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**US Army Corps  
of Engineers®**  
Engineer Research and  
Development Center

# **The Environmental Assessment and Management (TEAM) Guide: Delaware Supplement**

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**Abstract:** Environmental assessments help determine compliance with current environmental regulations. The U.S. Air Force, U.S. Army, Defense Logistics Agency (DLA), and Corps of Engineers (Civil Works) have adopted environmental compliance programs that identify compliance problems before they are cited as violations by the U.S. Environmental Protection Agency.

Since 1984, the U.S. Army Construction Engineering Research Laboratory, in cooperation with numerous Department of Defense (DOD) components, has developed environmental compliance assessment checklist manuals. The Environmental Assessment and Management (TEAM) Guide was developed for use by all DOD components. Currently there are five participating DOD components: the Air Force, Air National Guard, Army, Civil Works, and DLA. These agencies have agreed to share the development and maintenance of this Guide.

The Guide combines Code of Federal Regulations and management practices into a series of checklists that show legal requirements and the specific operations or items to review. TEAM Guide is supplemented by DOD component-specific manuals detailing DOD component regulations and policies. The Delaware Supplement was developed to be used in conjunction with the TEAM Guide, using existing Delaware state environmental legislation and regulations as well as suggested management practices.

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## FOREWORD

This is USACERL ERDC/CERL SR-05-21. The report is based on the information available on Enflex State Regulations of January 2010.

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CERL is an element of the U.S. Army Engineer Research and Development Center (ERDC), U.S. Army Corps of Engineers. The Director of ERDC is Dr. James R. Houston, and the Commander is COL Gary Johnson.



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## ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
AQMA	air quality management area
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
BACT	best available control technology
BOD	biochemical oxygen demand
BTEX	benzene, toluene, ethylbenzene, xylene
CAR	control area responsible party
CAS	Chemical Abstract Service
CEM	continuous emission monitoring
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act</i>
CFC	chlorofluorocarbons
CWA	<i>Clean Water Act</i>
dB	decibel
dBA	decibels using A-weighting network
dBC	decibels using C-weighting network
DEQ	Department of Environmental Quality
ESA	<i>Endangered Species Act</i>
FIFRA	<i>Federal Insecticide, Fungicide, and Rodenticide Act</i>
GVWR	gross vehicle weight rating
HEPA Filter	high efficiency particulate air filter
HWM	hazardous waste management
IARC	International Agency for Research on Cancer
ICRU	International Commission on Radiological Units and Measurements
IUPAC	International Union of Pure and Applied Chemistry
LAER	lowest achievable emission rate
Ldn	day-night airport noise level
Leq	equivalent noise level
LPG	Liquefied Petroleum Gas
MC	medium curing
MCL	maximum contaminant level
MFL	million fibers per liter
MSDS	material safety data sheet
MSW	municipal-type solid waste
MSWLF	municipal solid waste landfill
MWC	municipal waste combustor
NBS	National Bureau of Standards
NEPA	<i>National Environmental Policy Act</i>
NFPA	National Fire Protection Association
NHPA	<i>National Historic Preservation Act</i>
NPDES	National Pollutant Discharge Elimination System
NTNCWS	nontransient noncommunity water system
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
PEL	permissible exposure limit
POTW	publicly owned treatment works
PUC	Public Utility Commission of Oregon
RACT	reasonably available control technology
RC	rapid curing
RCRA	<i>Resource Conservation and Recovery Act</i>
RDF	refuse-derived fuel

## ACRONYMS

REL	recommended exposure level
RGF	recirculating gravel filter
RVP	Reid vapor pressure
SAE	Society of Automotive Engineers
SARA	<i>Superfund Amendments and Reauthorization Act</i>
SC	slow curing
SDWA	<i>Safe Drinking Water Act</i>
SIC	Standard Industrial Classification
SMCL	secondary maximum contaminant level
SPCC	spill prevention countermeasure and control
SPL	sound pressure level
SWDA	<i>Solid Waste Disposal Act</i>
TLV	threshold limit value
TNTC	too numerous to count
TPH	total petroleum hydrocarbons
TRI	toxic release inventory
TSCA	<i>Toxic Substance Control Act</i>
TSD	treatment, storage, and disposal
TSDF	treatment, storage, and disposal facility
TSP	total suspended particulate
TSS	total suspended solids
TTHM	total trihalomethane
UL	Underwriters Laboratory
UFC	Uniform Fire Code
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound
VOL	volatile organic liquid
WPCF	Water Pollution Control Facilities

## COMMONLY USED ABBREVIATIONS

bbl	barrel	mg	milligram
Btu	British thermal unit	mi	mile
C	Celsius	min	minute
cfs	cubic feet per second	MJ	megajoule
cm	centimeter	mL	milliliter
cm <sup>2</sup>	square centimeter	mm	millimeter
dscf	dry standard cubic foot	mo	month
dscm	dry standard cubic meter	mrem	millirem
F	Fahrenheit	MW	megawatt
ft	foot	ng	nanogram
ft <sup>2</sup>	square feet	NTU	nephelometric turbidity unit
ft <sup>3</sup>	cubic feet	oz	ounce
g	gram	pCi	picoCurie
gal	gallon	ppm	part per million
gJ	gigajoule	ppmv	part per million by volume
gr	grain	ppmw	part per million by weight
h	hour	psi	pound per square inch
ha	hectare	psia	pounds per square inch absolute
hp	horsepower	psig	pounds per square inch gauge
in.	inch	qt	quart
J	Joule	s	second
kg	kilogram	scf	standard cubic foot
km	kilometer	scm	standard cubic meter
kPa	kilopascals	sdcf	standard dry cubic foot
L	liter	sdcm	standard dry cubic meter
lb	pound	TU	turbidity unit
m	meter	V	volt
m <sup>3</sup>	cubic meter	yd	yard
MBtu	million British thermal units	yd <sup>2</sup>	square yard
meq	milligram equivalent	yr	year
CO	carbon monoxide	NO <sub>2</sub>	nitrogen dioxide
CO <sub>2</sub>	carbon dioxide	NO <sub>x</sub>	nitrogen oxides
Hg	mercury	SO <sub>2</sub>	sulfur dioxide



## METRIC CONVERSION TABLE

The following conversion table may be used throughout this manual to make approximate conversions between U.S. units and metric units.

1 in.	=	2.54 cm or 25.4 mm
1 ft	=	0.3048 m
1 ft <sup>2</sup>	=	0.093 m <sup>2</sup>
1 ft <sup>3</sup>	=	0.028 m <sup>3</sup>
1 psi	=	6.895 kPa
1 lb	=	0.454 kg
1 mi	=	1.61 km
1 gal	=	3.78 L
°F	=	(°C + 17.78) x 1.8
°C	=	0.55 (°F - 32)
1 yd	=	0.9144 m
1 Btu	=	4.184 kJ
1 acre	=	4046.9 m <sup>2</sup>
1 acre	=	0.405 hectare



**Comment Form**

Comments and questions regarding the Delaware Supplement can be addressed to:

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## SECTION 1

### AIR EMISSIONS MANAGEMENT

#### Delaware Supplement, January 2010

This section covers the state requirements for Air Emissions Management and is intended to supplement the U.S. TEAM Guide. Refer to the U.S. TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

#### Definitions

- *Actual Operating Conditions* - any conditions or operating parameters, or the quantities representing these conditions, or parameters, which exist during any operation (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Agricultural Operations* - an activity on land currently used or intended to be used primarily for the purpose of obtaining a profit in money by raising, harvesting and selling crops or by raising and selling livestock or poultry. Agricultural operation also means activities conducted by not-for-profit agricultural research organizations, which activities are necessary to serve that purpose. It does not include the construction and use of structures customarily provided in conjunction with the agricultural operation (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Air Contaminant* - particulate matter, dust, fumes, gas, mist, smoke, or vapor of any combination of these, exclusive of uncombined water (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Air Contaminant Control Device or System* - any method, process, equipment, or stack which removes, reduces, or renders less noxious air contaminants discharged into the atmosphere (DE 7 1000 1101, Section 2) [Citation Revised January 2007]; Citation Revised December 2008].
- *Air Contaminant Source* - any source from which there is emitted into the atmosphere any air contaminant regardless of who owns the property or facility from which the emission comes. The term includes all types of commercial and industrial plants and works, heating and power plants and stations, shops and stores; buildings and other structures of all types, including single and multiple family residences, apartment houses, office buildings, public buildings, hotels, restaurants, schools, hospitals, churches, and other institutional buildings, automobiles, trucks, tractors, buses and other motor vehicles; garages, vending and service locations, and stations; railroad locomotives; ships, boats, and other waterborne craft; airborne crafts; portable fuel-burning equipment; incinerators of all types, indoor and outdoor; and refuse dumps and piles (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Airless Cleaning System* - a solvent cleaning machine that is automatically operated and seals at a differential pressure of 0.50 pounds per square inch gauge (psig) or less, prior to the introduction of solvent or solvent vapor into the cleaning chamber and maintains differential pressure under vacuum during all cleaning and drying cycles (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Airless Spray* - a spray coating method in which the coating is atomized by forcing it through a small nozzle at high pressure. The coating is not mixed with air before exiting from the nozzle opening (DE 7 1000 1124, Section 11.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].

- *Air Pollution* - the presence in the outdoor atmosphere of one or more air contaminants in sufficient quantities and possessing characteristics and of a duration which is injurious to human, plant, or animal life, or to property, or which unreasonably interferes with the enjoyment of life and property within the jurisdiction of the state, excluding all aspects of employer-employee relationships as to health and safety hazards (DE 7 1 000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Air Quality Criteria* - a series of observed relationships between air pollutants and their effects on health, welfare, vegetation, or property. Criteria for any given effect are expressed in terms of pollutant concentrations, duration of exposure, and method of measurement (DE 7 100 0 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Air Quality Standard* - an air quality level as established by regulations in terms of a limit on contaminant levels in the atmosphere (DE 7 1000 110 1, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Airtight Cleaning System* - a solvent cleaning machine that is automatically operated and seals at a differential pressure of 0.50 pounds per square inch gauge (psig) or less, prior to the introduction of solvent or solvent vapor into the cleaning chamber and during all cleaning and drying cycles (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Asbestos* - any or all of the forms of asbestos including Actinolite, Amosite, Anthophyllite, Chrysotile, Crocidolite, or Tremolite (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Asbestos Containing Material* - asbestos or any material containing asbestos (DE 7 1000 1 113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Asphalt* - a dark brown to black cementitious material (solid, semisolid, or liquid in consistency) in which predominating constituents are bitumens which occur in nature as such or which are obtained as a residue in refining petroleum (DE 7 100 0 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Automated Parts Handling System* - a mechanical device that carries all parts and parts baskets at a controlled speed from the initial loading of soiled or wet parts through the removal of the cleaned or dried parts. Automated parts handling systems include, but are not limited to, hoists and conveyors (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Batch Vapor Cleaning Machine* - a vapor solvent cleaning machine in which individual parts or a set of parts move through the entire cleaning or drying cycle before new parts are introduced into the cleaning machine. The term does not include machines that do not have a solvent/air interface, such as airless and airtight cleaning systems (DE 7 1000 112 4, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Beryllium-Containing Waste* - material contaminated with beryllium or beryllium compounds used or generated during any process or operation performed by a source (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Carbon Adsorber* - a bed of activated carbon into which an air/solvent gas-vapor stream is routed and which adsorbs the solvent on the carbon (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Ceremonial Fires* - bonfires used for ceremonies sponsored by educational, cultural, or religious institutions (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].

- *Cleaning Activity* - the physical removal of foreign material from substrate that is being cleaned (DE 7 1000 1124, Section 45.2) [Added December 2008].
- *Cleaning of External Surface* - the act of applying a solvent to an external surface for cleaning. The cleaning activities may include, but are not limited to, wiping and spraying. Unit operation systems in this category include, but are not limited to, floor cleaning, equipment cleaning, large manufactured component cleaning, small manufactured component cleaning, and spray-booth cleaning (DE 7 1000 1124, Section 45.2) [Added December 2008].
- *Cleaning of Internal Surface* - the act of applying a solvent to an interior surface for cleaning. The cleaning activities may include, but are not limited to, flushing, purging, and spraying. Unit operation systems in this category include, but are not limited to, line cleaning, tank cleaning, spray-gun cleaning, and spray-booth cleaning (DE 7 1000 1124, Section 45.2) [Added December 2008].
- *Clear Coat* - a clear coating means a coating which lacks color and opacity or is transparent and uses the undercoat as a reflectant base or undertone color (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Coal Refuse* - waste-product of coal mining, cleaning, and coal preparation operation containing coal, matrix material, clay, and other organic and inorganic material (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Coating Line* - one or more apparatus or operations which include a coating applicator, flash-off area, and oven wherein a surface coating is applied, dried, or cured (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Coating or Printing* - coating is the application of a uniform layer of material across the entire width of a web. Printing is the formation of words, designs, and pictures, usually by a series of application rolls each with only partial coverage (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Code Orange Day* - a day which has been designated by the Department as a "Code Orange" day for expected pollution intensity (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Code Red Day* - a day which has been designated by the Department as a "Code Red" day for expected pollution intensity (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Cold Cleaning* - the batch process of cleaning and removing soils from metal surfaces by spraying, brushing, flushing, or immersion while maintaining the solvent below its boiling point. Wipe cleaning is to be included in this definition (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Cold Cleaning Machine* - a solvent cleaning machine that contains and/or uses unheated liquid solvent into which parts are placed to remove soils from the surfaces of the parts or to dry the parts. The term does not include machines that do not have a solvent/air interface, such as airless and airtight cleaning systems (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Component* - any piece of equipment which has the potential to leak volatile organic compounds when tested in the manner described in 14.4 of 7 D E A dmin. Code 1124. These sources include, but are not limited to, pumping seals, compressor seals, seal oil degassing vents, pipeline valves, flanges and other connections, pressure relief devices, process drains, and open ended pipes. Excluded from these sources are valves which are not externally regulated (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Revised December 2008].

- *Construction, Installation, Alteration, or Modification Permit* - written notice that the construction, installation, or alteration of an air contaminant source or control device has been approved by the Department (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Contamination* - the degradation of naturally occurring water, air, or soil quality either directly or indirectly as a result of the transfer of diseased organisms, blood, or other matter that may contain disease organisms from one material or object to another (DE 7 1000 1 101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Continuous Monitoring System* - the total equipment, required under the emission monitoring section in applicable subsections used to sample and condition (if applicable), to analyze, and to prove a permanent record of emissions or process parameters (DE 7 1000 1101 , Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Conveyorized Degreaser* - any continuous system which transports metallic objects through a bath containing organic solvent for the purpose of cleaning or degreasing (DE 7 1000 110 1, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Crop Residue* - any vegetative material remaining after harvesting, including leaves, stalks, roots (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Cutback Asphalt* - asphalt cement which has been liquefied by blending with petroleum solvents (diluent). Upon exposure to atmospheric conditions the diluents evaporate, leaving the asphalt cement to perform its function (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Day* - 24 consecutive hours (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Delivery Vessel* - tank trucks or trailers equipped with a storage tank and used for the transport of gasoline from sources of supply to stationary storage tanks (DE 7 1000 1101 , Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Department* - the Department of Natural Resources and Environmental Control (DE 7 1 000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Department* - the Department of Natural Resources and Environmental Control as defined in Title 29, Delaware Code, Chapter 80, as amended (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Desulfurized Fuel Gas* - a fuel gas with the sulfur content reduced to less than 10 gr of hydrogen sulfide (H<sub>2</sub>S) per 100 ft<sup>3</sup> of fuel gas (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Difficult-to-Monitor Valves* - any valve which cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Distillate Fuel Oil* - any liquid fuel derived directly or indirectly as the distilled product of crude petroleum, and having a maximum Saybolt Universal viscosity of 40 s at 100 °F (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].

- *Division* - the Division of Air and Waste Management (DE 7 1000 1 101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Downtime Mode* - the time period when a solvent cleaning machine is not cleaning or drying parts and the sump heating coils, if present, are turned off (DE 7 1000 1 124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Dipping* - immersing an item in a container of solvent to remove contaminants or residue (DE 7 1000 1 124, Section 45.2) [Added December 2008].
- *Dry Cleaning Facility* - a facility engaged in the cleaning of fabrics in an essentially nonaqueous solvent by means of one or more washes in solvent, extraction of excess solvent by spinning, and drying by tumbling in any air stream. The facility includes, but is not limited to, any washer, dryer, or filter and purification systems, waste disposal systems, holding tanks, pumps, and attendant piping and valves (DE 7 1000 1 101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Dwell* - the technique of holding parts within the freeboard area but above the vapor zone of a solvent cleaning machine. Dwell occurs after cleaning or drying to allow solvent to drain from the parts or parts baskets back into the solvent cleaning machine (DE 7 1000 1 124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Dwell Time* - the period of time between when parts or a parts basket is placed in the vapor zone of a batch vapor or in-line vapor cleaning machine and when solvent dripping ceases (DE 7 1000 1 124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Electrostatic Spray* - the application of charged atomized paint droplets that are deposited by electrostatic attraction (DE 7 1000 1 124, Section 11.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Emergency Vehicle* - any publicly owned and operated ambulance, lifeguard, or lifesaving equipment or any privately owned or operated vehicle which is responding to an emergency call. Any publicly owned vehicle operated by the following persons, agencies, or organizations (DE 7 1000 1 145, Section 2) (Added December 2006; Revised December 2008; Citation Revised January 2010):
  1. Any federal, state, or local agency, department, or district employing peace officers for use by those officers in the performance of their duties
  2. Any forestry or fire department of any public agency or fire department
  3. Any vehicle owned by the state, or any bridge and highway district, and equipped and used either for fighting fires, or towing or servicing other vehicles, caring for injured persons, or repairing damaged lighting or electrical equipment
  4. Any state-owned vehicle used in responding to emergency fire, rescue or communications calls and operated either by the Delaware Emergency Management Agency or by any public agency or industrial fire department to which the Delaware Emergency Management Agency has assigned the vehicle
  5. Any vehicle owned or operated by any department or agency of the United States government when the vehicle is used in responding to emergency fire, ambulance, or lifesaving calls or is actively engaged in law enforcement work.
  6. Any vehicle for which an authorized emergency vehicle permit has been issued by the Superintendent of the Delaware State Police.
- *Emulsified Asphalt* - an emulsion of asphalt cement and water which contains a small amount of an emulsifying agent (DE 7 1000 1 101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Equipment, Facility, and Procedural Change* - the use of alternative cleaning techniques and procedures, such as the use of high-pressure water equipment to reduce solvent stripping, floor scrubbers, removable or

replaceable equipment covers, improved containment of volatile organic compounds (VOCs) from materials in storage/transfer/use, improved reclaim/reuse/recycle procedures, etc. (DE 7 1000 1124, Section 45.2) [Added December 2008].

- *Equivalent Method* - any method of sampling and analyzing for an air pollutant which has been demonstrated to the Secretary's satisfaction to have a consistent and quantitatively known relationship to the referenced method under specified conditions (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Exempt Compounds* - any of the compounds listed under the definition of "Volatile Organic Compounds" which have been determined to have negligible photochemical reactivity (DE 7 1000 1124, Section 2) [Added December 1998; Citation Revised January 2008].
- *Existing Installation, Equipment, Source or Operation* - any air contaminant source the construction or modification of which was commenced before the date of adoption of any applicable regulation or standard. As this definition applies to 7 DE Admin. Code 1120, New Source Performance Standards, it means any air contaminant source the construction or modification of which was commenced before August 17, 1971. As this definition applies to 7 DE Admin. Code 1121. Emission Standards for Hazardous Air Pollutants, it means any air contaminant source the construction or modification of which was commenced before March 31, 1971 (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Revised December 2008].
- *Flushing* - pumping a solvent from a reservoir through a pipe or hose or through equipment (e.g., pipes, hoses, tanks) to remove contaminants or residue (DE 7 1000 1124, Section 45.2) [Added December 2008].
- *Freeboard Height* - for a batch cold cleaning machine, the distance from the liquid solvent level to the top of the solvent cleaning machine. For a batch vapor cleaning machine, it is the distance from the solvent/air interface to the top of the solvent cleaning machine, as measured during idling mode. For an in-line cleaning machine, it is the distance from the solvent/air interface to the bottom of the entrance or exit opening, whichever is lower, as measured during idling mode (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Freeboard Ratio* - the ratio of the solvent cleaning machine freeboard height to the smaller interior dimension (length, width, or diameter) of the solvent cleaning machine (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Freeboard Refrigeration Device* - a set of secondary coils mounted in the freeboard area that carries a refrigerant or other chilled substance to provide a chilled air blanket above the solvent vapor. A primary condenser that is capable of maintaining a temperature, in °F, in the center of the chilled air blanket at not more than 30 percent of the solvent's boiling point is both a primary condenser and a freeboard refrigeration device (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Friable Asbestos Material* - any material that contains more than 1 percent asbestos by weight and that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Fuel* - any combustible matter including, but not limited to, coal, gas, oil, and refuse (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Fuel* - any combustible matter including, but not limited to coal, gas, oil, and refuse (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].

- *Fuel Burning Equipment* - each unit, or any combination of units, discharging to a common stack used for the burning of fuel or other combustible material for the primary purpose of utilizing the thermal energy released (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Garbage* - animal or vegetable waste matter originating in houses, kitchens, restaurants, hotels, produce markets, or similar installations (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Garbage* - animal or vegetable waste matter originating in houses, kitchens, restaurants, hotels, produce markets or similar installations (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Hazardous Particulate Matter* - particulate matter which poses special health hazards due to chemical or biological reactivity or particle size (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *High Volume Low Pressure or HVLP* - a method of spraying a coating, that improves the transfer efficiency while maintaining the air pressure between 0.1 and 10 pounds per square inch gauge (psig) (DE 7 1000 1124, Section 11.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Idling Mode* - the time period when a solvent cleaning machine is not actively cleaning or drying parts and the sump heating coils, if present, are turned on (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Immersion Cold Cleaning Machine* - a cold solvent cleaning machine in which the parts are immersed in the solvent when being cleaned or dried. A remote reservoir cold cleaning machine that is also an immersion cold cleaning machine is considered an immersion cold cleaning machine for purposes of this Section (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Incineration* - the process of igniting and burning solid, semisolid, liquid, or gaseous combustible waste to their products of combustion (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Incineration* - the process of igniting and burning solid, semi solid, liquid, or gaseous combustible waste to their products of combustion (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Incinerator* - any enclosed device used to destroy waste material by using controlled flame combustion (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Industrial Waste* - any waste produced by a manufacturing process (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Infectious Waste* - those solid wastes that may cause human disease and may reasonably be suspected of harboring human pathogenic organisms, or may pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Types of solid wastes designated as infectious include, but are not limited to, the following (DE 7 1000 1101, Section 2) [Citation Revised January 2008; Citation Revised December 2008]:
  1. biological wastes:
    - a. biological liquid wastes - blood and blood products, excretions, exudates, secretions, suctionings, and other body fluids, including liquid wastes from renal dialysis
    - b. pathological wastes - all human tissues and anatomical remains, including human fetal remains which emanate from surgery, obstetrical procedures, autopsy, and laboratory procedures

- c. cultures and stocks of etiologic agents and associated biological wastes - includes, but is not limited to, specimen cultures, cultures and stocks of etiologic agents, and wastes from production of biologicals and serums
  - d. laboratory wastes - those wastes which have come in contact with pathogenic organisms or blood or body fluids including, but not limited to, disposal materials; culture dishes; devices used to transfer, inoculate, and mix cultures; paper and cloth which has come in contact with specimens, or cultures which have not been sterilized or rendered noninfectious; or laboratory wastes, including cultures of etiologic agents, which pose a substantial threat to health due to their volume and virulence
  - e. animal tissue, bedding, and other waste from animals known or suspected to be infected with a pathogen which also causes human disease, provided that prevailing evidence indicates that the tissue, bedding, or other waste may act as a vehicle of transmission to humans
  - f. human dialysis waste materials including blood lines and dialysate membranes
2. sharps - any discarded article that may cause puncture or cuts including, but not limited to, needles, intravenous (IV) tubing with needles attached, scalpel blades, glassware, and syringes that have been removed from their original sterile containers
  3. discarded biologicals - serums and vaccines produced by pharmaceutical companies for human or veterinary use
  4. other infectious wastes - any residue or contaminated soil, water, or other debris resulting from the cleanup of a spill of any infectious waste.
- *In-Line Vapor Cleaning Machine* - a vapor solvent cleaning machine that uses an automated parts handling system, typically a conveyor, to automatically provide a continuous supply of parts to be cleaned or dried. These units are fully enclosed except for the conveyor inlet and exit portals (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
  - *Large Incinerator* - an incinerator which has a capacity of greater than 1000 lb/h (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
  - *Light Duty Truck* - any motor vehicle rated at 3864 kg (8500 lb) gross weight or less which is designed primarily for the purpose of transportation or are derivatives of these vehicles (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
  - *Linear Extrapolation* - a technique for determining an unknown value lying numerically outside the range of a series of values which is in direct linear proportion to another series of known values by comparing the two series (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
  - *Linear Interpolation* - a technique for determining an unknown value lying numerically inside the range of a series of values which is in direct linear proportion to another series of known values by comparing the two series (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
  - *Liquid Service* - equipment which processes, transfers, or contains one or more volatile organic compounds as a liquid having a Reid vapor pressure greater than 0.1 psia (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
  - *Lowest Achievable Emission Rate (LAER)* - the rate of emissions based on whichever of the following is more stringent (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008]:
    1. the most stringent emission limitation which is contained in the implementation plan of any state for a class or category of source, unless the owner or operator of the proposed source demonstrates that the limitations are not achievable
    2. the most stringent emission limitation which is achieved in practice by a class or category of source.
 This term, as modified, means the lowest achievable emission rate for the new or modified facilities within the source. In no event will the application of this term permit a proposed new or modified facility to emit any pollutant in excess of the amount allowable under new source standards of performance.



- *Malfunction* - any sudden and unavoidable failure of air pollution control equipment or of a process to operate in a normal or unusual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown are not considered malfunctions (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Material* - any gas, liquid, or solid or any combination thereof (DE 7 1000 11 13, Section 3) [Added January 2008; Citation Revised January 2010].
- *Material Change* - the use of caustic cleaners, cleaners with a low VOC content or low vapor pressure, peelable-type equipment/structure coatings, etc. (DE 7 1000 1124, Section 45.2) [Added December 2008].
- *Metropolitan Philadelphia Interstate Air Quality Control Region* - a geographical region composed of Burlington, Camden, Gloucester, Mercer, and Salem counties in the State of New Jersey; Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties in the State of Pennsylvania; and New Castle County in the State of Delaware (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Mobile Equipment* - any equipment that is physically capable of being driven or drawn up on a highway including, but not limited to, the following types of equipment: automobiles; trucks, truck cabs, truck bodies; buses; motorcycles; ground support vehicles, used in support of aircraft activities at airports; construction vehicles (such as mobile cranes, bulldozers, concrete mixers); farming equipment (such as wheel tractors, plows, and pesticide sprayers); hauling equipment (such as truck trailers, utility bodies, and camper shells); and miscellaneous equipment (such as street cleaners and golf carts) (DE 7 1000 112 4, Section 11. 2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Modification* - any physical change in, or change in the method of operation of, any air contaminant source which results in an emission to the atmosphere of a new air contaminant or an increase in the emission rate to the atmosphere of one or more existing air contaminants. Upon modification, an existing source shall become subject to 7 DE Admin. Code 1120 only with respect to those pollutants which, after modification, are either newly emitted, or emitted at an increased rate. Routine maintenance, repair and replacements shall not be considered a modification. Conversion to coal required for energy considerations, as specified in Section 113 (d) (5) of the 1977 Clean Air Act, shall not be considered a modification. The relocation of an existing facility shall be considered a modification whenever the Department determines it necessary to maintain ambient air quality standards. Change in ownership of an existing facility shall not be considered a modification. This definition shall not apply to 7 DE Admin. Code 1125 (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Revised December 2008].
- *Monitoring Device* - the total equipment required under the monitoring of operations sections in applicable subsections used to measure and record, if applicable, process parameters (DE 7 1000 1101 , Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *National Ambient Air Quality Standards* - those primary and secondary ambient air quality standards which are promulgated by the administrator of the Federal Environmental Protection Agency (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *New Installation, Equipment, Source, Operation* - any air contaminant source the construction or modification of which is commenced after the date of adoption of any applicable regulation or standard. As this definition applies to 7 DE Admin. Code 1120, New Source Performance Standards, it means any air contaminant source the construction or modification of which was commenced after August 17, 1971. As this definition applies to 7 DE Admin. Code 1121, Emission Standards for Hazardous Air Pollutants, it means any air contaminant source the construction or modification of which was commenced after March 31, 1971. This definition shall not apply to 7 DE Admin. Code 1125 (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Revised December 2008].

- *Nitric Acid Production Unit* - any facility producing weak nitric acid by either the pressure or atmospheric pressure process (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Noninfectious* - a state in which potentially harmful microorganisms are absent, free of pathogens (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Non-Manufacturing Area Cleaning* - the cleaning of cafeterias, laboratories, pilot facilities, restrooms, office buildings, etc. (DE 7 1000 1124, Section 45.2) [Added December 2008].
- *On-Road Heavy-Duty Motor Vehicle* - any vehicle with a gross vehicle weight rating (GVWR) of greater than 8,500 pounds which is self-propelled and designed for transporting persons or property, including but not limited to trucks, buses, and farm vehicles (DE 7 1000 1145, Section 2) [Added January 2006; Citation Revised December 2008].
- *Opacity* - that condition which renders material partially or wholly impervious to rays of light and causes a degree of obstruction to an observer's view (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Open Burning* - any outdoor fire or outdoor smoke producing process from which the products of combustion are emitted directly into the ambient air. This does not include incinerators, boilers, or heaters used in process operations (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Revised December 2008].
- *Open Burning* - any outdoor fire or outdoor smoke-producing process from which the products of combustion are emitted directly into the ambient air. This does not include incinerators, boilers, or heaters used in process operations (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Open Top Vapor Degreaser* - the batch process of cleaning and removing soils from metal surfaces by condensing hot solvent vapor on the colder metal parts (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Operating Permit* - written notice that the operation of any air contaminant source or control device has been approved by the Department (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Packaging Rotogravure Printing* - rotogravure printing upon paper, paper board, metal foil, plastic film, or other substrates which are subsequently formed into containers and label for articles to be sold (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Particulate Matter (PM)* - material, other than uncombined water, which is suspended in or discharged into the atmosphere as a liquid or solid (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Parts Cleaning* - the spraying or wiping of solvent on a part or the dipping of a part in solvent for cleaning. Unit operation systems in this category include, but are not limited to, small manufactured component cleaning, tool cleaning, and maintenance equipment cleaning (DE 7 1000 1124, Section 45.2) [Added December 2008].
- *Perimeter Field Maintenance* - the open burning and removal of vegetation from the perimeter of a field in crop production or livestock for the specific purpose of keeping the field free and clear of vegetative obstruction that prohibit the agricultural operations (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].

- *Person* - any individual, firm, association, organization, partnership, business trust, corporation, company, contractor, supplier, installer, developer, user or owner or operator, or any Federal, State or Local governmental agency or public district or any officer or employee thereof (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *PM<sub>2.5</sub>* - particulate matter with an aerodynamic diameter of less than or equal to a nominal 2.5 micrometers, as determined by the appropriate reference methods (DE 7 1000 1101, Section 2) [Added December 1999; Citation Revised December 2008].
- *PM<sub>10</sub>* - particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers, as determined by appropriate reference methods (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Prescribed Burning* - open burning of undisturbed vegetation for the specific purpose of conservation practices, wildlife habitat management, or plant, pest or disease control under such conditions that the fire is confined to a predetermined area (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Primary Ambient Air Quality Standards* - those ambient air quality standards which are requisite to protect the public health and allow an adequate margin of safety (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Primary Condenser* - a series of circumferential cooling coils on a vapor cleaning machine through which a chilled substance is circulated or recirculated to provide continuous condensation of rising solvent vapors and, thereby, creating a concentrated solvent vapor zone (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Private Dwelling* - a domestic residence housing no more than three (3) families and where no commercial or industrial activity is conducted (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Publication Rotogravure Printing* - rotogravure printing upon paper which is subsequently formed into books, magazines, catalogues, brochures, directories, newspaper supplements, and other types of printed materials (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Purging* - the cleaning of the interior of a spray gun and other attached equipment (e.g., hoses, paint cups) cleaned simultaneously with the spray gun (DE 7 1000 1124, Section 45.2) [Added December 2008].
- *Reconstruction* - the replacement of components for an existing facility to such an extent that (DE 7 1000 1101, Section 2) [Citation Revised January 2008; Citation Revised December 2008]:
  1. the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility
  2. it is technologically and economically feasible to meet the applicable standards set forth in this part.
- *Recreational Purposes* - any purpose that fulfills a physical or social need including, but not limited to, camping, ceremonies, and religious rites (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Recreational Purposes* - any purpose which, in the judgment of the Department, fulfills a physical or social need, including, but not limited to, camping, ceremonies, and religious rites (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Reduced Room Draft* - decreasing the flow or movement of air across the top of the freeboard area of a solvent cleaning machine to less than 15.2 meters per minute (50 feet per minute) by methods including, but not limited

to, redirecting fans and/or air vents to not blow across the cleaning machine, moving the cleaning machine to a corner where there is less room draft, and constructing a partial or complete enclosure around the cleaning machine (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].

- *Refuse* - garbage, rubbish, or trade waste (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Refuse* - garbage, rubbish, or trade waste (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Reid Vapor Pressure* - the absolute pressure of a petroleum liquid product at 100 °F (37.8 °C) as measured by the standard test method set forth in 54 Federal Register (FR) pp. 11868 - 11911 (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Remote Reservoir Cold Cleaning Machine* - a solvent cleaning machine in which liquid solvent is pumped to a sink-like work area that immediately drains solvent back into a n enclosed container while parts are being cleaned or dried, allowing no solvent to pool in the work area (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Roll Coating* - the application of a coating material to a substrate by means of hard rubber or steel rolls (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Rubbish* - solids or liquids including but not necessarily limited to, rags, clothes, leather, rubber, carpets, excelsior, paper, ashes, furniture, tin cans, glass, crockery, masonry, tires, or waste oil (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Revised December 2008].
- *Rubbish* - waste solids or liquids including but not necessarily limited to, rags, clothes, leather, rubber, carpets, excelsior, paper, ashes, furniture, tin cans, glass, crockery, masonry, tires, or waste oil (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Salvage Operation* - any business, trade, or industry engaged entirely or partially in salvaging or reclaiming any product or material including, but not limited to, metal, chemicals, motor vehicles, shipping containers, or drums (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Salvage Operation* - any business, trade or industry engaged entirely or partially in salvaging or reclaiming any product or material, including, but not necessarily limited to metal, chemicals, motor vehicles, shipping containers or drums (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Secondary Ambient Air Quality Standards* - those ambient air quality standards which, in the judgment of the Department are requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of air contaminants in the ambient air (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Secretary* - the Secretary of the Department of Natural resources and Environmental Control (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Silviculture* - the care and cultivation of forest trees (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Small Incinerator* - an incinerator that has a capacity equal to or less than 1000 lb/h (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].

- *Soils* - contaminants that are removed from the parts being cleaned. Soils include, but are not limited to, grease, oils, waxes, metal chips, carbon deposits, fluxes, and tars (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Solid Fuel* - a fuel which is fired as a solid, such as anthracite or semi anthracite, bituminous or sub bituminous coal, lignite, coke, wood, or any solid by product of a manufacturing process that may be substituted for any of the above specifically mentioned fuels (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Revised December 2008].
- *Solid Fuel* - a fuel which is fired as a solid, such as anthracite or semi anthracite, bituminous or sub bituminous coal, lignite, coke, wood, or any solid by product of a manufacturing process that may be substituted for any of the above specifically mentioned fuels (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Solid Waste* - refuse, more than 50 percent of which is municipal type waste consisting of a mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustibles and noncombustible materials such as glass and rock (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Solvent* - organic materials that are liquid at standard conditions and that are used as dissolvers, viscosity reducers, or cleaning agents (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Solvent/Air Interface* - for a vapor cleaning machine, the location of contact between the concentrated solvent vapor layer and the air. This location of contact is defined as the mid-line height of the primary condenser coils. For a cold cleaning machine, it is the location of contact between the liquid solvent and the air (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Solvent Cleaning Machine* - any device or piece of equipment that uses volatile organic compounds, liquid or vapor, to remove soils from parts or to dry parts. Types of solvent cleaning machines include, but are not limited to, batch vapor, in-line vapor, in-line cold, immersion cold, and remote reservoir cold cleaning machines, as well as, airless cleaning and airtight cleaning systems (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Solvent Metal Cleaning* - the process of cleaning soils from metal surfaces by cold cleaning, open top vapor degreasing, or conveyORIZED degreasing (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Soot Blowing* - the operation of removing soot, slag, and/or fly ash from the firebox walls or the tubes of fuel burning equipment by the use of compressed air, steam, or water (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Spraying* - the application of a cleaning solvent to a surface through a nozzle (DE 7 1000 1124, Section 45.2) [Added December 2008].
- *Stack* - a flue, chimney, conduit, or other device constructed for the purpose of discharging air contaminants into the atmosphere (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Stack Height* - the vertical distance measured in feet between the point of discharge from a stack into the atmosphere and the land thereunder (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].

- *Standard for Demolition and Renovation* - of the asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP), as adopted through July 1, 2006.
- *Sulfuric Acid Plant* - any facility producing sulfuric acid by the contact process of burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans, or acid sludge, but does not include facilities where conversion to sulfuric acid is utilized primarily as a means of preventing emissions to the atmosphere of SO<sub>2</sub> or other sulfur compounds (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Superheated Vapor System* - a system that heats the solvent vapor, either passively or actively, to a temperature 10°F above the solvent's boiling point. Parts are held in the superheated vapor before exiting the machine to evaporate the liquid solvent on the parts. Hot vapor recycle is an example of a superheated vapor system (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Trade Waste* - any solid, liquid, or gaseous waste material or rubbish resulting from construction, land clearing for construction or development, building operations, or the prosecution of any business, trade, or industry including, but not necessarily limited to, wood, plastic products, cartons, paint, grease, oil and other petroleum products, chemicals or cinders (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *True Vapor Pressure* - the equilibrium partial pressure exerted by petroleum liquid as determined in accordance with methods described in American Petroleum Institute Bulletin 2517, Evaporation Loss from Floating Roof Tanks, 1962 (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Unit Operation System (UOS)* - the ensemble of equipment around which a material balance is performed. A UOS includes all possible points/sources that could result in losses to the atmosphere as a result of its being cleaned, including losses during dispensing of solvent, losses from residual solvent on or in cleaning tools (such as rags), losses from solvent storage, etc. An item of equipment used for cleaning parts by definition is a unit operation; therefore, carry-out losses during removal of cleaned parts shall be considered in a material balance. A UOS may include more than one cleaning activity that, by itself, could be classified as a UOS (DE 7 1000 1124, Section 45.2) [Added December 2008].
- *Unsafe-To-Monitor Valve* - any valve which the facility operator has demonstrated cannot be monitored without exposing monitoring personnel to an immediate danger (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Valves Not Externally Regulated* - valves that have no external controls, such as in-line check valves (DE 7 1000 1101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Vapor Cleaning Machine* - a batch or in-line solvent cleaning machine that heats liquid solvent that is used as part of the cleaning or drying cycle. The heated solvent may or may not be boiling. The term does not include machines that do not have a solvent/air interface, such as airless and airtight cleaning systems (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Volatile Organic Compound (VOC)* - any carbon-containing compound, excluding CO, CO<sub>2</sub>, carbonic acid, metallic carbides or carbonates and ammonium carbonate that participates in atmospheric photochemical reactions. This includes any such organic compound, other than the following, which have been determined to have negligible photochemical reactivity (DE 7 1000 1101, Section 2) [Revised December 1998; Citation Revised December 2008; Revised January 2010]:
  - 1 methane
  - 2 ethane
  - 3 methyl chloroform (1,1,1-trichloroethane)

- 4 CFC-113 (1,1,2-trichloro-1,2,2-trifluoromethane
- 5 methylene chloride (dichloromethane)
- 6 CFC-11 (trichlorofluoromethane)
- 7 CFC-12 (dichlorodifluoromethane)
- 8 HCFC-22 (chlorodifluoromethane)
- 9 HFC-23 (trifluoromethane)
- 10 CFC-114 (1,2-dichloro-1,1,2,2-tetrafluoroethane)
- 11 CFC-115 (chloropentafluoroethane)
- 12 HCFC-123 (1,1,1-trifluoro-2,2-dichloroethane)
- 13 HFC-134a (1,1,1,2-tetrafluoroethane)
- 14 HCFC-141b (1,1-dichloro-1-fluoroethane)
- 15 HCFC-142b (1-chloro-1,1-difluoroethane)
- 16 HCFC-124 (2-chloro-1,1,1,2-tetrafluoroethane)
- 17 HFC-125 (pentafluoroethane)
- 18 HFC-134 (1,1,2,2-tetrafluoroethane)
- 19 HFC-143a (1,1,1-trifluoroethane)
- 20 HFC-152a (1,1-difluoroethane)
- 21 parachlorobenzotrifluoride (PCBTF)
- 22 cyclic, branched, or linear completely methylated siloxanes
- 23 acetone
- 24 perchloroethylene (tetrachloroethylene)
- 25 HCFC-225ca (3,3-dichloro-1,1,1,2,2-pentafluoropropane)
- 26 HCFC-225cb (1,3-dichloro-1,1,2,2,3-pentafluoropropane)
- 27 HFC-43-10mee (1,1,1,2,3,4,4,5,5,5-decafluoropentane)
- 28 HFC-32 (difluoromethane)
- 29 HFC-161 (ethylfluoride)
- 30 HFC-236fa (1,1,1,3,3,3-hexafluoropropane)
- 31 HFC-245ca (1,1,2,2,3-pentafluoropropane)
- 32 HFC-245ea (1,1,2,3,3-pentafluoropropane)
- 33 HFC-245eb (1,1,1,2,3-pentafluoropropane)
- 34 HFC-245fa (1,1,1,3,3-pentafluoropropane)
- 35 HFC-236ea (1,1,1,2,3,3-hexafluoropropane)
- 36 HFC-365mfc (1,1,1,3,3-pentafluorobutane)
- 37 HCFC-31 (chlorofluoromethane)
- 38 HCFC-151a (1-chloro-1-fluoroethane)
- 39 HCFC-123a (1,2-dichloro-1,1,2-trifluoroethane)
- 40 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane (C4F9OCH3);
- 41 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF3)2CFCF2 OCH3)
- 42 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (C4F9OC2H5)
- 43 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF3)2CFCF2 OC2H5)
- 44 methyl acetate
- 45 HFE-7000 (1,1,1,2,2,3,3-heptafluoro-3-methoxy-propane) (n-C3F7OCH3)
- 46 HFE-7500 [3-ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl) hexane]
- 47 HFC-227ea (1,1,1,2,3,3,3-heptafluoropropane)
- 48 methyl formate
- 49 HFE-7300 (1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-trifluoromethyl-pentane)
- 50 t-butyl acetate\*
- 51 propylene carbonate
- 52 dimethyl carbonate
- 53 perfluorocarbon compounds which fall into these classes
- 54 Cyclic, branched, or linear, completely fluorinated alkanes
- 55 Cyclic, branched, or linear, completely fluorinated ethers with no unsaturated bonds
- 56 Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturated bonds

57 Sulfur containing perfluorocarbons with no unsaturated bonds and with sulfur bonds only to carbon and fluorine

\* t-butyl acetate is a VOC for purposes of all recordkeeping, emissions reporting, photo-chemical dispersion modeling and inventory requirements which apply to VOC and shall be uniquely identified in emission reports, but is not a VOC for purposes of VOC emissions limitations or VOC content requirements.

- *Waste Oil* - used or spent oil or solvents or other volatile hydrocarbons, including but not limited to crankcase oil (DE 7 1000 1113, Section 3) [Added January 2008; Citation Revised January 2010].
- *Working Mode* - the time period when the solvent cleaning machine is actively cleaning or drying parts (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].
- *Working Mode Cover* - any cover or solvent cleaning machine design that allows the cover to shield the cleaning machine openings from outside air disturbances while parts are being cleaned or dried in the cleaning machine. A cover that is used during the working mode is opened only during parts entry and removal (DE 7 1000 1124, Section 33.2) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].



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**REFER TO CHECKLIST ITEMS:**

All Federal Facilities	AE.1.1.DE.
Missing Checklist Items	AE.2.1.DE.
State-Specific Requirements	
General	AE.5.1.DE. through AE.5.3.DE.
Permits/Notifications	AE.6.1.DE. through AE.6.8.DE.
Management/Administrative	AE.7.1.DE. through AE.7.4.DE.
Operations	AE.8.1.DE. and AE.8.2.DE.
Emission Limits	AE.9.1.DE.
Steam Generators	AE.10.1.DE. through AE.10.3.DE.
Fuel Burning Equipment	AE.15.1.DE. through AE.15.5.DE.
Gas Turbines/Stationary Engines	AE.20.1.DE. through AE.20.6.DE.
Miscellaneous Incinerators	AE.25.1.DE. through AE.25.3.DE.
Medical Waste Incinerators	AE.30.1.DE. through AE.30.9.DE.
(NOTE: Delaware has adopted the requirements of 40 CFR 60, Subpart E c, S tandards of Performance for Hospital/Medical/Infectious Waste Incinerators, but has extended the applicability to all HMIWIs.)	
Sewage Sludge Incinerators	AE.45.1.DE.
Printing Presses and Graphic Arts	AE.60.1.DE. through AE.60.12.DE.
Fugitive Emissions	AE.65.1.DE.
Toxic Emissions	AE.67.1.DE.
Dry Cleaning Operations	
Petroleum Solvent	AE.70.1.DE. through AE.70.10.DE.
Perchloroethylene	[Deleted]
Acid Production Units	AE.80.1.DE. through AE.80.5.DE.
Coating Operations	AE.100.1.DE. through AE.100.16.DE.
Degreasing Operations	
Cold Cleaning	AE.116.1.DE. through AE.116.4.DE.
Vapor Cleaning	AE.117.1.DE. through AE.117.13.DE.
Reporting	AE.118.1.DE.
Miscellaneous VOC Operations	AE.125.1.DE. through AE.125.9.DE.
Open Burning	AE.130.1.DE. through AE.130.6.DE.
Vehicle Emissions	AE.135.1.DE. through AE.135.4.DE.
Asphalt Paving Materials/Operations	[Deleted]
Other Emissions/Sources	AE.155.1.DE. through AE.155.3.DE.
Aerospace Manufacturing/Rework Facilities	
General	AE.170.1.DE. through AE.170.5.DE.
Recordkeeping/Reporting	[Deleted]

**GUIDANCE FOR DELAWARE APPENDIX USERS**

**REFER TO APPENDIX NUMBERS:**

**REFER TO APPENDIX TITLES:**

1-1	Ambient Air Quality Standards for Specific Emissions
1-2	Emission Limits for HMIWIs
1-3	Delaware RMP Regulated Substances
1-4	Alert Stages: Sources and Requirements
1-5	Architectural Coating VOC Content Limits
1-6	Aerospace Coating VOC Content limits

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.1.</b></p> <p><b>ALL FEDERAL FACILITIES</b></p> <p><b>AE.1.1.DE.</b> Facilities with processes involving regulated substances above specific threshold levels are required to develop a risk management program (RMP) (DE 71 000 1201) [ Added December 1999; Revised January 2007].</p>	<p>Determine whether the facility has any processes with regulated substances having any potential release quantity equal to or greater than the sufficient quantities listed in Appendix 1-3.</p> <p>(NOTE: Formulae for determining potential release quantities are included in Appendix 1-3.)</p> <p>Verify that facilities with regulated substances having potential releases equal to or greater than the sufficient quantities:</p> <ul style="list-style-type: none"> <li>-implement the Risk Management Program (RMP) for the appropriate program level (see AE.1.4 in the U.S. TEAM Guide for requirements for the RMP)</li> <li>- perform a hazard assessment for the Delaware worst-case scenario</li> <li>- submit a Risk Management Plan to the Department</li> <li>- meet the emergency response, recordkeeping, and management requirements of the RMP.</li> </ul> <p>(NOTE: Delaware has adopted the provisions of 40 CFR 68, Risk Management Program (RMP). The requirements included here exceed the Federal requirements. These additional Delaware requirements apply to substances listed in Appendix 1-3, when they are not stored or used in amounts that would make them subject to the Federal requirements.)</p>

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<p><b>AE.2.</b></p> <p><b>MISSING CHECKLIST ITEMS</b></p> <p><b>AE.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

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<p><b>STATE-SPECIFIC REQUIREMENTS</b></p> <p><b>AE.5. General</b></p> <p><b>AE.5.1.DE.</b> Sources must not contribute to any violation of Federal or state ambient air quality standard (DE 7 10 00 1103) [Citation Revised January 2007 ; Citation Revised December 2008].</p> <p><b>AE.5.2.DE.</b> Sources in Delaware must not contribute to air quality violations in neighboring states (DE 7 1000 1116) [Citation Revised January 2007 ; Citation Revised December 2008].</p> <p><b>AE.5.3.DE.</b> [Deleted December 2008].</p>	<p>Verify that sources do not contribute to any violation of Federal or state ambient air quality standard.</p> <p>(NOTE: See Appendix 1 -1 for ambient air quality standards for particulate matter, SO<sub>2</sub>, CO, ozone, hydrocarbons, NO<sub>2</sub>, hydrogen sulfide, lead, and PM<sub>10</sub> particulates.)</p> <p>Verify that the source complies with any directive of the Department concerning interstate air pollution.</p> <p>(NOTE: DE 70 100 019 recodified.)</p>

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<p><b>STATE-SPECIFIC REQUIREMENTS</b></p> <p><b>AE.6. Permits/ Notifications</b></p> <p><b>AE.6.1.DE.</b> Sources must meet permit requirements (DE 7 1000 1102 and Appendix A) [Revised January 2 007; Citation Revised December 2008].</p>	<p>Verify that a permit from the Department is obtained prior to the construction, installation, alteration, or operation of any equipment or air contaminant control device that emits or prevents air pollution.</p> <p>Verify that the source meets the terms and conditions of any permit.</p> <p>(NOTE: Permit requirements do not apply to the operation of equipment during initial operations when the source is attempting to demonstrate to the Department the equipment's satisfactory performance. Additionally, permits are not required for the following equipment or devices unless they emit an air contaminant designated as a hazardous pollutant by the USEPA:</p> <ul style="list-style-type: none"> <li>- air contaminant detector, air contaminant recorder, combustion controller or combustion shutoff</li> <li>- fuel burning equipment (other than smokehouse generators) that meet the following conditions: <ul style="list-style-type: none"> <li>- uses any fuel and has a rated heat input of less than 10 million British Thermal Units (MBtus) per hour</li> <li>- uses only natural gas, LP gas, or other desulfurized fuel gas and has a rated heat input of less than 15 MBtus/h</li> </ul> </li> <li>- air conditioning or comfort ventilation systems</li> <li>- vacuum cleaning systems used exclusively for industrial, commercial, or residential housekeeping</li> <li>- ventilating or exhaust systems for print storage room cabinets</li> <li>- exhaust systems for controlling steam and heat</li> <li>- laboratory equipment used exclusively for chemical or physical analyses</li> <li>- internal combustion engines and vehicles used for transport of passengers or freight</li> <li>- equipment or apparatus emitting less than 10 lb/day of any air contaminant which, according to the Department, has little or no potential of causing air pollution</li> <li>- maintenance, repair, or replacement in kind of equipment for which a permit to operate has been issued</li> <li>- equipment that emits only nitrogen, oxygen, CO<sub>2</sub>, and/or water vapor</li> <li>- ventilating or exhaust systems used in eating establishments where food is prepared for the purpose of consumption</li> <li>- equipment used to liquefy or separate oxygen, nitrogen, or rare gases from the air</li> <li>- fireworks</li> <li>- smudge pots for or chards or small outdoor heating devices to prevent freezing of plants</li> </ul>

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<p><b>AE.6.2.DE.</b> Sources must meet specific permit/registration transfer requirements ( DE 7 1000</p>	<ul style="list-style-type: none"> <li>- outdoor painting and sand blasting equipment</li> <li>- lawn mowers, tractors, farm equipment, and construction equipment</li> <li>- gasoline dispensing facilities that never exceed a monthly throughput of 10,000 gal</li> <li>- stationary gasoline storage tanks that:               <ul style="list-style-type: none"> <li>- have a capacity less than 550 gal and that are used exclusively for the fueling of implements of husbandry</li> <li>- have a capacity less than 2000 gal and that were constructed prior to 1 January 1979</li> <li>- have a capacity less than 250 gal and that were constructed after 31 December 1978</li> </ul> </li> <li>- fire schools or fire fighting training</li> <li>- residential wood burning stoves and wood burning fireplaces</li> <li>- any stationary storage tank not subject to control by these regulations which contains any liquid having a true vapor pressure less than 0.5 psia at 70°F or is less than 5000 gal capacity</li> <li>- buildings, cabinets, and facilities used for storage of chemicals in closed containers</li> <li>- sewage treatment facilities</li> <li>- water treatment units</li> <li>- quiescent wastewater treatment operations</li> <li>- noncontact water cooling towers (water that has not been in direct contact with process fluids)</li> <li>- laundry dryers, extractors, or tumblers used for fabrics cleaned with a water solution of bleach or detergents</li> <li>- equipment used for hydraulic or hydrostatic testing</li> <li>- blueprint copiers and photographic processes</li> <li>- kilns used for firing ceramic ware that are heated exclusively by natural gas, electricity, and/or liquid petroleum gas, and the BTU input is less than 15 MBtus/h</li> <li>- inorganic acid storage tanks equipped with an emission control device</li> <li>- any internal combustion engine associated with a stationary electrical generator that:               <ul style="list-style-type: none"> <li>- has a standby power rating of 450 kilowatts or less that is used only during times of emergency</li> <li>- is located at any residence, or</li> <li>- is located at any commercial poultry producing premise, as these terms are defined in Regulation No. 1144</li> </ul> </li> <li>- any internal combustion fuel burning equipment, which is not associated with a stationary electrical generator, and has an engine power rating of 450 hp or less.)</li> </ul> <p>Verify that permits are not transferred from one location to another or from one piece of equipment to another.</p> <p>Verify that 30 days' advance written notice is given to the Department whenever</p>

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<p>1102, Section 7.0 [Citation Revised January 2007 ; Revised December 2008].</p> <p><b>AE.6.3.DE.</b> Permits/registrations must be readily available onsite (DE 7 1000 11 02, Section 8) [Citation Revised January 2007; Revised January 2008; Revised December 2008].</p> <p><b>AE.6.4.DE.</b> Sources must meet permit requirements for the prevention of the significant deterioration of air quality ( DE 7 1000 1125, Section 3 [Citation Revised January 2007 ; Citation Revised December 2008].</p> <p><b>AE.6.5.DE.</b> Sources must comply with the requirements of the state operating permit program ( DE 7 1000 1138) [Citation Revised January 2007; Citation Revised December 2008].</p> <p><b>AE.6.6.DE.</b> [Deleted January 2008].</p> <p><b>AE.6.7.DE.</b> Minor New Source Review (MNSR) is</p>	<p>the source intends to transfer a permit to or from another party.</p> <p>Verify that registrations are not transferred from one location to another, or from one piece of equipment to another.</p> <p>Verify that registrations are not transferred unless prior written notice is given to the Department, indicating the transfer is agreeable to both persons.</p> <p>Verify that permits and registrations forms are available on the premises where the construction, alteration, installation, or operation activity takes place.</p> <p>Verify that major sources do not contribute to the significant deterioration of air quality.</p> <p>Verify that major sources have permits guarding against the significant deterioration of air quality.</p> <p>Verify that the source has contacted the state to see whether any of its sources must comply with the requirements of the state operating permit program mandated by Title V of the Federal Clean Air Act.</p> <p>Verify that the source meets any applicable requirements specified by the state operating permit program.</p> <p>(NOTE: DE 70 100 024 renumbered and revised., See AE.6.8.DE.)</p> <p>(NOTE: These requirements apply to any person responsible for any proposed new stationary source, the construction of which:</p>



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<p>required for certain proposed new stationary source ( DE 7 1000 1125, Section 4) [Added January 2006 ; Citation Revised January 2007 ; Citation Revised December 2008].</p> <p><b>AE.6.8.DE.</b> Existing, new, reconstruction, and modified sources with VOC emissions (1124) must meet permit requirements ( DE 7 1000 1124, Section 1, 9) [ Added December 2008].</p>	<ul style="list-style-type: none"> <li>- was applied for, pursuant to Regulation 2, Section 11, after August 11, 2005, and</li> <li>- is subject to the construction, installation, or alteration requirements of Regulation No. 2, Section 2.1(c), and</li> <li>- is not subject to the requirements of Section 2 (EOP) or Section 3 (PSD) of this regulation, and</li> <li>- has a potential to emit of equal to or greater than 5 tons per year of volatile organic compounds ( VOCs) or, nitrogen oxides ( NOx), or sulfur dioxide (SO<sub>2</sub>) and/or sulfur trioxide (SO<sub>3</sub>) [also termed sulfur oxides (SO<sub>x</sub>)] or, fine particulate matter (PM<sub>2.5</sub>), or, the potential to emit of equal to or greater than 5 tons per year, in the aggregate, of any of the hazardous air pollutants (HAPs) listed in Section 112(b) of the federal Clean Air Act.)</li> </ul> <p>Verify that any person exempted because the proposed source has emissions below the thresholds above includes with the permit application documentation that shows the proposed source is exempted from MNSR.</p> <p>Verify that the new stationary source, relative to each pollutant identified above, is controlled by installing and operating emission control technology that limits emissions to the atmosphere by utilizing any one of the following options:</p> <ul style="list-style-type: none"> <li>- emission control technology that meets the LAER requirements</li> <li>- emission control technology that meets the BACT requirements</li> <li>- emission control technology approved in advance by the Department for the source type being constructed ( a listing and description of the approved technologies is available from the Department)</li> <li>- emission control technology approved by the Department, on a case-by-case basis.</li> </ul> <p>Verify that no source subject to VOC emission standards is operated, constructed, or modified unless a permit has been issued by the Department.</p> <p>Verify that the source meets the terms and conditions of any permit.</p> <p>(NOTE: DE 7 1000 1 124 is applicable to the sources of Volatile Organic Compounds (VOCs) as set-forth herein, except:</p> <ul style="list-style-type: none"> <li>- sources, other than solvent metal-cleaning sources, whose emissions of Volatile Organic Compounds (VOCs) are not more than fifteen (15) pounds per day, unless other limits are specified herein, provided the emission rates are determined and certified in a manner acceptable to the Department</li> <li>- sanitary landfills conforming to the State of Delaware Statewide Solid Waste Management Plan</li> <li>- no owner or operator substitutes either methyl chloroform or methylene chloride for any other Volatile Organic Compound (VOC) for any solvent metal cleaning purpose.)</li> </ul> <p>(NOTE: This also does not apply to the startup and shutdown of equipment which</p>

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	operates continuously or in an extended steady-state when emissions from such equipment during startup and shutdown are governed by a Non-Operating Permit issued pursuant to the provisions of 2.0 of 7 DE Admin. Code 1102.)

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<p><b>STATE-SPECIFIC REQUIREMENTS</b></p> <p><b>AE.7. Management/ Administrative</b></p> <p><b>AE.7.1.DE.</b> Certain sources must have air emergency plans ( DE 7 1000 111 5, Section 1 ) [Citation Revised January 2007 ; Citation Revised December 2008].</p> <p><b>AE.7.2.DE.</b> Stationary sources located in ozone nonattainment areas and emitting NO<sub>x</sub> or VOCs must submit annual emissions statements to the Department (DE 7 1000 111 7, Section 7) [Citation Revised January 2007; Citation Revised December 2008].</p> <p><b>AE.7.3.DE.</b> New sources must meet notification and recordkeeping requirements (DE 7 1000 1138, Section 3.9 and 3.10) [Citation Revised January 2007 ; Revised December 2008 ; Citation Revised January 2010].</p>	<p>Verify that any source listed in Table 1 of Appendix 1-4 has submitted to the Department an emergency standby plan.</p> <p>Verify that emissions statements for stationary sources located in ozone nonattainment areas and emitting NO<sub>x</sub> or VOCs submits emissions statements to the Department by 30 April of each year.</p> <p>Verify that, when a major source subsequently increases its emissions of hazardous air pollutants (or its potential to emit hazardous air pollutants) so that the source is a major source that is subject to the emissions standard or other requirement, the Department is notified.</p> <p>Verify that the owner or operator of an affected source subject to the provisions of 40 CFR Part 63 or this regulation maintain files of all information (including all reports and notifications) required by 40 CFR Part 63 or 7 1000 1138 recorded in a form suitable and readily available for expeditious inspection and review.</p> <p>Verify that the files are retained for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.</p> <p>Verify that, at a minimum, the most recent 2 years of data are retained on site.</p> <p>(NOTE: The remaining 3 years of data may be retained off site. Such files may be maintained on microfilm, on a computer, on computer floppy disks, on magnetic</p>

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	<p>tape disks, or on microfiche.)</p> <p>Verify that the following relevant records are maintained for the source:</p> <ul style="list-style-type: none"> <li>- the occurrence and duration of each startup, shutdown, or malfunction of operation (i.e., process equipment)</li> <li>- the occurrence and duration of each malfunction of the required air pollution control and monitoring equipment</li> <li>- all required maintenance performed on the air pollution control and monitoring equipment</li> <li>- actions taken during periods of startup, shutdown, or malfunction (including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation) when actions are different from the procedures specified in the affected source's startup, shutdown, and malfunction plan (see 2.6.5.3 of this regulation)</li> <li>- all information necessary to demonstrate conformance with the affected source's startup, shutdown, and malfunction plan when all actions taken during periods of startup, shutdown, or malfunction (including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation) are consistent with the procedures specified in the plan</li> <li>- each period during which a CMS is malfunctioning or inoperative (including out-of-control periods)</li> <li>- all required measurements needed to demonstrate compliance with a relevant standard (including, but not limited to, 15-minute averages of CMS data, raw performance testing measurements, and raw performance evaluation measurements, that support data that the source is required to report)</li> <li>- if the owner or operator is required to install a CEMS where the CEMS installed is automated, and where the calculated data averages do not exclude periods of CEMS breakdown or malfunction, an automated CEMS records and reduces the measured data to the form of the pollutant emission standard through the use of a computerized data acquisition system</li> <li>- if the owner or operator is required to install a CEMS where the measured data is manually reduced to obtain the reportable form of the standard, and where the calculated data averages do not exclude periods of CEMS breakdown or malfunction, in lieu of maintaining a file of all CEMS subhourly measurements, the owner or operator retains all subhourly measurements for the most recent reporting period (the subhourly measurements are retained for 120 days from the date of the most recent summary or excess emission report submitted to the Department)</li> <li>- results of performance tests, CMS performance evaluations, and opacity and visible emission observations</li> <li>- all measurements as may be necessary to determine the conditions of performance tests and performance evaluations</li> <li>- all CMS calibration checks</li> <li>- all adjustments and maintenance performed on CMS</li> <li>- any information demonstrating whether a source is meeting the requirements for a waiver of recordkeeping or reporting requirements under this</li> </ul>

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<p><b>AE.7.4.DE.</b> VOC sources using control devices for compliance must meet recordkeeping and reporting requirements ( DE 7 1000 1124, Section 4. 5.2) [Adopted December 2008].</p>	<p>regulation, if the source has been granted a waiver</p> <ul style="list-style-type: none"> <li>- all emission levels relative to the criterion for obtaining permission to use an alternative to the relative accuracy test, if the source has been granted such permission</li> <li>- all documentation supporting initial notifications and notifications of compliance status.</li> </ul> <p>Verify that the owner or operator of an affected source subject to notification requirements established under 40 CFR Part 63 or 7 100 0 11 38 submits notifications to the Department (to the attention of the Program Administrator of Air Quality Management, sends a copy of each notification submitted to the Department to the EPA Region III Office.</p> <p>(NOTE: The Regional Office may waive this requirement for any notifications at its discretion.)</p> <p>(NOTE: See AE.100.9.DE. for coating unit requirements.)</p> <p>Verify that, on and after the initial startup date, the owner or operator of operation referenced below collects and records all of the following information each day for each operation and maintains the information at the facility for a period of 5 years:</p> <ul style="list-style-type: none"> <li>- the overall emission reduction efficiency for each day</li> <li>- control device monitoring data</li> <li>- a log of operating time for the capture system, control device, monitoring equipment, and the associated coating unit, line, or operation</li> <li>- a maintenance log for the capture system, control device, and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages</li> <li>- for thermal incinerators, all 3-hour periods of operation in which the average combustion temperature was more than 28° C (50° F) below the average combustion temperature during the most recent performance test that demonstrated that the facility was in compliance (combustion chamber set-point must be no less than that during the most recent performance test that demonstrated that the facility was in compliance)</li> <li>- for catalytic incinerators, all 3-hour periods of operation in which the average temperature of the process vent stream immediately before the catalyst bed is more than 28° C (82° F) below the average temperature of the process vent stream immediately before the catalyst bed during the most recent performance test that demonstrated that the facility was in compliance. (set-point for the process vent stream immediately before the catalyst bed must be no less than that during the most recent performance test that demonstrated that the facility was in compliance)</li> <li>- for carbon adsorbers, all three-hour periods of operation during which either the average VOC concentration or the reading of organics in the exhaust</li> </ul>

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	<p>gases is more than 20 percent greater than the average exhaust gas concentration or reading measured by the organics monitoring device during the most recent determination of the recovery efficiency of the carbon adsorber that demonstrated that the facility was in compliance.</p> <p>Verify that the Department is notified, when any record showing noncompliance with the applicable requirements for control devices, by sending a copy of the record to the Department within 45 calendar days following the occurrence.</p> <p>Verify that, at least 30 calendar days before changing the method of compliance from control devices to the use of complying coatings or daily-weighted averaging.</p>

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<p><b>STATE-SPECIFIC REQUIREMENTS</b></p> <p><b>AE.8. Operations</b></p> <p><b>AE.8.1.DE.</b> Sources must take specified actions during air pollution alerts ( DE 7 1000 11 5, Sections 2 and 3) [Revised December 2 000; Citation Revised January 2007; Revised December 2008].</p>	<p>Verify that the source follows the directives of the Department during any air pollution alert.</p> <p>Verify that during a declared Alert-Stage I:</p> <ul style="list-style-type: none"> <li>- there is no open burning by any person</li> <li>- the use of incinerators for the disposal of solid or liquid waste is limited to the hours specified by the Department, and plans for the alternate disposal methods are formulated</li> <li>- persons operating fuel burning equipment which requires boiler flaring and soot blowing perform such operation only between the hours specified by the Department</li> <li>- any person responsible for the operation of a source of air contamination as set forth in Table I of Appendix 1-4 takes all Air Pollution Alert-Stage I actions as required for such source of air contamination, and puts into effect the standby plans for Alert-Stage I status.</li> </ul> <p>Verify that during a declared Alert-Stage II:</p> <ul style="list-style-type: none"> <li>- there is no open burning by any person</li> <li>- the use of incinerators for the disposal of any form of solid or liquid waste is prohibited</li> <li>- persons operating fuel-burning equipment which requires boiler flaring or soot blowing perform such operations only between the hours specified by the Department</li> <li>- any person responsible for the operation of a source air contamination as set forth in Table II of Appendix 1-4, takes all Air Pollution Alert-Stage II actions as required for such source of air contamination, and puts into effect the standby plans for Alert-Stage II status.</li> </ul> <p>Verify that during a declared Alert-Emergency Stage:</p> <ul style="list-style-type: none"> <li>- there is no open burning by any person</li> <li>- the use of incinerators for the disposal of any form of solid or liquid waste is prohibited</li> <li>- any person responsible for the operation of a source of air contamination as set forth in Table III of Appendix 1-4 take all Alert-Emergency Stage actions as required for such source of air contamination, and put into effect the standby plans for Alert-Emergency Stage</li> <li>- all places of employment below immediately cease operations:</li> </ul>

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<p><b>AE.8.2.DE.</b> VOCs sources must not circumvent emissions (DE 7 1000 112 4, Section 7) [ Added December 2008].</p>	<ul style="list-style-type: none"> <li>- mining and quarrying of non-metallic minerals</li> <li>- all contract construction work except that which proceeds to a void physical harm</li> <li>- wholesale trade establishments, i.e., places of business primarily engaged in selling merchandise to retailers, to industrial, commercial, institutional or professional users, or to other wholesalers, or acting as agents in buying merchandise for or selling merchandise to such persons or companies</li> <li>- all offices of local, county, and state government including authorities, joint meetings and any other public body, except to the extent that such offices continue to operate in order to enforce the requirements of this order pursuant to statute</li> <li>- all retail trade establishments except pharmacies and stores primarily engaged in the sale of food</li> <li>- banks, credit agencies other than banks, securities and commodities brokers, dealers, exchanges, and services; offices of insurance carriers, agents and brokers, real estate offices</li> <li>- wholesale and retail laundries, laundry services and cleaning and dyeing establishments; photographic studios, beauty shops, barber shops; shoe repair shops</li> <li>- advertising offices, consumer credit reporting, adjustment and collection agencies, duplicating, addressing, blueprinting; photocopying, mailing, mailing lists and stenographic services, equipment rental services, commercial testing laboratories</li> <li>- automobile repair, automobile services, garages</li> <li>- establishments rendering amusement and recreation services including motion picture theaters</li> <li>- elementary and secondary schools, junior colleges, vocational schools, and public and private libraries</li> <li>- the use of motor vehicles is prohibited except in emergencies as determined by local and state police and the Department</li> <li>- all other manufacturing establishments not mentioned above institute such actions as will reduce air contaminants from their operation by ceasing or curtailing operations which emit air contaminants to the maximum extent possible without causing injury to persons or serious damage to equipment.</li> </ul> <p>Verify that no owner or operator builds, erects, installs, or uses any article, machine, equipment, process, or other method that conceals emissions that would otherwise constitute non-compliance with an applicable requirement of 7 1000 1124.</p> <p>(NOTE: This includes, but is not limited to, the use of gaseous diluents to achieve compliance, and the piecemeal carrying out of an operation to avoid coverage by a section of this regulation that applies only to operations larger than a specified size.)</p>



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	Verify that no VOC source owner or operator discharges or disposes of VOCs or material containing VOCs to surface impoundments, pits, wastewater treatment facilities or sewers for the purpose of circumventing any provision or requirement of this regulation.

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<p><b>STATE-SPECIFIC REQUIREMENTS</b></p> <p><b>AE.9. Emissions Limits</b></p> <p><b>AE.9.1.DE.</b> Visible emissions from stationary or mobile sources must not exceed specific limitations (DE 7 1000 1114, Sections 1 through 3 ) [Citation Revised January 2007 ; Citation Revised December 2008].</p>	<p>(NOTE: The limitations for visible emissions do not apply to startup and shutdown of equipment that operates continuously or in an extended steady state when emissions from the equipment during startup or shutdown are governed by an operation permit. Additionally, limitations do not apply to electric arc furnaces, and their associated dust-handling equipment, with a capacity of more than 100 tons.)</p> <p>Verify that visible emissions from stationary or mobile sources do not exceed 20 percent opacity for an aggregate of more than 3 min in any 1 h or more than 15 min in any 24 h period.</p> <p>(NOTE: Some sources may be more stringently restricted by the Secretary if conditions warrant that action.)</p>

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<p><b>AE.10.</b></p> <p><b>STEAM GENERATORS</b></p> <p><b>AE.10.1.DE.</b> Industrial boilers must meet specific NO<sub>x</sub> emissions limits (DE 7 1000 11 42, Sections 1.2 and 1.3) [Added December 2002; Citation Revised January 2007; Citation Revised January 2008].</p> <p><b>AE.10.2.DE.</b> Industrial boilers must meet specific NO<sub>x</sub> monitoring requirements (DE 7 1000 11 42, Section 1.4) [Added December 2002; Citation Revised January 2008].</p>	<p>Verify that the NO<sub>x</sub> emission rate from an industrial boiler is equal to or less than the following:</p> <ul style="list-style-type: none"> <li>- between May 1st through September 30th of each year, inclusive: 0.10 lb/MBtu, 24-hour calendar day average</li> <li>- during all times that gaseous fuel is being fired: 0.10 lb/MBtu, 24-hour calendar day average</li> <li>- during all times not covered above: 0.25 lb/MBtu, 24-hour calendar day average.</li> </ul> <p>(NOTE: As an alternative to compliance with these requirements, compliance may be achieved through the procurement and retirement of NO<sub>x</sub> allowances authorized for use under Regulation No. 39 of the State of Delaware "Regulations Governing the Control of Air Pollution.")</p> <p>(NOTE: This checklist item applies to any person that owns or operates any combustion unit with a maximum heat input capacity of equal to or greater than 100 million Btu per hour, except to any unit that, as of 11 December 2001:</p> <ul style="list-style-type: none"> <li>- emits NO<sub>x</sub> at a rate equal to or less than the rate identified below: <ul style="list-style-type: none"> <li>- for Face and Tangential burners: <ul style="list-style-type: none"> <li>- gas only: 0.20 lb/MBtu</li> <li>- oil or gas or both: 0.25 lb/MBtu</li> <li>- coal (dry bottom): 0.38 lb/MBtu</li> </ul> </li> <li>- for Cyclone burners: <ul style="list-style-type: none"> <li>- oil or gas or both: 0.43 lb/MBtu</li> </ul> </li> <li>- Stokers: <ul style="list-style-type: none"> <li>- coal (dry bottom): 0.40 lb/MBtu</li> </ul> </li> </ul> </li> <li>- is equipped with low NO<sub>x</sub> burner, flue gas recirculation, selective catalytic reduction, or selective noncatalytic reduction technology</li> <li>- is subject to the NO<sub>x</sub> Budget Trading requirements.)</li> </ul> <p>(NOTE: The requirements of this checklist item are in addition to all other state and federal requirements.)</p> <p>(NOTE: See AE.10.1.DE. for applicability.)</p> <p>Verify that compliance with the NO<sub>x</sub> emission standards is determined based on CEM data collected in compliance with the requirements of 40 CFR, Part 60, Appendix F.</p>

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<p>2007; Citation Revised January 2008].</p> <p><b>AE.10.3.DE.</b> Industrial boilers must meet specific NO<sub>x</sub> emissions-related recordkeeping and reporting requirements ( DE 71000 1142, Section 1.5) [Adopted December 2002 ; Citation Revised January 2007 ; Citation Revised January 2008].</p>	<p>(NOTE: See AE.10.1.DE. for applicability.)</p> <p>Verify that owners/operators of industrial boilers develop, and submit to the Department for approval, a schedule for bringing the affected emission unit(s) into compliance with the requirements of this section, including:</p> <ul style="list-style-type: none"> <li>- the method by which compliance will be achieved</li> <li>- the dates by which the affected person commits to completing the following major increments of progress, as applicable: <ul style="list-style-type: none"> <li>- completion of engineering</li> <li>- submission of permit applications</li> <li>- awarding of contracts for construction and/or installation</li> <li>- initiation of construction</li> <li>- completion of construction</li> <li>- commencement of trial operation</li> <li>- initial compliance testing</li> <li>- submission of compliance testing reports</li> <li>- commencement of normal operations (in full compliance).</li> </ul> </li> </ul> <p>Verify that owners/operators of industrial boilers submit to the Department an initial compliance certification, that includes:</p> <ul style="list-style-type: none"> <li>- the name and the location of the facility</li> <li>- the address and telephone number of the person responsible for the facility</li> <li>- identification of the subject source(s)</li> <li>- the applicable standard</li> <li>- the method of compliance</li> <li>- certification that each subject source is in compliance with the applicable standard.</li> </ul> <p>Verify that all records necessary for determining compliance with these standards are maintained at the facility for a period of 5 years.</p> <p>Verify that owners/operators of industrial boilers supply the Department with the following information within 30 days of becoming aware of an occurrence of excess emissions:</p> <ul style="list-style-type: none"> <li>- the name and location of the facility</li> <li>- the subject source(s) that caused the excess emissions</li> <li>- the time and date of first observation of the excess emissions</li> <li>- the cause and expected duration of the excess emissions</li> <li>- the estimated rate of emissions (expressed in the units of the applicable emission limitation) and the operating data and calculations used in</li> </ul>

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	determining the magnitude of the excess emissions - the proposed corrective actions and schedule to correct the conditions causing the excess emissions.

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<p><b>AE.15.</b></p> <p><b>FUEL BURNING EQUIPMENT</b></p> <p><b>AE.15.1.DE.</b> Particulate matter emissions from fuel burning equipment with a heat input less than 1,000,000 BTU per hour must not exceed specific limitations (DE 71001104) [Citation Revised January 2007; Revised December 2008].</p> <p><b>AE.15.2.DE.</b> SO<sub>2</sub> emissions from fuel burning equipment must not exceed specific limitations (DE 71001108) [Citation Revised January 2007; Citation Revised December 2008].</p>	<p>Verify that the source does not emit particulate matter in excess of 0.3 lb/MBtu heat input, maximum 2-h average, from any fuel burning equipment.</p> <p>(NOTE: The provisions of this regulation shall not apply where the heat input to the equipment is less than 1,000,000 BTU per hour. The provisions of this regulation shall not apply to equipment or operations whose emissions are controlled by 7 DE Admin. Code 1105 or 7 DE Admin. Code 1107 or 7 DE Admin. Code 1129. For purposes of this regulation, the heat input value shall be based upon the manufacturer's guaranteed maximum input or the Department's calculated input.)</p> <p>(NOTE: The provisions of this regulation do not apply to the start-up and shutdown of equipment which operates continuously or in an extended steady state when emissions from such equipment during start-up and shutdown are governed by an operation permit issued pursuant to the provisions of 2.0 of 7 DE Admin. Code 1102.)</p> <p>Verify that particulate SO<sub>2</sub> emissions from fuel burning equipment do not contribute to a violation of ambient air quality standards.</p> <p>(NOTE: The limitations of SO<sub>2</sub> emissions from fuel burning equipment do not apply (a) to startup and shutdown of equipment operating continuously or (b) in an extended steady state when emissions from the equipment during startup and shutdown are governed by an operation permit. Additionally, the limitations do not apply to fuels used by watercraft.)</p> <p>Verify that no fuel burning equipment in New Castle County uses any fuel with a sulfur content greater than 1.0 percent by weight.</p> <p>Verify that no fuel burning equipment uses any distillate fuel oil with a sulfur content greater than 0.3 percent by weight.</p> <p>(NOTE: The limits on sulfur content do not apply to any fuel burning equipment employing emission control that limits SO<sub>2</sub> emissions to that which would result from burning, without emissions control, fuel not exceeding the 1.0 (for fuel in New Castle County) or 0.3 (for fuel oil anywhere) percent sulfur content limitation.)</p> <p>Verify that any emission control equipment used to meet sulfur content limitations</p>

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<p><b>AE.15.3.DE.</b> Existing fuel burning equipment must meet specific monitoring requirements ( DE 7 1000 1117, Section 3) [Citation Revised January 2007 ; Citation Revised December 2008].</p> <p><b>AE.15.4.DE.</b> Fuel burning equipment required to operate continuous monitoring systems must meet minimum recordkeeping and reporting requirements ( DE 7 1000 1117, Section 5.1) [Citation Revised January 2007 ; Citation Revised December 2008].</p> <p><b>AE.15.5.DE.</b> New fuel burning equipment must meet</p>	<p>has been approved by the Department.</p> <p>Verify that existing fuel burning equipment ( i.e., equipment the construction or modification of which commenced before 17 August 1971) with a nameplate capacity factor of greater than 30 percent ( as reported to the Federal Power Commission for calendar year 1974) operates a continuous monitoring system for the following:</p> <ul style="list-style-type: none"> <li>- opacity, if the equipment is of greater than 250 MBtu/h heat input except in the following instances: <ul style="list-style-type: none"> <li>- gaseous fuel is the only fuel burned</li> <li>- oil or a mixture of gas and oil are the only fuels burned and the source complies with applicable particulate matter and opacity requirements without utilizing particulate matter collection equipment</li> </ul> </li> <li>- waste heat boilers (e.g., CO boilers), unless they derive greater than 250 MBtu/h heat input from the firing of auxiliary fuel</li> <li>- SO<sub>2</sub>, if the equipment is of greater than 250 MBtu/h input with installed SO<sub>2</sub> control equipment</li> <li>- NO<sub>x</sub>, if all of the following criteria are met: <ul style="list-style-type: none"> <li>- the equipment discharges effluents through a common stack of greater than 1000 MBtu/h heat input</li> <li>- equipment is located in an Air Quality Control Region classified as a Priority I for NO<sub>x</sub></li> <li>- equipment emits NO<sub>x</sub> at levels more than 30 percent above the New Source Performance Standard</li> </ul> </li> <li>- percent oxygen or CO<sub>2</sub>, where measurements of oxygen or CO<sub>2</sub> in the flue gas are required to convert either SO<sub>2</sub> or NO<sub>x</sub> continuous emission monitoring data, or both, to units of the New Source Performance Standard.</li> </ul> <p>Verify that, each calendar quarter, the source submits a written report of the following for any fuel burning equipment required to operate a continuous monitoring system:</p> <ul style="list-style-type: none"> <li>- excess emissions</li> <li>- downtimes, repairs, and adjustments of the continuous monitoring system.</li> </ul> <p>Verify that quarterly reports are maintained on file for at least 2 yr.</p> <p>Verify that new fuel burning equipment of more than 250 MBtu/h heat input do</p>

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<p>specific standards of performance ( DE 7 1000 1120, Section 2) [Citation Revised January 2007 ; Revised December 2008].</p>	<p>not exceed the following emissions limitations:</p> <ul style="list-style-type: none"> <li>- for particulate matter:               <ul style="list-style-type: none"> <li>- 0.10 lb/MBtu (0.18 g/million calories) heat input</li> <li>- 20 percent opacity (except that a maximum of 40 percent opacity is permissible for not more than 2 min in any hour)</li> </ul> </li> <li>- for SO<sub>2</sub> in Kent and Sussex Counties, 1.20 lb/MBtu (2.1 g/million calories) heat input</li> <li>- for NO<sub>x</sub>:               <ul style="list-style-type: none"> <li>- 0.20 lb/MBtu (0.36 g/million calories), expressed as NO<sub>2</sub>, when gaseous fossil fuel is burned</li> <li>- 0.30 lb/MBtu (0.54 g/million calories), expressed as NO<sub>2</sub>, when liquid fossil fuel is burned</li> <li>- 0.70 lb/MBtu (1.26 g/million calories), expressed as NO<sub>2</sub>, when solid fossil fuel is burned</li> </ul> </li> <li>- the proration of the following formula, when different fossil fuels are burned simultaneously in any combination, where X is the total heat input derived from gaseous fossil fuel, Y is the percent of total heat input derived from liquid fuel, and Z is the percent of total heat input derived from solid fuel:               <math display="block">\frac{X(0.20) + Y(0.30) + Z(0.70)}{X+Y+Z}</math> </li> </ul> <p>Verify that new fuel burning equipment of more than 250 MBtu/h heat input operate continuous monitoring systems for the following:</p> <ul style="list-style-type: none"> <li>- opacity (except where gaseous fuel is the only fuel burned)</li> <li>- SO<sub>2</sub></li> <li>- NO<sub>x</sub> (except for sources emitting NO<sub>x</sub> at 30 percent below limitations).</li> </ul>



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<p><b>AE.20</b></p> <p><b>GAS TURBINES/STATIONARY ENGINES</b></p> <p><b>AE.20.1.DE.</b> Stationary engines must meet notification requirements (DE 7 1000 1144, Section 1) [Added January 2007 ; Revised December 2008].</p>	<p>(NOTE: The purpose of this regulation is to ensure that emissions of nitrogen oxides (NOx), nonmethane hydrocarbons (NMHC), particulate matter (PM), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), and carbon dioxide (CO<sub>2</sub>) from stationary generators in the State of Delaware do not adversely impact public health, safety, and welfare. The requirements of this regulation are in addition to all other applicable State and Federal requirements. This regulation applies to new and existing, emergency and distributed, stationary generators, except for:</p> <ul style="list-style-type: none"> <li>- a generator covered by a permit which imposes a NO<sub>x</sub> emission limitation established to meet Best Available Control Technology (BACT) or Lowest Achievable Emission Rate (LAER)</li> <li>- an emergency generator located on a residential property where no commercial or industrial activity is carried on, and operated solely to provide emergency electric power to the domestic residence and structures on that property housing no more than three (3) families</li> <li>- a generator which is mobile</li> <li>- a generator with a standby power rating of 10 kW or less</li> <li>- existing emergency stationary generators at the member companies of the Delaware Volunteer Firemen's Association which are operated as emergency generators only.)</li> </ul> <p>Verify that the owner of a new stationary generator submits the information required in Initial Notification of this regulation and complies with the requirements of this regulation by the date of installation.</p> <p>Verify that the owner of an existing stationary generator submits the information required no later than April 11, 2006.</p> <p>Verify that if the existing generator is to be classified as an emergency generator, the owner complies with the requirements of this regulation by April 11, 2006.</p> <p>Verify that if the existing generator is to be classified as a distributed generator:</p> <ul style="list-style-type: none"> <li>- the owner complies with the requirements of this regulation by April 1, 2007, or</li> <li>- if the generator is installed on commercial poultry producing premises, the owner complies with the requirements of this regulation by April 11, 2006.</li> </ul> <p>(NOTE: The owner may request an extension of this compliance date, up to one (1) year, if the owner demonstrates to the Department that the additional</p>

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<p><b>AE.20.2.DE.</b> Stationary engines must meet emissions limits ( DE 7 1000 1144, Section 3 ) [ Added J anuary 2007].</p>	<p>compliance time is needed.)</p> <p>Verify that, if the generator is to be reclassified from an emergency generator to a distributed generator, or vice versa, the owner of a stationary generator submits to the Department a letter stating that the generator is to be reclassified, and the owner complies with the requirements of this regulation before the reclassification.</p> <p>(NOTE: The owner of an existing, distributed generator may request, and the Department may grant, an extension of the April 1, 2007 compliance date, up to one (1) year, if the owner demonstrates to the Department's satisfaction that additional compliance time is necessary.)</p> <p>Verify that, as part of the initial notification, the owner of a stationary generator submits to the Department the following information:</p> <ul style="list-style-type: none"> <li>- the generator owner's name and telephone number</li> <li>- the physical address where the generator is installed, or will be installed</li> <li>- a description of the generator including the make, model number, and serial number</li> <li>- the year of manufacture for the generator</li> <li>- the standby power rating or the prime power rating for the generator, or both power ratings if both are known</li> <li>- the date of installation for existing generators, or the expected date of installation for new generators.</li> </ul> <p>Verify that the owner of a stationary generator submits to the Department a letter stating whether the generator is to be classified as an emergency generator or a distributed generator.</p> <p>Verify that a generator does not exceed the following standards (in pounds per megawatt-hour (lbs/MWh) of electricity output) under full load design conditions or at the load conditions specified by the applicable testing methods:</p> <ul style="list-style-type: none"> <li>- for emergency generators: <ul style="list-style-type: none"> <li>- for existing emergency generator: the owner or operator of an existing emergency generator operates the generator in conformance with the generator manufacturer's instructions, such as following maintenance and operating requirements to help minimize emissions</li> <li>- for new emergency generator: a new emergency generator meets the applicable emissions standards set by the US EPA for non-road engines (40 CFR 89, 90, 91, 92, 94, 1039, or 1048 July 1, 2004 Edition)</li> </ul> </li> <li>- for distributed generators (the following standards do not apply to distributed generators while operating to provide emergency electric power during an emergency): <ul style="list-style-type: none"> <li>- for existing distributed generators, emissions of the following pollutants</li> </ul> </li> </ul>

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	<p>do not exceed the listed emission standard (in lbs/MWh):</p> <ul style="list-style-type: none"> <li>- nitrogen oxides: 4.0</li> <li>- nonmethane hydrocarbons: 1.9</li> <li>- particulate matter (liquid-fueled reciprocating engines only): 0.7</li> <li>- carbon monoxide: 10.0</li> <li>- carbon dioxide: 1,900</li> </ul> <p>- for new distributed generators installed on or after Jan 11, 2006, emissions of the following pollutants do not exceed the listed emission standard (in lbs/MWh):</p> <ul style="list-style-type: none"> <li>- nitrogen oxides: 2.2</li> <li>- nonmethane hydrocarbons: 0.5</li> <li>- particulate matter (liquid-fueled reciprocating engines only): 0.7</li> <li>- carbon monoxide: 10.0</li> <li>- carbon dioxide: 1,900</li> </ul> <p>- for new distributed generators installed on or after Jan 1, 2008, emissions of the following pollutants do not exceed the listed emission standard (in lbs/MWh):</p> <ul style="list-style-type: none"> <li>- nitrogen oxides: 1.0</li> <li>- nonmethane hydrocarbons: 0.5</li> <li>- particulate matter (liquid-fueled reciprocating engines only): 0.7</li> <li>- carbon monoxide: 10.0</li> <li>- carbon dioxide: 1,900</li> </ul> <p>- for new distributed generators installed on or after Jan 1, 2012, emissions of the following pollutants do not exceed the listed emission standard (in lbs/MWh):</p> <ul style="list-style-type: none"> <li>- nitrogen oxides: 0.6</li> <li>- nonmethane hydrocarbons: 0.3</li> <li>- particulate matter (liquid-fueled reciprocating engines only): 0.7</li> <li>- carbon monoxide: 1.0</li> <li>- carbon dioxide: 1,650</li> </ul> <p>(NOTE: As an alternative to the owner of a new existing distributed generator installed on commercial poultry producing premises, to generate electricity to those premises, the generator is exempt from the previous emission standards if one of the following requirements are met:</p> <ul style="list-style-type: none"> <li>- the owner of such a generator is participating or is signed up to participate in a Department approved, emission control strategy cost-share program for generators offered by either the Kent Conservation District or the Sussex Conservation District, or</li> <li>- the generator is gaseous fueled.)</li> </ul> <p>(NOTE: A new distributed generator that uses waste, landfill, or digester gases is exempt from the preceding emission standards and meet the following emission standards:</p> <ul style="list-style-type: none"> <li>- nitrogen oxides: 2.2</li> <li>- nonmethane hydrocarbons: 0.7</li> <li>- carbon monoxide: 10.0</li> <li>- carbon dioxide: 1,900.)</li> </ul>

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<p><b>AE.20.3.DE.</b> Stationary engines must meet operating requirements ( DE 7 1000 1144, Section 4) [ Added January 2007].</p>	<p>(NOTE: An emergency generator may operate for an unlimited number of hours during an emergency.)</p> <p>Verify that no emergency or distributed generator is used during testing or for maintenance purposes before 5 p. m. on a day which has a Ground Level Ozone Pollution Forecast or Particle Pollution Forecast of "Code Red" or "Code Orange" as announced by the Department.</p> <p>(NOTE: An emergency generator may operate for an unlimited number of hours during testing or for maintenance purposes, pursuant to the definition of an emergency generator, except as restricted above.)</p> <p>(NOTE: A distributed generator may operate at any time, except as restricted above.)</p> <p>(NOTE: An emergency generator may be tested on any day that such testing is required to meet National Fire Protection Association (NFPA) or Joint Commission on Accreditation of Healthcare Organizations (JCAHO) standards.)</p>
<p><b>AE.20.4.DE.</b> Stationary engines must meet fuel requirements ( DE 7 1000 1144, Section 5) [ Added January 2007 ; Revised December 2008].</p>	<p>Verify that each shipment of diesel fuel or a biodiesel blend, received for use in a generator, has a sulfur content equal to or less than 0.05 percent by weight.</p> <p>Verify that gaseous fuels, except for waste, landfill, or digester gases, combusted in a generator contain no more than ten grains total sulfur per 100 dry standard cubic feet (170 ppmv total sulfur) on a daily average.</p> <p>Verify that waste, landfill, or digester gases combusted in a generator contain no more than ten grains total sulfur per 100 dry standard cubic feet (170 ppmv total sulfur) on a daily average.</p> <p>(NOTE: An alternative total sulfur limit for waste, landfill, or digester gases will be allowed based upon a case-by-case determination.)</p>
<p><b>AE.20.5.DE.</b> Stationary engines must meet recordkeeping and reporting requirements ( DE 7 1000 1144, Section 6) [ Added January 2007].</p>	<p>Verify that the owner of a generator maintains the following records on the property where the generator is installed, or at such other readily accessible location that the Department approves in writing:</p> <ul style="list-style-type: none"> <li>- yearly fuel consumption, calculated and recorded each calendar month by recording (for each fuel) the current calendar month's fuel consumption and adding it to those of the previous eleven consecutive months</li> <li>- yearly operating hours calculated and recorded each calendar month by recording the current calendar month's operating hours and adding them to</li> </ul>

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<b>AE.20.6.DE.</b> Stationary engines must meet emissions certification requirements (DE 7 1000 11 44, Section 7.3 and 7.4) [Added January 2007].	<p>those of the previous eleven consecutive months, using a non-resettable hour metering device to continuously monitor the monthly and yearly operating hours for each of their generators</p> <ul style="list-style-type: none"> <li>- yearly operating hours during which testing or maintenance occurred, calculated and recorded each calendar month by recording the current calendar month's testing or maintenance hours and adding them to those of the previous eleven consecutive months, along with a brief description of each testing or maintenance performed.</li> </ul> <p>Verify that, except as provided below, for each shipment of liquid fuel (other than liquefied petroleum gas), received for use in a generator, a shipping receipt and certification are obtained from the fuel distributor which identifies:</p> <ul style="list-style-type: none"> <li>- the type of fuel delivered</li> <li>- the percentage of sulfur in the fuel (by weight dry basis), and the method used to determine the sulfur content.</li> </ul> <p>(NOTE: As an alternative to the preceding requirement, the owner may have the fuel in the generator's fuel tank certified by a third party laboratory, after each shipment of liquid fuel, that identifies:</p> <ul style="list-style-type: none"> <li>- the type of fuel delivered</li> <li>- the percentage of sulfur in the fuel (by weight dry basis), and the method used to determine the sulfur content.)</li> </ul> <p>Verify that the owner maintains each record required by this regulation for a minimum of five years after the date the record is made, and promptly provides the original or a copy of a record or records to the Department upon request.</p> <p>(NOTE: The owner may retain hard copies (e.g., paper) or electronic copies (e.g., compact discs, computer disks, magnetic tape, etc.) of the records.)</p> <p>Verify that an owner or operator verifies, by each generator's respective compliance date as listed in AE.20.1.DE., that a generator complies with its respective emission requirements.</p> <p>Verify that the owner or operator verifies a distributed generator's compliance with the emission standards every five years.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.25.</b></p> <p><b>MISCELLANEOUS INCINERATORS</b></p> <p><b>AE.25.1.DE.</b> Emissions from noninfectious waste incinerators must meet specific requirements (DE 7 1000 1107) [Citation Revised January 2007 ; Revised December 2008].</p>	<p>(NOTE: Emissions limitations for noninfectious waste incinerators do not apply to the following:</p> <ul style="list-style-type: none"> <li>- incineration operations disposing of refuse at a rate greater than 3 000 lb/h (limitations are specified by the Department)</li> <li>- open-pit incinerators (limitations are specified by the Department)</li> <li>- incinerators used exclusively for experimentation (limitations are specified by the Department)</li> <li>- startup and shutdown of equipment operating continuously or in an extended steady state when emissions from the equipment during startup and shutdown are governed by an operation permit.)</li> </ul> <p>Verify that new incinerators are constructed only to incinerate the following:</p> <ul style="list-style-type: none"> <li>- human remains by cremation</li> <li>- remains of animals ( i.e., remains not regulated by infectious waste requirements)</li> <li>- industrial waste or sludge in specific instances where no other method of disposal is acceptable to the Secretary</li> <li>- composted refuse or sludge from sewage treatment plants specifically prepared for incineration</li> <li>- refuse regulated by the U.S. Department of Agriculture.</li> </ul> <p>Verify that the combustion temperature in the secondary chamber is greater than 1400 degree F.</p> <p>Verify that an indicating pyrometer or other temperature control device is installed in such a manner to accurately determine combustion chamber temperature.</p> <p>Verify that particulate matter emissions from noninfectious waste incinerators do not exceed the following limitations:</p> <ul style="list-style-type: none"> <li>- charging rate of 100 lb/h and mass emissions of 0.2 lb/h</li> <li>- charging rate of 200 lb/h and mass emissions of 0.4 lb/h</li> <li>- charging rate of 300 lb/h and mass emissions of 0.6 lb/h</li> <li>- charging rate of 400 lb/h and mass emissions of 0.8 lb/h</li> <li>- charging rate of 500 lb/h and mass emissions of 1.0 lb/h</li> <li>- charging rate of 1000 lb/h and mass emissions of 2.0 lb/h</li> <li>- charging rate of 2000 lb/h and mass emissions of 3.5 lb/h</li> <li>- charging rate of 3000 lb/h and mass emissions of 5.0 lb/h.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.25.2.DE.</b> New incinerators of more than 3,000 pounds per hour charging rate must meet specific standards of performance ( DE 7 1000 1120, Section 6) [Citation Revised January 2007 ; Revised December 2008].</p> <p><b>AE.25.3.DE.</b> Incinerators must obtain a permit to burn waste oil ( DE 7 1000 112 2) [Citation Revised January 2007].</p>	<p>(NOTE: The allowable mass emission rate for a charging rate between any 2 consecutive charging rates is determined by linear interpolation from the table. The allowable mass emission rate for a charging rate below the minimum charging rate is determined by linear interpolation from the table.)</p> <p>(NOTE: The requirements for new incinerators apply to sources the construction, reconstruction, or modification of which commenced after 17 August 1971. See State-Specific Requirements (AE.5), New Sources, for additional requirements for new stationary sources.)</p> <p>Verify that particulate matter emissions from new incinerators of more than 3000 lb/h charging rate do not exceed 0.18 g/dscm (0.08 gr/dscf) corrected to 12 CO<sub>2</sub>.</p> <p>Verify that hourly charging rates and hours of operation are recorded.</p> <p>Verify that waste oil is not burned in any incinerator unless a permit is first obtained by the Department.</p> <p>Verify that no equipment is used for the combustion of waste oil unless it will cause the complete combustion of the oil and will control the emission of air contaminants to the extent necessary to prevent adverse effects to the environment.</p>

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<p><b>MEDICAL WASTE INCINERATORS</b></p> <p><b>AE.30. General</b></p> <p><b>AE.30.1.DE.</b> Incinerators intended for use in the treatment or disposal of infectious waste must meet permit requirements ( DE 7 1000 11 29, Section 1 ) [Citation Revised January 2007; Citation Revised December 2008].</p> <p><b>AE.30.2.DE.</b> Infectious waste treated by incineration must meet specific requirements (DE 7 1000 1129, Section 4) [Citation Revised January 2007; Citation Revised December 2008].</p>	<p>Verify that any incinerator used to burn infectious waste has been issued a permit before the incinerator is ever used.</p> <p>Verify that the incinerator meets the terms and conditions of the permit.</p> <p>(NOTE: Biological liquid wastes that can be directly discharged into a permitted wastewater treatment system are not subject to the requirements for medical waste incinerators. The following are not managed as infectious wastes:</p> <ul style="list-style-type: none"> <li>- soiled diapers produced by a person not known to have an infectious disease</li> <li>- wastes which are contaminated only with organisms that are not pathogenic to humans and which are managed in accordance with the United States Department of Agriculture ( USDA), the Delaware Department of Agriculture and Consumer Services, or other regulations</li> <li>- food wastes which are pathogenic to humans only through direct ingestion.)</li> </ul> <p>(NOTE: Any infectious waste contaminated by or mixed with hazardous, radioactive, or toxic waste is considered hazardous, radioactive, or toxic waste and is therefore managed by requirements for the respective kind of waste.)</p> <p>(NOTE: See AE.30.1.DE. for applicability.)</p> <p>Verify that all treatment of infectious waste by incineration renders the waste noninfectious.</p> <p>(NOTE: Bed linen, instruments, equipment and other reusable items are not wastes until they are discarded. The provisions of 4.0 of this regulation apply only to wastes. The provisions of this regulation do not include the sterilization for disinfection of items that are reused for their original purpose. Therefore, the method of sterilization or disinfection of items prior to reuse is not limited. When reusable items are no longer serviceable and are discarded, they become wastes and subject to the provisions of this regulation at that time and must be sterilized by steam, incinerated, or otherwise rendered non-infectious.)</p> <p>(NOTE: Pathological waste are incinerated or interred in accordance with 24 Del.C.)</p>



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<p><b>AE.30.3.DE.</b> Infectious waste incinerators must meet specific recordkeeping and reporting requirements (DE 7 1000 11 29, Section 5 ) [Citation Revised January 2007; Revised December 2008].</p>	<p>(NOTE: See AE.30.1.DE. for applicability.)</p> <p>Verify that a any infectious waste incinerator facility maintains the following records for at least 3 yr:</p> <ul style="list-style-type: none"> <li>- names, addresses, phone numbers, and actual working schedules of all individuals responsible for the incineration of infectious waste</li> <li>- date, persons involved, and short description of events in a any spill of infectious waste</li> <li>- notebook or file containing the policies and procedures of a any infectious waste incinerator facility</li> <li>- log of all special training received by personnel involved in the incineration of infectious waste.</li> </ul> <p>Verify that personnel involved in the incineration of infectious waste maintains a log indicating the method of monitoring the waste as well as a verification that waste has been rendered noninfectious.</p>
<p><b>AE.30.4.DE.</b> Ash generated by infectious wastes incinerator must comply with Delaware solid waste requirements ( DE 7 1000 1129, Section 6) [Citation Revised January 2007 ; Citation Revised December 2008].</p>	<p>(NOTE: See AE.30.1.DE. for applicability.)</p> <p>Verify that ash generated by a any infectious waste incinerator complies with Delaware solid waste requirements.</p>
<p><b>AE.30.5.DE.</b> New, modified, and existing infectious waste incinerators must meet permitting and operational requirements ( DE 7 1000 1129, Section 7. 1 and 7. 2) [Citation Revised January 2007; Revised December 2008].</p>	<p>Verify that any new facility or modification for which an application for a permit to construct a source of air contamination is received by the Department after September 2008 complies with the requirements Section 7.0 before operation may commence.</p> <p>(NOTE: The permitting procedures are specified in 7 DE Admin Code 1102. The permit application shall also address emissions of: Nitrogen Oxides; Sulfur Oxides; Polychlorinated DiBenzo Dioxins and Furans; and metals including Arsenic, Beryllium, Cadmium, Chromium, Lead, Mercury and Nickel.)</p> <p>Verify that any new, modified, or existing infectious waste incinerator is under the direct supervision and control of personnel qualified in incinerator management by training, education, and experience.</p> <p>Verify that the permittee implements a Department approved operator training</p>

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<p><b>AE.30.6.DE.</b> Large incinerators must meet design and combustion gas criteria and emission limits (DE 71001129, Section 7.2.1 and 7.2.3) [Citation Revised January 2007 ; Revised December 2008].</p>	<p>program.</p> <p>Verify that the permittee implements a Department approved preventative maintenance program for all incinerator equipment, including instrumentation that includes at least the following:</p> <ul style="list-style-type: none"> <li>- preventative maintenance schedule and documentation that work has been accomplished</li> <li>- spare parts list and inventory control system to assure availability.</li> </ul> <p>Verify that any and all wastewater resulting from the operation of an incinerator is managed in accordance with applicable regulations.</p> <p>Verify that atmospheric emissions do not violate 7 DE Admin Code 1100, Regulations Governing the Control of Air Pollution or applicable permit conditions.</p> <p>Verify that signs indicating the days and hours of incinerator operation are posted at the entrance to the incinerator area.</p> <p>Verify that access to the incinerator area is limited to the times posted when authorized personnel are on duty.</p> <p>Verify that fire control equipment meets the requirements of the applicable fire codes and the underwriters' requirements.</p> <p>(NOTE: See AE.30.5.DE. for applicability.)</p> <p>Verify that the incinerator is designed with a primary and secondary combustion chamber with the primary chamber able to achieve the minimum temperature of 1600 degree F.</p> <p>Verify that the temperature is achieved before the waste is introduced and maintained during the incineration process.</p> <p>Verify that the composition of the flue gases, at the point where they have been subjected to the design criteria have a minimum oxygen content of 4 percent and a maximum carbon monoxide content of 100 ppm v, dry basis, corrected to 7 percent oxygen.</p> <p>Verify that there is instrumentation to continuously monitor and record:</p> <ul style="list-style-type: none"> <li>- the temperatures in the primary chamber and the secondary chambers</li> <li>- the oxygen and carbon monoxide content of the flue gases.</li> </ul> <p>Verify that there is a system to automatically control the combustion air flow in</p>

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<p><b>AE.30.7.DE.</b> Infectious waste incinerators must meet monitoring equipment requirements ( DE 7 1000 1129, Section 7.2.1) [Citation Revised January 2007 ; Revised December 2008].</p>	<p>order to maintain the required minimum oxygen content.</p> <p>Verify that the air vented from the waste storage area is included in the primary combustion air for the incinerator to the maximum extent practicable.</p> <p>Verify that particulate emissions from the incinerator do not exceed 0.03 grain per dry standard cubic foot corrected to 7 percent oxygen.</p> <p>Verify that the infectious waste is received and stored in a manner prevents fugitive emissions.</p> <p>Verify that the ash is loaded in an enclosed area and is stored in such a manner that there will be no fugitive emissions.</p> <p>Verify that hydrogen chloride emissions do not exceed 10 percent by weight of the uncontrolled emissions unless the stack gas concentration is less than 50 ppmv, dry basis, corrected to 7 percent oxygen, or the uncontrolled emission rate is less than 4 pounds per hour.</p> <p>Verify that there is continuous emission monitoring equipment for opacity on large incinerators.</p> <p>(NOTE: At such time that the Department determines Hydrogen Chloride emissions monitoring equipment to be reliable and commercially available, all large incinerators must install these monitoring devices.)</p> <p>(NOTE: See AE.30.5.DE. for applicability.)</p> <p>Verify that both large and small infectious waste incinerators (i.e., those with a capacity equal to or less than 1000 lb/h) operate continuous emissions monitoring equipment for opacity.</p> <p>Verify that, upon the decision of the Department concerning the reliability and commercial availability of hydrogen chloride emissions monitoring equipment, large infectious waste incinerators operate monitoring devices for hydrogen chloride.</p> <p>(NOTE: At the time current Delaware regulations were printed, the Department had not determined that hydrogen chloride monitoring equipment was reliable and commercially available.)</p> <p>Verify that, if best available control technology ( BACT) is used, hydrogen chloride emissions are reduced by 90 percent.</p> <p>Verify that the incinerator implements a quality assurance plan approved by the</p>

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<p><b>AE.30.8.DE.</b> Small incinerators must meet design and combustion gas criteria and emission limits ( DE 7 1000 1129, Section 7.2.2 and 7.2.3) [ Citation Revised January 2007; Revised December 2008].</p>	<p>Department for emission monitoring equipment and instrumentation.</p> <p>(NOTE: See AE.30.5.DE. for applicability.)</p> <p>Verify that the incinerator is designed with a primary and secondary combustion chamber with the primary chamber able to achieve the minimum temperature of 1600 degree F.</p> <p>Verify that the temperature is achieved before the waste is introduced and maintained during the incineration process.</p> <p>Verify that the secondary chamber is designed so that the gases generated by the infectious waste combustion in the primary chamber will be subjected to a temperature of 1800 degree F.</p> <p>Verify that the composition of the flue gases, at the point where they have been subjected to the design criteria have a minimum oxygen content of 4 percent and a maximum carbon monoxide content of 100 ppm v, dry basis, corrected to 7 percent oxygen.</p> <p>Verify that there is instrumentation to continuously monitor and record:</p> <ul style="list-style-type: none"> <li>- the temperatures in the primary chamber and the secondary chambers</li> <li>- the oxygen and carbon monoxide content of the flue gases.</li> </ul> <p>Verify that there is trained operator in attendance when the incinerator is operating, if a system to automatically control the combustion air flow in order to maintain the required minimum oxygen content is not installed.</p> <p>Verify that particulate emissions from the incinerator do not exceed 0.08 grain per dry standard cubic foot corrected to 7 percent oxygen.</p> <p>Verify that the infectious waste is received and stored in a manner prevents fugitive emissions.</p> <p>Verify that the ash is loaded in an enclosed area and is stored in such a manner that there will be no fugitive emissions.</p> <p>Verify that hydrogen chloride emissions do not exceed 10 percent by weight of the uncontrolled emissions unless the stack gas concentration is less than 50 ppmv, dry basis, corrected to 7 percent oxygen, or the uncontrolled emission rate is less than 4 pounds per hour.</p> <p>Verify that there is continuous emission monitoring equipment for opacity on small incinerators.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.30.9.DE.</b> All HMIWIs in Delaware must comply with requirements of Subpart EC of 40 CFR 60 (DE 710001120) [Added December 1998; Citation Revised January 2007; Revised December 2008].</p>	<p>(NOTE: At such time that the Department determines Hydrogen Chloride emissions monitoring equipment to be reliable and commercially available, all large incinerators must install these monitoring devices.)</p> <p>Verify that all HMIWIs comply with the requirements of Subpart EC of 40 CFR 60.</p> <p>Verify that HMIWIs for which construction was not commenced after 20 June 1996, or for which modification was not commenced after 16 March 1998, meet the emission limits set forth in Appendix 1-2.</p> <p>Verify that intravenous bags are included in the definition of <i>medical waste</i> and treated appropriately.</p> <p>Verify that, for large HMIWI for which construction is commenced after June 20, 1996 or for which modification is commenced after March 16, 1998, determine compliance with the visible emission limits for fugitive emissions from flyash/bottom ash storage and handling by conducting a performance test using EPA Reference Method 22 on an annual basis (no more than 12 months following the previous performance test).</p> <p>(NOTE: The owner or operator of an affected facility using an air pollution control device other than a dry scrubber followed by a fabric filter, a wet scrubber, or a dry scrubber followed by a fabric filter and a wet scrubber to comply with the emission limits petition the Administrator (with a copy to the Department) for other site-specific operating parameters to be established during the initial performance test and continuously monitored thereafter.)</p> <p>Verify that any site-specific operating parameters are met.</p> <p>(NOTE: See sections AE.30, AE.32, and AE.34 in the U.S. TEAM Guide for requirements.)</p> <p>(NOTE: Delaware has adopted the provisions of Subpart Ec <i>Standards of Performance for Hospital/Medical/Infectious Waste Incinerators</i>, of Part 60, Title 40 of the Code of Federal Regulations (dated September 15, 1997). Delaware has extended these requirements to all HMIWIs, not only those for which construction are commenced after 20 June 1996 or for which modification is commenced after 16 March 1998. HMIWI facilities not covered by the Federal requirements have until 11 September 1999 to comply with the requirements. See sections AE.30, AE.32, and AE.34 in the U.S. TEAM Guide for checklist items covering the Federal requirements. This section includes the emission standards for HMIWI facilities not covered by the Federal.)</p>



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<p><b>AE.45.</b></p> <p><b>SEWAGE SLUDGE INCINERATORS</b></p> <p><b>AE.45.1.DE.</b> New sewage sludge incinerators must meet specific standards of performance ( DE 7 1000 1120, Section 7) [Citation Revised January 2007 ; Revised December 2008].</p>	<p>(NOTE: The standards of performance for new sewage sludge incinerators apply to sources the construction, reconstruction, or modification of which commenced after 17 August 1971. See State-Specific Requirements (AE.5), New Sources, for additional requirements for new stationary sources.)</p> <p>Verify that sewage sludge incinerators do not exceed the following emissions limitations:</p> <ul style="list-style-type: none"> <li>- for particulate matter, 0.65 g/kg (1.30 lb/ton) dry sludge input</li> <li>- for gases, 20 percent opacity.</li> </ul> <p>Verify that a flow measuring device which can be used to determine either the mass or volume of sludge charged to the incinerator is installed, calibrated, maintained, and operated.</p> <p>Verify that the flow measuring device have an accuracy of +/-5.0 percent over its operating range.</p> <p>Verify that access is provided to the sludge charged so that a well-mixed representative grab sample of the sludge can be obtained.</p>

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<b>AE.60.</b>	
<b>PRINTING PRESSES AND GRAPHIC ARTS</b>	
<b>AE.60.1.DE.</b> [Deleted January 2008].	(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Section 37, Printing Presses, is now reserved.)
<b>AE.60.2.DE.</b> [Deleted January 2008].	(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Section 37, Printing Presses, is now reserved.)
<b>AE.60.3.DE.</b> [Deleted January 2008].	(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Section 37, Printing Presses, is now reserved.)
<b>AE.60.4.DE.</b> [Deleted January 2008].	(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Section 37, Printing Presses, is now reserved.)
<b>AE.60.5.DE.</b> [Deleted January 2008].	(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Section 37, Printing Presses, is now reserved.)
<b>AE.60.6.DE.</b> [Deleted January 2008].	(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Section 37, Printing Presses, is now reserved.)
<b>AE.60.7.DE.</b> Packaging rotogravure, publication rotogravure, or flexographic printing presses must meet specific VOC emissions standards ( DE 7 10 00 1124, Sections 37.1, 37.3, and 37.d) [Added December 2008].	(NOTE: The provisions of 37.0 of this regulation apply to any packaging rotogravure, publication rotogravure, or flexographic printing press at any facility whose maximum theoretical emissions of volatile organic compounds ( VOCs) (including solvents used to clean each of these printing presses) without control devices from all printing presses are greater than or equal to 7.7 tons per year.)  Verify that printing presses employ one of the following methods to comply with VOC emissions standards:  - limiting the VOC content of coatings or inks applied - employing daily-weighted average limitations



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<p><b>AE.60.8.DE.</b> Packaging rotogravure, publication rotogravure, or flexographic printing presses operating control systems must meet specific operating</p>	<ul style="list-style-type: none"> <li>- utilizing control devices.</li> </ul> <p>Verify that packaging rotogravure or flexographic printing press do not apply any coating or ink unless the VOC content is equal to or less than one of the following:</p> <ul style="list-style-type: none"> <li>- 40 percent VOC by volume of the coating or ink, excluding water and exempt compounds, as applied</li> <li>- 25 percent VOC by volume of the volatile content in the coating or ink, as applied</li> <li>- 0.5 kilogram (kg) VOC per kg (0.5 pound [lb] VOC per lb) coating solids, as applied.</li> </ul> <p>Verify that publication rotogravure printing press do not apply any coating or ink unless the VOC content is equal to or less than one of the following:</p> <ul style="list-style-type: none"> <li>- 40 percent VOC by volume of the coating or ink, excluding water and exempt compounds, as applied</li> <li>- 25 percent VOC by volume of the volatile content in the coating or ink, as applied.</li> </ul> <p>Verify that, when daily-weighted average limitations are used to comply with VOC emissions standards, printing presses do not exceed the daily-weighted average limitations.</p> <p>Verify that, when utilizing control devices to comply with VOC emissions standards, one of the following control systems is used:</p> <ul style="list-style-type: none"> <li>- carbon adsorption control device that reduces by at least 90 percent VOC emissions delivered from the capture system to the control device</li> <li>- incineration control device that reduces by at least 90 percent VOC emissions delivered from the capture system to the control device</li> <li>- another VOC emission control device that reduces by at least 90 percent VOC emissions delivered from the capture system to the control device.</li> </ul> <p>Verify that control systems reduce VOC emissions as follows:</p> <ul style="list-style-type: none"> <li>- 75 percent for publication rotogravure printing presses</li> <li>- 65 percent for packaging rotogravure printing presses</li> <li>- 60 percent for flexographic printing presses.</li> </ul> <p>Verify that the capture system and control device are operated at all times that printing presses are operated.</p> <p>Verify that the owner or operator demonstrates compliance through the applicable coating analysis and capture system and control device efficiency test methods specified in Appendix B, Appendix D and Appendix E of 7100 01124 and in</p>

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requirements ( DE 7 1000 1124, Section 37.5.2) [Added December 2008].	<p>accordance with the capture efficiency test methods in Appendix D.</p> <p>Verify that the control device is equipped with the applicable monitoring equipment specified in 2.0 of Appendix D of 7 1000 1124.</p> <p>Verify that the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.</p>
<p><b>AE.60.9.DE.</b> Packaging rotogravure, publication rotogravure, or flexographic printing presses exempt from VOC emissions limitations must meet specific recordkeeping and reporting requirements ( DE 7 1000 1124, Section 37.7.1 and 37.7.2) [ Added December 2008].</p>	<p>Verify that exemption certification is submitted to the Department for any exempt printing presses.</p> <p>Verify that the following records are maintained for at least 5 yr:</p> <ul style="list-style-type: none"> <li>- name and identification number of each coating and ink used each year</li> <li>- weight of VOC per volume of coating solids and the volume of solids of each coating applied each year</li> <li>- total potential emissions.</li> </ul> <p>Verify that a report is submitted to the Department demonstrating that the total potential emissions of VOC from printing presses are less than 7.7 ton/yr of press-ready ink before the application of capture systems and control devices.</p> <p>Verify that exceedance reports are submitted within 45 days of the exceedance.</p>
<p><b>AE.60.10.DE.</b> Packaging rotogravure, publication rotogravure, or flexographic printing presses using complying coatings or inks to meet VOC emissions limitations must meet specific recordkeeping and reporting requirements ( DE 7 1000 1124, Section 37.7.2) [Added December 2008].</p>	<p>Verify that compliance certification is submitted to the Department for any printing presses subject to VOC emissions limitations.</p> <p>Verify that the following records are maintained for at least 5 yr:</p> <ul style="list-style-type: none"> <li>- name and identification number of each coating and ink used each year</li> <li>- VOC content of each coating and ink applied expressed in units necessary to determine compliance.</li> </ul> <p>Verify that any exceedance of VOC contents in coatings or inks is reported within 45 days after it occurs.</p> <p>Verify that, at least 30 days before changing the method of compliance, printing presses meet either daily-weighted averaging or control equipment requirements.</p>
<p><b>AE.60.11.DE.</b> Packaging rotogravure, publication</p>	<p>Verify that compliance certification is submitted to the Department for any</p>

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<p>rotogravure, or flexographic printing presses using daily-weighted averages to meet VOC emissions limitations must meet specific recordkeeping and reporting requirements (DE 71000 1124, Section 37.7.3) [Added December 2008].</p> <p><b>AE.60.12.DE.</b> Packaging rotogravure, publication rotogravure, or flexographic printing presses using control devices to meet VOC emissions limitations must meet specific recordkeeping and reporting requirements (DE 71000 1124, Section 37.7.4) [ Added December 2008].</p>	<p>printing presses subject to VOC emissions limitations.</p> <p>Verify that the following records are maintained for at least 5 yr:</p> <ul style="list-style-type: none"> <li>- the name and identification number of each coating and ink, as applied, on each printing press</li> <li>- the VOC content and the volume of each coating and ink, as applied, each day on each printing press, expressed in units necessary to determine compliance</li> <li>- the daily-weighted average VOC content of all coatings and inks, as applied, on each printing press.</li> </ul> <p>Verify that any exceedance of VOC emissions limitations is reported within 45 days after it occurs.</p> <p>Verify that, at least 30 days before changing the method of compliance, printing presses meet either complying coatings or control equipment requirements.</p> <p>Verify that compliance certification is submitted to the Department for any printing presses subject to VOC emissions limitations.</p> <p>Verify that the following records are maintained for at least 5 yr:</p> <ul style="list-style-type: none"> <li>- control device monitoring data</li> <li>- log of operating time for the capture system, control device, and monitoring equipment and the associated printing press</li> <li>- maintenance log for the capture system, control device, and monitoring equipment detailing all routine and nonroutine maintenance performed, including the date and duration of any outages.</li> </ul> <p>Verify that any exceedance of VOC emissions limitations is reported within 45 days after it occurs.</p> <p>Verify that, at least 30 days before changing the method of compliance, printing presses meet either complying coatings or daily-weighted average requirements.</p>

**COMPLIANCE CATEGORY:  
SOLID WASTE MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.65.</b></p> <p><b>FUGITIVE EMISSIONS</b></p> <p><b>AE.65.1.DE.</b> Particulate matter emissions from construction, materials handling, grading, land clearing, excavation, use of nonpaved roads, and materials movement and storage must be controlled ( DE 7 10 00 1106, Section 1 through 4 and 6) [Citation Revised January 2007; Revised December 2008].</p>	<p>Verify that particulate matter emissions from construction and materials handling to a limit so as not to cause air pollution.</p> <p>Verify that existing structures, buildings, or parts of buildings in New Castle County or in incorporated areas of Kent and Sussex Counties are not demolished unless the following methods are used to control dust emissions:</p> <ul style="list-style-type: none"> <li>- water application</li> <li>- other techniques approved by the Department.</li> </ul> <p>Verify that the following techniques are used during land clearing, land grading (including grading for roads), excavation, or the use of nonpaved on private property to control dust emissions sufficient to cause air pollution:</p> <ul style="list-style-type: none"> <li>- water application</li> <li>- other techniques approved by the Department.</li> </ul> <p>Verify that visible particulate matter is not emitted from any material being transported by a motor vehicle.</p> <p>Verify that none of the following are allowed to cause air pollution:</p> <ul style="list-style-type: none"> <li>- stockpiling</li> <li>- other storage of material</li> <li>- transport to or from a storage facility.</li> </ul>

<b>COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT New York Supplement</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.67.</b></p> <p><b>TOXIC EMISSIONS</b></p> <p><b>AE.67.1.DE.</b> [Delete January 2010]</p>	<p>(NOTE: DE 70 100 021 renumbered to DE 7 1000 1138 and revised.)</p>

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AIR EMISSIONS MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>DRY CLEANING OPERATIONS</b></p> <p><b>AE.70. Petroleum Solvent</b></p> <p><b>AE.70.1.DE.</b> [Deleted January 2008].</p> <p><b>AE.70.2.DE.</b> [Deleted January 2008].</p> <p><b>AE.70.3.DE.</b> [Deleted January 2008].</p> <p><b>AE.70.4.DE.</b> [Deleted January 2008].</p> <p><b>AE.70.5.DE.</b> [Deleted January 2008].</p> <p><b>AE.70.6.DE.</b> Petroleum solvent dry cleaning facilities exempt from requirements because of their size must meet exemption demonstration and recordkeeping requirements (DE 7 1000 1124, Sections 38.1 and 38. 5.2) [ Added December 2008].</p>	<p>(NOTE: DE 7 0 1 00 024 was renumbered to DE 7 1 000 1124 and revised. Section 38, Petroleum Solvent Dry Cleaners, is now reserved.)</p> <p>(NOTE: DE 70 100 024 was renumbered to DE 7 1 000 1124 and revised. Section 38, Petroleum Solvent Dry Cleaners, is now reserved.)</p> <p>(NOTE: DE 7 0 1 00 024 was renumbered to DE 7 1 000 1124 and revised. Section 38, Petroleum Solvent Dry Cleaners, is now reserved.)</p> <p>(NOTE: DE 7 0 1 00 024 was renumbered to DE 7 1 000 1124 and revised. Section 38, Petroleum Solvent Dry Cleaners, is now reserved.)</p> <p>(NOTE: DE 70 100 024 was renumbered to DE 7 1 000 1124 and revised. Section 38, Petroleum Solvent Dry Cleaners, is now reserved.)</p> <p>Verify that the exemption status of petroleum solvent dry cleaning facilities is demonstrated by maintaining records of annual solvent consumption for at least 5 yr.</p> <p>(NOTE: If exempt facilities ever consume 123,000 L/yr (32,500 gal/yr) or more of petroleum solvent, they become subject to petroleum dry cleaning facility requirements and remain subject to the requirements even if the facilities later drop below the consumption threshold.)</p> <p>(NOTE: The requirements for petroleum solvent dry cleaning operations apply to facilities consuming 123,000 L/yr (32,500 gal/yr) or more of petroleum solvent. Facilities consuming less than 123,000 L/yr (32,500 gal/yr) of petroleum solvent are exempt from requirements. Facilities using only petroleum-based solvents containing chlorine also are exempt from requirements.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.70.7.DE.</b> Petroleum solvent dry cleaning facilities must meet specific standards to control fugitive emissions (DE 7 1000 1124, Sections 38.3.1 and 38. 3.2) [ Added December 2008].</p>	<p>(NOTE: See AE.70.6.DE. for applicability.)</p> <p>Verify that there are no perceptible leaks from any portion of the dry cleaning equipment.</p> <p>Verify that the following are kept closed at all times except when opening is required for operation and maintenance:</p> <ul style="list-style-type: none"> <li>- washer lint traps</li> <li>- button traps</li> <li>- access doors</li> <li>- other parts of the equipment where solvent may be exposed to the atmosphere.</li> </ul> <p>Verify that perceptible leaks are repaired within 3 working days of leak detection.</p> <p>Verify that, if parts are unavailable to repair perceptible leaks, parts are ordered within 3 working days of leak detection and are installed within 3 working days after arrival.</p>
<p><b>AE.70.8.DE.</b> Dryers at petroleum solvent dry cleaning facilities must comply with VOC emissions requirements (DE 7 1000 1124, Section 38.3.3) [Added December 2008 ; Citation Revised January 2010].</p>	<p>(NOTE: See AE.70.6.DE. for applicability.)</p> <p>Verify that VOC emissions from any standard dryer are limited by one of the following means:</p> <ul style="list-style-type: none"> <li>- limiting VOC emissions to 1.6 kg (3.5 lb) VOC per 45 kg (100 lb) dry weight of articles dry cleaned</li> <li>- maintaining and operating a solvent-recovery dryer so that the dryer remains closed and the recovery phase continues until a final recovered solvent flow rate of no greater than 50 mL/min (0.013 gal/min) is attained.</li> </ul>
<p><b>AE.70.9.DE.</b> Filtration systems at petroleum solvent dry cleaning facilities must comply with VOC emissions requirements ( DE 7 1000 1124, Section 38.3.4) [ Added December 2008].</p>	<p>(NOTE: See AE.70.6.DE. for applicability.)</p> <p>Verify that filtration systems meet one of the following requirements:</p> <ul style="list-style-type: none"> <li>- reduce VOC content of filtration waste to 1 kg (2.2 lb) VOC per 100 kg (220 lb) dry weight of articles dry cleaned</li> <li>- maintain and operate a cartridge filtration system according to the manufacturer's instructions</li> <li>- drain all filter cartridges in their sealed housings for 8 hours or more before removing them.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.70.10.DE.</b> Petroleum solvent dry cleaning facilities must meet specific recordkeeping and reporting requirements ( DE 7 1000 1124, Section 38. 5.2 and 38.6) [ Added December 2008].</p>	<p>(NOTE: See AE.70.6.DE. for applicability.)</p> <p>Verify that dry cleaning facilities maintain the following records for at least 5 yr:</p> <ul style="list-style-type: none"> <li>- weight of VOCs vented from the dryer emission control device</li> <li>- dry weight of articles dry cleaned</li> <li>- weight of the VOCs contained in the filtration waste samples</li> <li>- records of the weight of VOCs in filtration waste material per 100 kg (220 lb) dry weight of articles dry cleaned.</li> </ul> <p>Verify that compliance certification is submitted to the Department for any petroleum solvent dry cleaning facilities.</p> <p>Verify that excess emissions and other required information are reported to the Department according to the compliance certification, recordkeeping, and reporting requirements for noncoating VOC sources (see AE.125.DE. for further details).</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>DRY CLEANING OPERATIONS</b></p> <p><b>AE.75. Perchloroethylene</b></p> <p><b>AE.75.1.DE.</b> [Deleted December 1999].</p> <p><b>AE.75.2.DE.</b> [Deleted December 1999].</p>	<p>(NOTE: Regulation repealed. Delaware has adopted the Federal standards.)</p> <p>(NOTE: Regulation repealed. Delaware has adopted the Federal standards.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.80.</b></p> <p><b>ACID PRODUCTION UNITS</b></p> <p><b>AE.80.1.DE.</b> Sulfuric acid manufacturing operations must not exceed specific emissions limitations (DE 7 1000 1109, Sections 1 and 2) [Citation Revised January 2007; Citation Revised December 2008].</p> <p><b>AE.80.2.DE.</b> Sulfuric acid plants of greater than 300 tons/day production capacity must operate continuous monitoring systems (DE 7 1000 1117, Section 3.3) [Citation Revised December</p>	<p>(NOTE: The emissions limitations for sulfuric acid manufacturing operations do not apply during the startup and shutdown of equipment that operate continuously or in an extended steady state when startup and shutdown emissions are governed by an operation permit.)</p> <p>Verify that emissions of SO<sub>2</sub> in the tail gases from existing sulfuric acid manufacturing equipment do not exceed either a concentration of 1000 ppmv or the following limitations:</p> <ul style="list-style-type: none"> <li>- a production rate of 100 tons/day and mass emissions of 75 lb/h</li> <li>- a production rate of 300 tons/day and mass emissions of 210 lb/h</li> <li>- a production rate of 500 tons/day and mass emissions of 345 lb/h</li> <li>- a production rate of 700 tons/day and mass emissions of 480 lb/h</li> <li>- a production rate of 900 tons/day and mass emissions of 615 lb/h</li> <li>- a production rate of 1100 tons/day and mass emissions of 750 lb/h</li> <li>- a production rate of 1300 tons/day and mass emissions of 885 lb/h</li> <li>- a production rate of 1500 tons/day and mass emissions of 1020 lb/h.</li> </ul> <p>(NOTE: The allowable mass emission rate for a production rate between any 2 consecutive production rates is determined by linear interpolation from the table. The allowable mass emission rate for a production rate below the minimum charging rate is determined by linear interpolation from the table.)</p> <p>Verify that no existing sulfuric acid plant emits any gases containing acid mist (expressed as H<sub>2</sub>SO<sub>4</sub>) in excess of 0.25 g/kg (0.5 lb/ton) of acid produced (expressed as 100 percent H<sub>2</sub>SO<sub>4</sub>).</p> <p>(NOTE: The acid mist limitation does not apply to acid plants used as SO<sub>2</sub> control systems, to chamber process plants, to acid concentrators, or to petroleum storage and transfer facilities.)</p> <p>Verify that any sulfuric acid plant with a production capacity greater than 300 tons/day operates a continuous monitoring system to measure SO<sub>2</sub>.</p>

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<p>2008].</p> <p><b>AE.80.3.DE.</b> Sulfuric acid plants required to operate continuous monitoring systems must meet minimum recordkeeping and reporting requirements ( DE 71000 1117, Section 6.2 [Citation Revised January 2007 ; Revised December 2008].</p> <p><b>AE.80.4.DE.</b> Sulfuric acid plants must meet specific standards of performance (DE 71000 1120, Section 8 ) [Citation Revised January 2007; Revised December 2008].</p> <p><b>AE.80.5.DE.</b> Nitric acid plants must meet specific standards of performance (DE 71000 1120, Section 3 ) [Citation Revised January 2007; Revised December 2008].</p>	<p>Verify that the average sulfur dioxide concentration (ppm), production rate (tons H<sub>2</sub>SO<sub>4</sub> produced/day), and the SO<sub>2</sub> emission rate ( lbs. SO<sub>2</sub>/hour) is reported whenever the one-hour average exceeds the applicable standard in AE.89.2.DE.</p> <p>Verify that, when excess SO<sub>2</sub> emissions lasting for more than three consecutive hours, the owner or operator summarizes the data.</p> <p>Verify that the data is reported to the Department at the end of each calendar quarter.</p> <p>(NOTE: These requirements apply within 60 days after achieving the maximum production rate at which the applicable source will be operated, but not later than 180 days after initial startup of such facility and at such other times as may be required by the Secretary, the person responsible for such source shall conduct performance test or tests and furnish the Secretary a written report of the results of such performance test or tests.)</p> <p>Verify that sulfuric acid units do not emit SO<sub>2</sub> in excess of 2 kg/metric ton (4 lb/ton) of acid produced (the production being expressed as 100 percent H<sub>2</sub>SO<sub>4</sub>).</p> <p>Verify that sulfuric acid units do not emit gases that exceed the following limitations:</p> <ul style="list-style-type: none"> <li>- for gases containing acid mist ( expressed as H<sub>2</sub>SO<sub>4</sub>), 0.075 kg/metric ton (0.15 lb/ton) of acid produced ( the production being expressed as 100 percent H<sub>2</sub>SO<sub>4</sub>)</li> <li>- 10 percent opacity.</li> </ul> <p>Verify that sulfuric acid units operate continuous monitoring systems for SO<sub>2</sub>.</p> <p>(NOTE: The standards of performance for new nitric acid plants apply to sources the construction, reconstruction, or modification of which commenced after 17 August 1971. See State-Specific Requirements (AE.5), New Sources, for general requirements for new stationary sources.)</p> <p>Verify that new nitric acid units do not emit NO<sub>x</sub> in excess of the following limitations:</p> <ul style="list-style-type: none"> <li>- 3.0 lb/ton (1.5 kg/metric ton) of acid produced, expressed as HNO<sub>3</sub></li> <li>- 10 percent opacity.</li> </ul>

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	<p>Verify that nitric acid units operate a continuous monitoring system for NO<sub>x</sub>.</p> <p>Verify that the daily production rate hours of operation are recorded.</p> <p>Verify that a continuous monitoring system for the measurement of nitrogen oxides is installed, calibrated, maintained, and operated by the person responsible for the applicable source.</p> <p>(NOTE: The pollutant gas used to prepare calibration gas mixtures, Performance Specification 2 and for calibration checks shall be nitrogen dioxide NO<sub>2</sub>. The span shall be set at 500 ppm of nitrogen dioxide. Reference Method 7 shall be used for conducting monitoring system performance evaluations.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<b>AE.100.</b>	
<b>COATING OPERATIONS</b>	
<b>AE.100.1.DE.</b> [Deleted January 2008].	(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Sections 3 and 4 are now reserved.)
<b>AE.100.2.DE.</b> [Deleted January 2008].	(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Sections 3 and 4 are now reserved.)
<b>AE.100.3.DE.</b> [Deleted January 2008].	(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Sections 3 and 4 are now reserved.)
<b>AE.100.4.DE.</b> [Deleted January 2008].	(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Sections 3 and 4 are now reserved.)
<b>AE.100.5.DE.</b> Particulate matter emissions from sandblasting operations must be controlled ( DE 7 1000 1106, Section 5 [Citation Revised January 2007 ; Citation Revised December 2008].	Verify that sand and/or other abrasive materials do not travel beyond the property line where sandblasting or related abrasion operations are being performed.
<b>AE.100.6.DE.</b> Coating sources exempt from emission limitations must meet certification, recordkeeping and reporting requirements (DE 7 10 00 1124, Section 4.2) [Added December 2008].	Verify that the volatile organic compound ( VOC) content of each coating, as applied, and the efficiency of each capture system and control device is determined by the applicable test methods and procedures specified in Appendix B and Appendix D of 1124.  Verify that an owner or operator of a coating unit where combined VOC emissions from all coating units, lines, and operations at the facility are below the applicability threshold specified, before the application of capture systems and control devices, certifies to the Department that the facility is exempt from emission limitations by providing all of the following:

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<p><b>AE.100.7.DE.</b> Coating sources must meet certification, recordkeeping and reporting requirements (DE 710 00 1124, Section 4.3) [Added December 2008].</p>	<ul style="list-style-type: none"> <li>- name and location of the facility</li> <li>- address and telephone number of the person responsible for the facility.</li> <li>- declaration that the facility is exempt from the emission limitations because combined VOC emissions from all coating units, lines, and operations at the facility that are covered are below the appropriate applicability threshold before the application of capture systems and control devices</li> <li>- calculations of the daily-weighted average that demonstrate that the combined VOC emissions from all coating units, lines, and operations at the facility that are covered by an individual section of this regulation for a day representative of current maximum production levels are less than 6.8 kilograms (kg) (15 pounds [lb]) before the application of capture systems and control devices.</li> </ul> <p>Verify that the source owner or operator collects and records all of the following information each day and maintain the information at the facility for a period of 5 years:</p> <ul style="list-style-type: none"> <li>- name and identification number of each coating, as applied</li> <li>- the mass of VOC per volume (excluding water and exempt compounds) and the volume of coating (i) (excluding water and exempt compounds), as applied, used each day</li> <li>- the total VOC emissions at the facility, as calculated using the equation under 4.2.1.4.</li> </ul> <p>Verify that the source owner or operator notifies the Department of any record showing that combined VOC emissions from all coating units, lines, and operations at the coating facility exceed 6.8 kg (15 lb) on any day, before the application of capture systems and control devices.</p> <p>Verify that a copy is sent to the Department within 45 calendar days after the exceedance occurs.</p> <p>(NOTE: This reporting requirement is in addition to any other exceedance reporting requirements mandated by the State of Delaware.)</p> <p>Verify that, upon startup of a new coating unit, line, or operation, or upon changing the method of compliance for an existing subject coating unit, line, or operation from daily-weighted averaging or control devices to the use of complying coatings, the owner or operator of a coating unit, line, or operation certifies to the Department that the coating unit, line, or operation is or will be in compliance with the requirements of the applicable section on and after the initial startup date.</p> <p>Verify that the certification for the use of compliance coatings includes:</p> <ul style="list-style-type: none"> <li>- name and location of the facility</li> </ul>

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<p><b>AE.100.8.DE.</b> Coating sources using daily-weighted averaging must meet certification, recordkeeping and reporting requirements (DE 7 10 00 1124, Section 4.4) [Added December 2008].</p>	<ul style="list-style-type: none"> <li>- address and telephone number of the person responsible for the facility</li> <li>- identification of subject sources</li> <li>- name and identification number of each coating, as applied, on each coating unit, line, or operation</li> <li>- mass of VOC per volume (excluding water and exempt compounds) and the volume of each coating (excluding water and exempt compounds), as applied per day</li> <li>- time at which the facility's "day" begins if a time other than midnight local time is used to define a "day."</li> </ul> <p>Verify that the following information is collected and recorded for each day for each coating unit, line, or operation and maintained at the facility for a period of 5 years:</p> <ul style="list-style-type: none"> <li>- name and identification number of each coating, as applied, on each coating unit, line, or operation</li> <li>- mass of VOC per volume of each coating (excluding water and exempt compounds), as applied, used each day on each coating unit, line, or operation</li> <li>- volume of each coating applied each day on each coating unit line or operation.</li> </ul> <p>Verify that the Department is notified in either of the following instances:</p> <ul style="list-style-type: none"> <li>- any records showing use of a non-complying coatings is reported by sending a copy of such record to the Department within 45 calendar days following that use</li> <li>- at least 30 calendar days before changing the method of compliance from the use of complying coatings to daily-weighted averaging or control devices.</li> </ul> <p>Verify that, upon startup of a new coating unit, line, or operation, or upon changing the method of compliance for an existing subject coating unit, line, or operation from the use of complying coatings or control devices to daily-weighted averaging, the owner or operator of the subject coating unit, line, or operation certifies to the Department that the coating unit, line, or operation is or will be in compliance on and after the initial startup date.</p> <p>Verify that the certification includes:</p> <ul style="list-style-type: none"> <li>- name and location of the facility</li> <li>- address and telephone number of the person responsible for the facility</li> <li>- identification of subject sources</li> <li>- name and identification number of each coating unit, line, or operation that will comply by means of daily-weighted averaging</li> <li>- instrument or method by which the owner or operator will accurately measure or calculate the volume of each coating (excluding water and</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.100.9.DE.</b> Coating sources using control devices must meet recordkeeping and reporting requirements (DE 7 1000 1124, Section 4. 5.1) [Added December 2008].</p>	<p>exempt compounds), as applied, used each day on each coating unit, line, or operation</p> <ul style="list-style-type: none"> <li>- method by which the owner or operator will create and maintain records each day</li> <li>- calculation of the daily-weighted average, using the procedure in 1.0 of Appendix, for a day representative of current or projected maximum production levels</li> <li>- time at which the facility's "day" begins if a time other than midnight local time is used to define a "day."</li> </ul> <p>Verify that the following information is collected and recorded each day for each coating unit, line, or operation and maintained at the facility for a period of 5 years:</p> <ul style="list-style-type: none"> <li>- name and identification number of each coating, as applied, on each coating unit, line, or operation</li> <li>- mass of VOC per volume (excluding water and exempt compounds) and the volume of each coating (excluding water and exempt compounds), as applied, used each day on each coating unit, line, or operation</li> <li>- daily-weighted average VOC content of all coatings, as applied, on each coating unit, line, or operation calculated according to the procedure in 1.0 of Appendix C.</li> </ul> <p>Verify that the Department is notified in either of the following instances:</p> <ul style="list-style-type: none"> <li>- any records showing noncompliance with the applicable daily-weighted average requirements are reported by sending a copy of the record to the Department within 45 calendar days following the occurrence</li> <li>- at least 30 calendar days before changing the method of compliance from daily-weighted averaging to the use of complying coatings or control devices.</li> </ul> <p>Verify that, upon startup of a new coating unit, line, or operation, or upon changing the method of compliance for an existing coating unit, line, or operation from the use of complying coatings or daily-weighted averaging to control devices, the owner or operator of the subject coating unit, line, or operation performs a compliance test.</p> <p>Verify that the testing is performed within 90 days of startup, and pursuant to the procedures in Appendix A through Appendix D of 1124.</p> <p>Verify that the results of all tests and calculations necessary to demonstrate that the subject coating unit, line, or operation is or will be in compliance with the applicable requirements on and after the initial startup date is submitted to the Department.</p> <p>Verify that the following information is collected and recorded each day for each</p>



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<p><b>AE.100.10.DE.</b> Coating of mobile equipment must use specific application techniques (DE 71000 1124, Section 11.1, 11.3.1 and 11.3.2) [ Added December 2002; Citation Revised January 2007 ; Revised January 2008].</p>	<p>coating unit, line, or operation and is maintained at the facility for a period of 5 years:</p> <ul style="list-style-type: none"> <li>- name and identification number of each coating used on each coating unit, line, or operation</li> <li>- mass of VOC per unit volume of coating solids, as applied, the volume solids content, as applied, and the volume, as applied, of each coating used each day on each coating unit, line, or operation</li> <li>- maximum VOC content (mass of VOC per unit volume of coating solids, as applied) or the daily-weighted average VOC content (mass of VOC per unit volume of coating solids, as applied) of the coatings used each day on each coating unit, line, or operation</li> <li>- required overall emission reduction efficiency for each day for each coating unit, line, or operation</li> <li>- actual overall emission reduction efficiency achieved for each day for each coating unit, line, or operation as determined in 3.0 of Appendix D of 1124</li> <li>- control device monitoring data</li> <li>- log of operating time for the capture system, control device, monitoring equipment, and the associated coating unit, line, or operation</li> <li>- maintenance log for the capture system, control device, and monitoring equipment detailing a ll routine and non-routine maintenance performed including dates and duration of any outages.</li> </ul> <p>Verify that any record showing noncompliance with the applicable requirements for control devices is reported by sending a copy of the record to the Department within 45 calendar days following the occurrence.</p> <p>Verify that, at least 30 calendar days upon changing the method of compliance from control devices to the use of complying coatings or daily-weighted averaging, the owner or operator complies with all applicable requirements and notifies the Department.</p> <p>Verify that only the following application techniques are used:</p> <ul style="list-style-type: none"> <li>- any non-atomized application technique ( e.g., flow/curtain coating, dip coating, roller coating, brush coating, cotton-tipped swab application coating, electrodeposition coating, etc.)</li> <li>- High Volume Low Pressure (HVLP) spraying</li> <li>- electrostatic spray</li> <li>- airless spray</li> <li>- any other coating application technique that the person has demonstrated and the Department has determined achieves emission reductions equivalent to HVLP or electrostatic spray.</li> </ul> <p>(NOTE: This checklist item applies to any person who applies coatings, for the purpose of protection and/or beautification, to mobile equipment or mobile</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.100.11.DE.</b> Spray gun s used t o a pply c oatings t o mobile e quipment must be cleaned u sing s pecific techniques (DE 7 1000 1124, Section 11. 3.3) [ Added December 2002 ; C itation Revised January 2007 ; Revised January 2008].</p> <p><b>AE.100.12.DE.</b> Specific housekeeping a nd pol lution prevention m easures m ust be implemented w herever coatings are applied to mobile equipment ( DE 7 1000 1124 , Section 11. 3.4) [ Added December 2002 ; C itation Revised J anuary 2007 ; Revised January 2008].</p>	<p>equipment components in the State of Delaware, except:</p> <ul style="list-style-type: none"> <li>- the surface coating process at any automobile assembly plant</li> <li>- persons who do not receive compensation for the application of the coatings</li> <li>- the application of coatings sold in non-refillable aerosol cans.</li> </ul> <p>The following are exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- the use of airbrush application methods for graphics, stenciling, lettering, and other identification markings</li> <li>- the applications of coatings to cover finish imperfections equal to or less than 1 inch in diameter.)</li> </ul> <p>(NOTE: A ny p erson who i s cu rrently subject t o a s tate o r f ederal r ule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability t hreshold i s and s hall r emain s ubject to th ose p rovisions. Compliance with the requirements of this section is in addition to all other state and federal requirements, to i nclude the requirements of 40 CFR 59, Subpart B, "National V olatile O rganic C ompound E mission S tandards f or A utomobile Refinish Coatings".)</p> <p>(NOTE: See AE.100.10.DE. for applicability.)</p> <p>Verify t hat s pray gun s used t o a pply c oatings t o m obile e quipment or m obile equipment components are cleaned by one of the following methods:</p> <ul style="list-style-type: none"> <li>- use of an enclosed spray gun cleaning system that is kept closed when not in use</li> <li>- the unatomized discharge of solvent into a paint waste container that is kept closed when not in use</li> <li>- the disassembly of the spray gun and cleaning i n a vat that is kept closed when not in use</li> <li>- the atomized spray into a paint waste container that is fitted with a device designed to capture atomized solvent emissions.</li> </ul> <p>(NOTE: See AE.100.10.DE. for applicability.)</p> <p>Verify t hat a ny p e rson s ubject t o t he pr ovisions of t his s ub-section ( see applicability n ote above) i mplements t he following h ousekeeping a nd pol lution prevention measures:</p> <ul style="list-style-type: none"> <li>- fresh a nd used c oatings, solvent, a nd c leaning s olvents a re s tored i n n on-absorbent, n on-leaking co ntainers t hat a re k ept cl osed at a ll t imes e xcept when filling or emptying</li> <li>- cloth a nd pa per, or o ther a bsorbent a pplicators, m oistened w ith c oatings, solvents, or cleaning solvents r e stored i n closed, non-absorbent, non-leaking containers</li> </ul>

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<p><b>AE.100.13.DE.</b> Persons engaged in the application of coatings to mobile equipment must meet training requirements ( DE 7 1000 1124, Section 11.3.5) [Added December 2002 ; Citation Revised January 2007 ; Revised January 2008].</p> <p><b>AE.100.14.DE.</b> Architectural coatings must meet specific VOC content limits ( DE 7 1000 1 141, Sections 1.1, 1.3.4, 1.3.5, 1.3.6, and 1.3.7) [Added December 2002 ; Citation Revised January 2007; Citation Revised December 2008 ; Citation Revised January 2010].</p>	<p>- handling and transfer procedures minimize spills during the transfer of coatings, solvents, and cleaning solvents.</p> <p>(NOTE: See AE.100.10.DE. for applicability.)</p> <p>Verify that any person engaged in the application of coatings to mobile equipment is trained in the proper use and handling of coatings, solvents and waste products in order to minimize the emission of air contaminants.</p> <p>Verify that proof of training for any person subject to the requirements of this Section is maintained on the facility premises.</p> <p>(NOTE: Acceptable forms of training include equipment or paint manufacturer's seminars, classes, workshops, or any other training approved by the Department.)</p> <p>Verify that no person solicits for application or applies in the State of Delaware, any architectural coating with a VOC content in excess of the corresponding limit specified in Appendix 1-5.</p> <p>Verify that no person solicits for application or applies of any architectural coating that is thinned to exceed the applicable VOC limit specified in Appendix 1-5.</p> <p>Verify that no person solicits for application or applies any rust preventive coating for industrial use unless such rust preventive coating complies with the industrial maintenance coating VOC limit specified in Appendix 1-5.</p> <p>(NOTE: For any coating that does not meet any of the definitions for the specialty coatings categories listed in Appendix 1-5, the VOC content limit is determined by classifying the coating as a flat coating or a non-flat coating, based on its gloss, and the corresponding flat or non-flat coating limit applies.)</p> <p>(NOTE: A person or facility may add up to 10 percent by volume of VOC to a lacquer to avoid blushing of the finish during days with relative humidity greater than 70 percent and the temperature below 65 degrees F, at the time of application, provided that the coating contains acetone and no more than 550 grams of VOC per liter of coating, less water and exempt compounds, prior to the addition of VOC.)</p> <p>(NOTE: This checklist item applies to any person who applies or solicits the application of any architectural coating in the State of Delaware on or after 1 January 2005. A coating manufactured prior to 1 January 2005, may be sold, supplied, or offered for sale on or after 1 January 2005. In addition, a coating manufactured before 1 January 2005 may be applied at anytime, both before and after 1 January 2005, so long as the coating complied with the standards in effect</p>

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<p><b>AE.100.15.DE.</b> Containers of architectural coatings must be kept closed when not in use (DE 7 1000 112 4, Section 1.3.3) [ Added December 2002; Citation Revised January 2007 ; Citation Revised January 2008 ; Citation Revised December 2008].</p> <p><b>AE.100.16.DE.</b> Handling, storage, and disposal of VOCs at sources whose VOC emissions are 15 pounds per day or more must meet operational requirements (DE 7 1000 1124, Section 3.3 and 8) [Added December 2008].</p>	<p>at the time the coating was manufactured. This does not apply to any coating that does not display the date code.)</p> <p>(NOTE: This regulation does not apply to:</p> <ul style="list-style-type: none"> <li>- any architectural coating that is sold or manufactured for use outside the State of Delaware or for shipment to other manufacturers for reformulation or repackaging</li> <li>- any aerosol coating product, or</li> <li>- any architectural coating that is sold in a container with a volume of one liter (1.057 quart) or less.)</li> </ul> <p>(NOTE: See AE.100.10.DE. for applicability.)</p> <p>Verify that all architectural coating containers used to apply the contents to a surface directly from the container by pouring, siphoning, brushing, rolling, padding, raggng, or other means, are closed when not in use.</p> <p>(NOTE: These architectural coating containers include, but are not limited to, drums, buckets, cans, pails, trays, or other application containers.)</p> <p>Verify that containers of any VOC-containing materials used for thinning or cleanup is closed when not in use.</p> <p>(NOTE: Repeated in AE.125.5.DE.)</p> <p>Verify that the owner or operator does not permit the disposal of more than 5 kilograms (kg) (11 pounds [lb]) of any VOC, or of any materials containing more than five kg (11 lb) of any VOCs, in any one day in a manner that would permit the evaporation of VOC into the ambient air.</p> <p>(NOTE: These requirements apply to, but are not limited to, the disposal of VOC from VOC control devices.)</p> <p>(NOTE: This provision does not apply to:</p> <ul style="list-style-type: none"> <li>- any VOC or material containing VOC emitted from a regulated entity that is subject to a VOC standard under this regulation</li> <li>- coating sources that are exempt from the emission limitations of 10.0 through 23.0 of 7 1000 1124</li> <li>- waste paint (sludge) handling systems, water treatment systems, and other similar operations at coating facilities using complying coatings</li> <li>- any VOC or material containing VOCs used during process maintenance turnarounds for cleaning purposes, provided that the provisions of 8.3, 8.4 and 8.5 are followed.)</li> </ul> <p>Verify that open containers are not used for the storage or disposal of cloth or</p>

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	<p>paper impregnated with VOCs that are used for surface preparation, cleanup, or coating removal.</p> <p>Verify that containers for the storage or disposal of cloth or paper impregnated with VOCs are kept closed, except when adding or removing material.</p> <p>Verify that open containers are not used to store spent or fresh VOC to be used for surface preparation, cleanup or coating removal.</p> <p>Verify that containers for the storage of spent or fresh VOCs are kept closed, except when adding or removing material.</p> <p>Verify that VOCs are not used for the cleanup of spray equipment unless equipment is used to collect the cleaning compounds and to minimize their evaporation to the atmosphere.</p>



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<p><b>AE.116.3.DE.</b> Cold cleaning facilities must meet specific operating requirements (DE 7 1000 112 4, Section 33. 3.3) [Revised December 2 002; Citation Revised January 2007; Citation Revised January 2008].</p>	<p>(NOTE: See AE.116.1.DE. for applicability.)</p> <p>(NOTE: This checklist item applies to all batch cold cleaning machines. The provisions of this checklist item will not apply if the owner or operator of the cold cleaning machine demonstrates a nd t he D epartment ap proves i n writing that compliance with the paragraph will result in unsafe operating conditions.)</p> <p>Verify that cold cleaning machines are operated in accordance with the following procedures:</p> <ul style="list-style-type: none"> <li>- waste solvent, still bottoms, and sump bottoms are collected and stored in closed containers ( the closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container)</li> <li>- cleaned parts are drained at least 15 seconds or until dripping ceases, whichever is longer</li> <li>- parts having cavities or blind holes are tipped or rotated while the part is draining</li> <li>- during the draining, tipping or rotating, the parts are positioned so that solvent drains directly back to the cleaning machine</li> <li>- flushing of parts using a flexible hose or other flushing device is performed only within the freeboard area of the cold cleaning machine</li> <li>- the solvent flushing is a solid fluid stream, not an atomized or shower spray, at a pressure that does not exceed 10 pounds per square inch gauge (psig)</li> <li>- work area fans are located and positioned so that they do not blow across the opening of the cold cleaning machine</li> <li>- sponges, fabric, wood, leather, paper products, and other absorbent materials are not cleaned or dried in the cold cleaning machine</li> <li>- any solvent bath agitator is operated to produce a rolling motion of the solvent with no observable splashing of the solvent against the tank walls or the parts being cleaned</li> <li>- air agitated solvent baths are not used</li> <li>- spills during solvent transfer and use of the cold cleaning machine are cleaned up immediately, and the wipe rags or other absorbent material are immediately stored in covered containers for disposal or recycling</li> <li>- the owner or operator ensures that the solvent level does not exceed the fill line.</li> </ul>
<p><b>AE.116.4.DE.</b> Cold cleaning facilities must meet specific operating requirements (DE 7 1000 1124, Section 33.3.4 and 33.3.6) [ Added December 2002; Citation Revised January 2007 ; Citation Revised January 2008].</p>	<p>(NOTE: See AE.116.1.DE. for applicability.)</p> <p>Verify that no person uses any solvent with a vapor pressure of 1.0 millimeters of mercury (mm Hg) or greater measured at 20 degrees C (68 degrees F) and that contains volatile organic compounds, in a cold cleaning machine.</p> <p>Verify that the owner or operator of a cold cleaning machine maintains, for not less than 5 years, the following information:</p> <ul style="list-style-type: none"> <li>- the name and address of the solvent supplier</li> </ul>

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<b>REGULATORY  REQUIREMENTS:</b>	<b>REVIEWER CHECKS:  January 2010</b>
	<ul style="list-style-type: none"> <li>- the type of solvent including the product or vendor identification number</li> <li>- the vapor pressure of the solvent measured in mm Hg at 20°C (68°F).</li> </ul> <p>(NOTE: An invoice, bill of sale, certificate that corresponds to a number of sales, Material Safety Data Sheet (MSDS), or other appropriate documentation acceptable to the Department may be used to comply with this Section.)</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>DEGREASING OPERATIONS</b></p> <p><b>AE.117. Vapor Cleaning</b></p> <p><b>AE.117.1.DE.</b> Batch vapor degreasers must meet specific equipment requirements ( DE 7 1000 112 4, Section 33.1 33.4.1) [Revised December 2002; Citation Revised January 2007 ; Citation Revised January 2008].</p>	<p>(NOTE: This checklist item applies to batch vapor cleaning machines.)</p> <p>(NOTE: This checklist item applies to any person who owns or operates a solvent cleaning machine that meets the following criteria:</p> <ul style="list-style-type: none"> <li>- contains more than 1 liter of solvent, and</li> <li>- uses any solvent containing volatile organic compounds in a total concentration greater than 5 percent by weight, as a cleaning and/or drying agent.)</li> </ul> <p>(NOTE: Any person subject to both this section and Regulation 30 of the State of Delaware "Regulations Governing the Control of Air Pollution" will submit to the Department a request to amend the existing Title V permit, consistent with the permitting requirements of Regulation 30. Any person subject to these requirements, but not subject to Regulation 30, will submit to the Department a request to amend the existing Regulation 2 permit.)</p> <p>Verify that batch vapor cleaning machines is equipped with:</p> <ul style="list-style-type: none"> <li>- either a fully enclosed design, or</li> <li>- idling and downtime mode covers that completely covers the cleaning machine openings when in place and: <ul style="list-style-type: none"> <li>- are free of cracks, holes, and other defects, and readily opened or closed without disturbing the vapor zone</li> <li>- if the solvent cleaning machine opening is greater than 10 square feet, the covers are powered</li> <li>- if a lip exhaust is used, the closed covers are below the level of the lip exhaust</li> </ul> </li> <li>- a freeboard ratio of 0.75 or greater</li> <li>- a primary condenser</li> <li>- a vapor up control switch</li> <li>- a device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils</li> <li>- a vapor level control device that shuts off the sump heat if the vapor level in the vapor cleaning machine rises above the height of the primary condenser</li> <li>- an automated parts handling system that moves parts or parts baskets at a speed of 3.4 meters per minute (11 feet per minute) or less when the parts are entering or exiting the vapor zone</li> <li>- if the parts or parts basket being cleaned or dried occupy more than 50 percent of the solvent/air interface area, an automated parts handling system that moves parts or parts baskets at a speed of 0.93 meters per minute (3 feet</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.117.2.DE.</b> Batch vapor degreasers must meet specific control requirements ( DE 7 1000 1124, Section 33.4.2 and 3) [ Revised December 2002 ; Citation Revised January 2007; Revised January 2008].</p>	<p>per minute) or less - a permanent, conspicuous label summarizing the operating requirements.</p> <p>Verify that each vapor cleaning machine that uses a lip exhaust is designed and operated to route all collected solvent vapors through a properly operated and maintained carbon adsorber, and that the concentration of organic solvent in the exhaust does not exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less.</p> <p>(NOTE: See AE.117.1.DE. for applicability.)</p> <p>Verify that a batch vapor cleaning machine with a solvent/air interface area of 13 square feet or less implements one of the following control options:</p> <ul style="list-style-type: none"> <li>- a working mode cover, a freeboard ratio of 1.0, and superheated vapor</li> <li>- superheated vapor and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point</li> <li>- a working mode cover and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in degrees F, is no greater than 30 percent of the solvent's boiling point</li> <li>- reduced room draft, a freeboard ratio of 1.0, and superheated vapor</li> <li>- reduced room draft and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in degrees F, is no greater than 30 percent of the solvent's boiling point</li> <li>- a freeboard ratio of 1.0 and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in degrees F, is no greater than 30 percent of the solvent's boiling point</li> <li>- dwell and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in degrees F, is no greater than 30 percent of the solvent's boiling point, and dwell is not less than 35 percent of the dwell time determined for the part or parts basket</li> <li>- reduced room draft, a freeboard ratio of 1.0, and dwell (dwell is not less than 35 percent of the dwell time determined for the part or parts basket)</li> <li>- a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in degrees F, is no greater than 30 percent of the solvent's boiling point and a carbon adsorber that reduces solvent emissions in the exhaust to a level not to exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less</li> <li>- a freeboard ratio of 1.0, superheated vapor, and a carbon adsorber that reduces solvent emissions in the exhaust to a level not to exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less.</li> </ul> <p>Verify that a batch vapor cleaning machine with a solvent/air interface area of</p>

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<p><b>AE.117.3.DE.</b> Batch vapor degreasers must meet specific operating requirements (DE 71000 112 4, Section 33. 4.4) [Revised December 2002; Citation Revised January 2007; Citation Revised January 2008].</p>	<p>greater than 13 square feet implements one of the following control options:</p> <ul style="list-style-type: none"> <li>- a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in degrees F, is no greater than 30 percent of the solvent's boiling point, a freeboard ratio of 1.0, and superheated vapor</li> <li>- dwell, a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in degrees F, is no greater than 30 percent of the solvent's boiling point, and reduced room draft (dwell will be not less than 35 percent of the dwell time determined for the part or parts basket)</li> <li>- a working mode cover, a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in degrees F, is no greater than 30 percent of the solvent's boiling point, and superheated vapor</li> <li>- reduced room draft, freeboard ratio of 1.0, and superheated vapor</li> <li>- a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in degrees F, is no greater than 30 percent of the solvent's boiling point, reduced room draft, and superheated vapor</li> <li>- a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in degrees F, is no greater than 30 percent of the solvent's boiling point, a freeboard ratio of 1.0, and reduced room draft</li> <li>- a freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point, superheated vapor, and a carbon adsorber that reduces solvent emissions in the exhaust to a level not to exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less.</li> </ul> <p>(NOTE: See AE.117.1.DE. for applicability.)</p> <p>(NOTE: This checklist item applies to batch vapor cleaning machines.)</p> <p>Verify that batch vapor cleaning machines are operated in accordance with the following procedures:</p> <ul style="list-style-type: none"> <li>- waste solvent, still bottoms, and sump bottoms are collected and stored in closed containers (the closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container)</li> <li>- cleaned parts are drained at least 15 seconds or until dripping ceases, whichever is longer, parts having cavities or blind holes are tipped or rotated while the part is draining, and during the draining, tipping or rotating, the parts are positioned so that solvent drains directly back to the batch vapor cleaning machine (a superheated vapor system is a n acceptable alternate technology)</li> <li>- parts or parts baskets are not removed from the batch vapor cleaning machine until dripping has ceased</li> <li>- flushing of parts using a flexible hose or other flushing device is performed within the vapor zone of the batch vapor cleaning machine or within a section of the machine that is not exposed to the ambient air</li> <li>- the solvent flushing is a solid fluid stream, not an atomized or shower spray</li> </ul>

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<p><b>AE.117.4.DE.</b> In-line cleaning machines must meet equipment requirements ( DE 7 10 00 11 24, Section 33.5.1) [Revised December 2 002; Citation Revised January 2007; Citation Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- when the cover is open, the batch vapor cleaning machine is not exposed to drafts greater than 40 meters per minute (132 feet per minute), as measured between 1 and 2 meters (3.3 and 6.6 feet) upwind and at the same elevation as the tank lip</li> <li>- sponges, fabric, wood, leather, paper products, and other absorbent materials are not cleaned or dried in the batch vapor cleaning machine</li> <li>- spills during solvent transfer and use of the batch vapor cleaning machine are cleaned up immediately, and the wipe rags or other absorbent material are immediately stored in covered containers for disposal or recycling</li> <li>- work area fans are located and positioned so that they do not blow across the opening of the batch vapor cleaning machine</li> <li>- during startup of each batch vapor cleaning machine, the primary condenser is turned on before the sump heater</li> <li>- during shutdown of each batch vapor cleaning machine, the sump heater is turned off and the solvent vapor layer allowed to collapse before the primary condenser is turned off</li> <li>- when solvent is added to or drained from the batch vapor cleaning machine, the solvent is transferred using threaded or other leakproof couplings, and the discharge end of the pipe is located beneath the liquid solvent surface</li> <li>- the idling and downtime mode covers are closed at all times during idling and downtimes except during maintenance of the machine when the solvent has been removed and during addition of solvent to the machine</li> <li>- if a lip exhaust is used on the open top batch vapor cleaning machine, the ventilation rate does not exceed 20 m<sup>3</sup>/min/m<sup>2</sup> ( 65 ft<sup>3</sup>/min/ft<sup>2</sup>) of batch vapor cleaning machine open area, unless a higher rate is necessary to meet OSHA requirements.</li> </ul> <p>(NOTE: See AE.117.1.DE. for applicability.)</p> <p>(NOTE: This checklist item applies to in-line cold and vapor cleaning machines.)</p> <p>Verify that in-line cleaning machines are equipped with:</p> <ul style="list-style-type: none"> <li>- either a fully enclosed design, or</li> <li>- idling and downtime mode covers that completely covers the in-line cleaning machine openings when in place, and: <ul style="list-style-type: none"> <li>- are free of cracks, holes, and other defects, and readily opened or closed without disturbing the vapor zone</li> </ul> </li> <li>- a freeboard ratio of 0.75 or greater</li> <li>- a primary condenser</li> <li>- a vapor up control switch</li> <li>- a device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils</li> <li>- a vapor level control device that shuts off the sump heat if the vapor level in the in-line cleaning machine rises above the height of the primary condenser</li> <li>- an automated parts handling system that moves parts or parts baskets at a speed of 3.4 meters per minute (11 feet per minute) or less when the parts are</li> </ul>

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<p><b>AE.117.5.DE.</b> In-line cleaning machines must meet specific control requirements (DE 7 1000 112 4, Section 33.5.2) [ Revised December 2002; Citation Revised January 2007 ; Citation Revised January 2008].</p> <p><b>AE.117.6.DE.</b> In-line cleaning machines must meet specific operating requirements ( DE 7 1000 1124, Section 33. 5.3) [Revised December 2 002; Citation Revised J anuary 2007; C itation R evised January 2008].</p>	<p>entering or exiting the vapor zone</p> <ul style="list-style-type: none"> <li>- if the parts or parts basket being cleaned or dried occupy more than 50 percent of the solvent/air interface area, an automated parts handling system that moves parts or parts baskets at a speed of 0.93 meters per minute (3 feet per minute) or less</li> <li>- a permanent, conspicuous label summarizing the operating requirements.</li> </ul> <p>Verify that each in-line machine that uses a lip exhaust is designed and operated to route all collected solvent vapors through a properly operated and maintained carbon adsorber, and that the concentration of organic solvent in the exhaust does not exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less.</p> <p>(NOTE: See AE.117.1.DE. for applicability.)</p> <p>(NOTE: This checklist item applies to in-line cold and vapor cleaning machines.)</p> <p>Verify that an in-line cleaning machine implements one of the following control options:</p> <ul style="list-style-type: none"> <li>- a freeboard ratio of 1.0 and superheated vapor</li> <li>- a freeboard ratio of 1.0 and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in degrees F, is no greater than 30 percent of the solvent's boiling point</li> <li>- dwell and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in degrees F, is no greater than 30 percent of the solvent's boiling point (dwell will not be less than 35 percent of the dwell time determined for the part or parts basket)</li> <li>- dwell and a carbon adsorber that reduces solvent emissions in the exhaust to a level not to exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less (dwell will not be less than 35 percent of the dwell time determined for the part or parts basket).</li> </ul> <p>(NOTE: See AE.117.1.DE. for applicability.)</p> <p>(NOTE: This checklist item applies to in-line cold and vapor cleaning machines.)</p> <p>Verify that in-line cleaning machines are operated in accordance with the following procedures:</p> <ul style="list-style-type: none"> <li>- waste solvent, still bottoms, and sump bottoms are collected and stored in closed containers ( the closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container)</li> <li>- cleaned parts are drained at least 15 seconds or until dripping ceases,</li> </ul>

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<p><b>AE.117.7.DE.</b> Airless and airtight cleaning systems must meet general requirements (DE 7 1000 1124, Sections 33.6.1 through 33.6.6) [Revised December 2002; Citation Revised January</p>	<p>whichever is longer, parts having cavities or blind holes are tipped or rotated while the part is draining, and during the draining, tipping or rotating, the parts are positioned so that solvent drains directly back to the in-line cleaning machine</p> <ul style="list-style-type: none"> <li>- parts or parts baskets are not removed from the in-line cleaning machine until dripping has ceased</li> <li>- flushing of parts using a flexible hose or other flushing device is performed within the vapor zone of the in-line cleaning machine or within a section of the machine that is not exposed to the ambient air</li> <li>- the solvent flushing is a solid fluid stream, not an atomized or shower spray</li> <li>- when the in-line cleaning machine is operating, the entrance and exit portals are not exposed to drafts greater than 40 meters per minute (132 feet per minute), as measured between 1 and 2 meters (3.3 and 6.6 feet) upwind and at the same elevation as the portals</li> <li>- sponges, fabric, wood, leather, paper products, and other absorbent materials are not cleaned or dried in the in-line cleaning machine</li> <li>- spills during solvent transfer and use of the in-line cleaning machine are cleaned up immediately, and the wipe rags or other absorbent material are immediately stored in covered containers for disposal or recycling</li> <li>- work area fans are located and positioned so that they do not blow across the opening of the in-line cleaning machine</li> <li>- during startup of each in-line cleaning machine, the primary condenser is turned on before the sump heater</li> <li>- during shutdown of each in-line cleaning machine, the sump heater is turned off and the solvent vapor layer allowed to collapse before the primary condenser is turned off</li> <li>- when solvent is added to or drained from the in-line cleaning machine, the solvent is transferred using threaded or other leakproof couplings, and the discharge end of the pipe is located beneath the liquid solvent surface</li> <li>- the idling and downtime mode covers are closed at all times during idling and downtimes except during maintenance of the machine when the solvent has been removed and during addition of solvent to the machine</li> <li>- if a lip exhaust is used on the in-line cleaning machine, the ventilation rate does not exceed 20 m<sup>3</sup>/min/m<sup>2</sup> (65 ft<sup>3</sup>/min/ft<sup>2</sup>) of in-line cleaning machine open area, unless a higher rate is necessary to meet OSHA requirements</li> <li>- openings are minimized during operations so that entrances and exit silhouette workloads with an average clearance between the parts and the edge of the portal opening of less than 10 centimeters (4 inches) or less than 10 percent of the width of the opening.</li> </ul> <p>(NOTE: See AE.117.1.DE. for applicability.)</p> <p>(NOTE: This checklist item applies to cleaning machines that do not have a solvent/air interface. These cleaning machines include, but are not limited to, airless and airtight cleaning systems.)</p> <p>Verify that each machine has a log of solvent additions and deletions, including</p>

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<p>2007; Citation Revised January 2008].</p> <p><b>AE.117.8.DE.</b> Airless and airtight cleaning systems must meet specific operating requirements ( DE 7 1000 1124, Sections 33.6.7) [Added December 2002 ; Citation Revised January 2007 ; Citation Revised January 2008].</p>	<p>the weight of solvent contained in activated carbon or other adsorbent material used to control emissions from the cleaning machine.</p> <p>Verify that the owner or operator of each machine demonstrates that the emissions from each machine, on a three-month rolling average, are equal to or less than the allowable emission limit determined using the following equation:</p> <p style="margin-left: 40px;"><math>EL = 330(Vol)^{0.6}</math> (Eq. 1) where: <math>EL =</math> the three-month rolling average monthly emission limit (kilograms/month). <math>Vol =</math> the cleaning capacity of machine (cubic meters).</p> <p>Verify that the owner or operator of each machine operates the machine in conformance with the manufacturer's instructions and good air pollution control practices.</p> <p>Verify that the owner or operator of each machine equipped with a carbon adsorber maintains and operates the carbon adsorber system to reduce solvent emissions in the exhaust to a level not exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less.</p> <p>Verify that each machine has permanent, conspicuous label summarizing the operating requirements.</p> <p>Verify that the owner or operator demonstrates compliance with the applicable 3-month rolling average monthly emission limit on a monthly basis.</p> <p>Verify that if the applicable 3-month rolling average monthly emission limit is not met, it is reported to the Department within 30 days.</p> <p>(NOTE: See AE.117.1.DE. for applicability.)</p> <p>Verify that cleaning machines not having a solvent/air interface are operated in accordance with the following procedures:</p> <ul style="list-style-type: none"> <li>- waste solvent, still bottoms, and sump bottoms are collected and stored in closed containers (the closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container)</li> <li>- cleaned parts are drained at least 15 seconds or until dripping ceases, whichever is longer, parts having cavities or blind holes are tipped or rotated while the part is draining, and during the draining, tipping or rotating, the parts are repositioned so that solvent drains directly back to the cleaning machine</li> <li>- parts or parts baskets are not removed from the cleaning machine until dripping has ceased</li> </ul>

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<p><b>AE.117.9.DE.</b> Airless and airtight cleaning systems must meet specific recordkeeping requirements ( DE 7 1000 1124, Sections 33.6.8) [Added December 2002 ; Citation Revised January 2007 ; Citation Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- sponges, fabric, wood, leather, paper products, and other absorbent materials are not cleaned or dried in the cleaning machine</li> <li>- spills during solvent transfer and use of the cleaning machine are cleaned up immediately, and the wipe rags or other absorbent material are immediately stored in covered containers for disposal or recycling</li> <li>- work area fans are located and positioned so that they do not blow across the opening of the cleaning machine</li> <li>- when solvent is added to or drained from the cleaning machine, the solvent is transferred using threaded or other leakproof couplings, and the discharge end of the pipe is located beneath the liquid solvent surface.</li> </ul> <p>(NOTE: See AE.117.1.DE. for applicability.)</p> <p>Verify that on the first operating day of every month, the owner/operator ensures that the solvent cleaning machine system contains only clean liquid solvent.</p> <p>(NOTE: “ Clean liquid solvent” includes, but is not limited to, fresh unused solvent, recycled solvent, and used solvent that have been cleaned of soils.)</p> <p>Verify that a fill line is indicated during the first month the measurements are made, and that the solvent level within the machine is returned to the same fill-line each month, immediately prior to calculating monthly emissions.</p> <p>(NOTE: The solvent cleaning machine does not have to be emptied and filled with fresh unused solvent prior to the calculations.)</p> <p>Verify that, using the records of all solvent additions and deletions for the previous monthly reporting period, the owner/operator determine total solvent emissions, E, using the following equation:</p> <p style="margin-left: 40px;"><math>E = SA - LSR - SSR</math></p> <p style="margin-left: 40px;">where:</p> <p style="margin-left: 40px;">E = the total VOC solvent emissions from the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month)</p> <p style="margin-left: 40px;">SA = the total amount of VOC liquid solvent added to the solvent cleaning machine during the most recent monthly reporting period ( kilograms of solvent per month)</p> <p style="margin-left: 40px;">LSR = the total amount of VOC liquid solvent removed from the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month)</p> <p style="margin-left: 40px;">SSR = the total amount of VOC solvent removed from the solvent cleaning machine in solid waste during the most recent monthly reporting period (kilograms of solvent per month), as determined from tests conducted using Method 25D in appendix A of 40 CFR part 60 or by engineering calculations included in the compliance report.</p>



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<p><b>AE.117.10.DE.</b> Owners/operators of batch vapor or in-line cleaning machines opting to comply via alternative compliance standards must meet maintain a log of solvent use and emissions (DE 7 1000 112 4, Sections 33. 7.1) [ Added December 2002 ; Citation Revised January 2007 ; Citation Revised January 2008].</p> <p><b>AE.117.11.DE.</b> Owners/operators of batch vapor or in-line cleaning machines opting to comply via alternative compliance standards must meet specific operating requirements (DE 7 1000 112 4, Sections 33. 7.2) [Added December 2002 ; Citation Revised January 2007; Citation Revised</p>	<p>Verify that the owner/operator determines the monthly rolling average solvent emission using the following equation:</p> $EA = (E(j = 1) + E(j = 2) + E(j = 3)) / 3$ <p>where: EA = the average VOC solvent emissions over the preceding 3 monthly reporting periods (kilograms of solvent per month) E = the total VOC solvent emissions for each month (j) for the most recent 3 monthly reporting periods (kilograms of solvent per month) j = 1 = the most recent monthly reporting period j = 2 = the monthly reporting period immediately prior to j = 1 j = 3 = the monthly reporting period immediately prior to j = 2.</p> <p>(NOTE: See AE.117.1.DE. for applicability.)</p> <p>(NOTE: As an alternative to meeting the requirements, the owner or operator of a batch vapor or in-line cleaning machine can elect to comply with the requirements of this subsection ( AE.117.10.DE. through AE.117.12.DE.). The owner or operator will maintain records sufficient to demonstrate compliance.)</p> <p>Verify that the owner or operator:</p> <ul style="list-style-type: none"> <li>- maintains a log of solvent additions and deletions for each solvent cleaning machine</li> <li>- ensure that emissions from each solvent cleaning machine are equal to or less than the following allowable emission limit: <ul style="list-style-type: none"> <li>- for batch vapor cleaning machines: a 3-month rolling average monthly emission limit of 150 kg/m<sup>2</sup>/month</li> <li>- for existing in-line cleaning machines: a 3-month rolling average monthly emission limit of 153 kg/m<sup>2</sup>/month</li> <li>- for new in-line cleaning machines: a 3-month rolling average monthly emission limit of 99 kg/m<sup>2</sup>/month.</li> </ul> </li> </ul> <p>(NOTE: See AE.117.1.DE. for applicability.)</p> <p>Verify that each batch vapor cleaning machine has a sign posting operating requirements, and meets the operating requirements for batch vapor cleaning machines listed in AE.117.3.DE.</p> <p>Verify that each in-line cleaning machine has a sign posting operating requirements, and meets the operating requirements for batch vapor cleaning machines listed in AE.117.6.DE.</p>

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<p>January 2008].</p> <p><b>AE.117.12.DE.</b> Owners/operators of batch vapor or in-line cleaning machines opting to comply via alternative compliance standards must meet specific monitoring and recordkeeping requirements (DE 7 1000 1124, Sections 33.7.3 and 33.7.4) [ Added December 2002 ; Citation Revised January 2007 ; Citation Revised January 2008].</p>	<p>(NOTE: See AE.117.1.DE. for applicability.)</p> <p>Verify that the owner or operator of a solvent cleaning machine complying with alternative compliance standards demonstrates compliance with the applicable 3-month rolling average monthly emission limit on a monthly basis.</p> <p>Verify that, if the applicable 3-month rolling average monthly emission limit is not met, the exceedance is reported to the Department within 30 days of the determination of the exceedance.</p> <p>Verify that the owner or operator of a solvent cleaning machine complying with alternative compliance standards maintains records and determines compliance with the applicable provisions in accordance with the following:</p> <ul style="list-style-type: none"> <li>- a fill line is indicated during the first month the measurements are made, and</li> <li>- the solvent level within the machine is returned to the same fill-line each month, immediately prior to calculating monthly emissions.</li> </ul> <p>(NOTE: The solvent cleaning machine does not have to be emptied and filled with fresh unused solvent prior to the calculations.)</p> <p>Verify that, using the records of all solvent additions and deletions for the previous monthly reporting period, the owner/operator determines total solvent emissions, E, using the following equation:</p> $E = (SA - LSR - SSR) / \text{AREA}$ <p>where:</p> <p>E = the total VOC solvent emissions from the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per square meter of solvent/air interface area per month)</p> <p>SA = the total amount of VOC liquid solvent added to the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month)</p> <p>LSR = the total amount of VOC liquid solvent removed from the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month)</p> <p>SSR = the total amount of VOC solvent removed from the solvent cleaning machine in solid waste during the most recent monthly reporting period (kilograms of solvent per month), as determined from tests conducted using Method 25D in appendix A of 40 CFR part 60 or by engineering calculations included in the compliance report</p> <p>Area = the solvent/air interface area of the solvent cleaning machine (square meters).</p>

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<p><b>AE.117.13.DE.</b> Owners/operators of solvent cleaning machines (other than cold cleaning machines) must meet specific monitoring requirements ( DE 71000 1124, Sections 33.8) [Added December 2002 ; Citation Revised January 2007 ; Citation Revised January 2008].</p>	<p>Verify that the owner/operator determines the monthly rolling average solvent emission, EA, using the following equation:</p> $EA = (E(j = 1) + E(j = 2) + E(j = 3)) / 3$ <p>where: EA = the average VOC solvent emissions over the preceding 3 monthly reporting periods ( kilograms of solvent per square meter of solvent/air interface area per month) E = the total VOC solvent emissions for each month (j) for the most recent 3 monthly reporting periods ( kilograms of solvent per square meter of solvent/air interface area per month) j = 1 = the most recent monthly reporting period j = 2 = the monthly reporting period immediately prior to j = 1 j = 3 = the monthly reporting period immediately prior to j = 2.</p> <p>(NOTE: See AE.117.1.DE. for applicability.)</p> <p>Verify that the owner or operator of a solvent cleaning machine subject to the provisions of AE.117.1.DE. through AE.117.12.DE. conduct monitoring as follows:</p> <ul style="list-style-type: none"> <li>- if a freeboard refrigeration device is used, the owner or operator uses a thermometer or thermocouple to measure the temperature at the center of the air blanket during the idling mode, with measurements and recordings made weekly</li> <li>- if a superheated vapor system is used, the owner or operator uses a thermometer or thermocouple to measure the temperature at the center of the superheated solvent vapor zone while the solvent cleaning machine is in the idling mode, with measurements and recordings made weekly</li> <li>- if a cover ( working mode, downtime mode, and/or idling mode cover) is used, the owner or operator conducts a visual inspection to determine if the cover is opening and closing properly, completely covers the cleaning machine openings when closed, and is free of cracks, holes, and other defects, with observations and recordings made monthly</li> <li>- if dwell is used to comply with the requirements of this section, the owner or operator determines the actual dwell time by measuring the period of time that parts are held within the freeboard area of the solvent cleaning machine after cleaning or drying, with measurements and recordings made monthly.</li> </ul> <p>Verify that the owner or operator determine the automated parts handling system speed by measuring the time it takes to travel a measured distance, with measurements and recordings made monthly.</p> <p>Verify that, if reduced room draft is used to comply with the requirements of this section, the owner or operator determines the average wind speed and controlling room parameters ( i.e., redirecting fans, closing doors and windows, etc.) as</p>

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	<p>follows:</p> <ul style="list-style-type: none"> <li>- initially measures the wind speed within 6 inches above the top of the freeboard area of the solvent cleaning machine in accordance with the following:               <ul style="list-style-type: none"> <li>- determines the direction of the wind current by slowly rotating a velometer or similar device until the maximum speed is located</li> <li>- orients a velometer in the direction of the wind current at the 4 corners of the machine</li> <li>- records the reading for each corner</li> <li>- averages the values obtained at each corner and record the average wind speed</li> </ul> </li> <li>- records the room parameters established during the initial compliance test to achieve the reduced room draft</li> <li>- quarterly monitor of the wind speed</li> <li>- weekly monitoring of the room parameters.</li> </ul> <p>Verify that, if an enclosure (full or partial) is used to achieve reduced room draft, the owner or operator conducts an initial monitoring test of the wind speed within the enclosure by slowly rotating a velometer inside the entrance to the enclosure until the maximum speed is located and recorded, with measurements and recordings made monthly.</p> <p>Verify that, if an enclosure (full or partial) is used to achieve reduced room draft, the owner or operator also conducts a monthly visual inspection of the enclosure to determine if it is free of cracks, holes, and other defects.</p> <p>Verify that the owner or operator of a machine using a carbon adsorber measures and records the concentration of VOC solvent in the exhaust of the carbon adsorber whenever the solvent cleaning machine is in the working mode and/or is venting to the carbon adsorber.</p>

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<p><b>DEGREASING OPERATIONS</b></p> <p><b>AE.118. Reporting</b></p> <p><b>AE.118.1.DE.</b> Sources subject to cold cleaning, batch vapor degreasing, in-line cleaning machine, or airless/airtight cleaning machine requirements must meet specific recordkeeping and reporting requirements (DE 7 1000 1124, Sections 33.1, 33.9 and 33.10) [Revised December 2002; Citation Revised January 2007; Citation Revised January 2008].</p>	<p>Verify that the owner or operator of a solvent cleaning machine maintains the following records in a readily accessible location for a least 5 years:</p> <ul style="list-style-type: none"> <li>- the log of operating times for the carbon adsorber, if applicable</li> <li>- the maintenance record for the carbon adsorber, such as replacement of the activated carbon bed, if applicable</li> <li>- the maintenance record for each control option used, such as replacement of a heater in the superheated vapor recycle system, if applicable</li> <li>- the logs and calculations demonstrating compliance with the allowable emission limits, where applicable</li> <li>- the results of all monitoring conducted in accordance with the requirements of this regulation (see AE.117.13.DE. et seq.).</li> </ul> <p>Verify that the owner of operator of a solvent cleaning machine:</p> <ul style="list-style-type: none"> <li>- complies with the initial compliance certification requirements</li> <li>- complies with the requirements of this regulation regarding reports of excess emissions, as well as complying with other State of Delaware exceedance reporting requirements.</li> </ul> <p>(NOTE: This section applies to any person who owns or operates a solvent cleaning machine that:</p> <ul style="list-style-type: none"> <li>- contains more than 1 liter of solvent</li> <li>- uses any solvent containing volatile organic compounds in a total concentration greater than 5 percent by weight, as a cleaning and/or drying agent.)</li> </ul>

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<p><b>AE.125.</b></p> <p><b>MISCELLANEOUS VOC OPERATIONS</b></p>	
<p><b>AE.125.1.DE.</b> [Deleted January 2008].</p>	<p>(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Section 5 is reserved.)</p>
<p><b>AE.125.2.DE.</b> [Deleted January 2008].</p>	<p>(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Section 43 is reserved.)</p>
<p><b>AE.125.3.DE.</b> [Deleted January 2008].</p>	<p>(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Section 43 is reserved.)</p>
<p><b>AE.125.4.DE.</b> [Deleted January 2008].</p>	<p>(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Section 43 is reserved.)</p>
<p><b>AE.125.5.DE.</b> Handling, storage, and disposal of VOCs at sources whose VOC emissions are 15 pounds per day or more must meet operational requirements (DE 7 1000 1124, Section 3.3 and 8) [Added December 2008].</p>	<p>(NOTE: Repeated in AE.100.16.DE.)</p> <p>Verify that the owner or operator does not permit the disposal of more than 5 kilograms (kg) (11 pounds [lb]) of any VOC, or of any materials containing more than five kg (11 lb) of any VOCs, in any one day in a manner that would permit the evaporation of VOC into the ambient air.</p> <p>(NOTE: These requirements apply to, but are not limited to, the disposal of VOC from VOC control devices.)</p> <p>Verify that open containers are not used for the storage or disposal of cloth or paper impregnated with VOCs that are used for surface preparation, cleanup, or coating removal.</p> <p>Verify that containers for the storage or disposal of cloth or paper impregnated with VOCs are kept closed, except when adding or removing material.</p> <p>Verify that open containers are not used to store spent or fresh VOC to be used for surface preparation, cleanup or coating removal.</p> <p>Verify that containers for the storage of spent or fresh VOCs are kept closed,</p>

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<p><b>AE.125.6.DE.</b> Sources that use organic solvents for the purpose of cleaning must implement a Cleaning Solvent Plan (DE 7 1000 11 24, Sections 45.1 and 45.3) [Added December 2008].</p>	<p>except when adding or removing material.</p> <p>Verify that VOCs are not used for the cleanup of spray equipment unless equipment is used to collect the cleaning compounds and to minimize their evaporation to the atmosphere.</p> <p>(NOTE: These provisions do not apply to:</p> <ul style="list-style-type: none"> <li>- any VOC or material containing VOC emitted from a regulated entity that is subject to a VOC standard under this regulation</li> <li>- coating sources that are exempt from the emission limitations of 10.0 through 23.0 of 7 1000 1124</li> <li>- waste paint (sludge) handling systems, water treatment systems, and other similar operations at coating facilities using complying coatings</li> <li>- any VOC or material containing VOCs used during process maintenance turnarounds for cleaning purposes, provided that the provisions of 8.3, 8.4 and 8.5 are followed.)</li> </ul> <p>Verify that the owner or operator of a source that uses organic solvents for the purpose of cleaning submits a Solvent Usage Study to the Department.</p> <p>Verify that the Screening Test Plan is approved by the Department.</p> <p>Verify that the owner or operator of a source that uses organic solvents for the purpose of cleaning conducts Screening Tests to evaluate the performance of alternative (aqueous or lower VOC) cleaning solutions and creates a Cleaning Solvent Proposal.</p> <p>Verify that the owner or operator implements the Cleaning Solvent Proposal and the approved schedule.</p> <p>(NOTE: The provisions of 45.0 apply to all sources that use organic solvents for the purpose of cleaning. The provisions do not apply to the following sources:</p> <ul style="list-style-type: none"> <li>- any source that is covered under 3 3.0, Solvent Metal Cleaning, of this regulation</li> <li>- any non-manufacturing area cleaning operation</li> <li>- any non-routine maintenance of manufacturing facilities and equipment</li> <li>- any source that uses less than 4,540 kilograms (5 tons) of cleaning solvent per year</li> <li>- any facility that becomes or is currently subject to the provisions of 45.0 of this regulation by exceeding the applicability threshold in 45.1.1.4 of this regulation remains subject to these provisions even if its emissions later fall below the applicability threshold</li> <li>- any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold and remains subject to these provisions, even if its throughput or emissions later fall below the applicability threshold</li> <li>- existing sources comply with this regulation upon promulgation. New,</li> </ul>

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<p><b>AE.125.7.DE.</b> Sources that use organic solvents for the purpose of cleaning and that implement a Cleaning Solvent Plan must meet recordkeeping and reporting requirements (DE 7 1000 1124, Sections 45.5 and 45. 6) [ Added December 2008].</p> <p><b>AE.125.8.DE.</b> Other facilities in New Castle, Kern, or Sussex County that emit VOCs must limit VOC emissions requirements (DE 7 1000 1113, Sections 50.1, 50.2, and 50. 3) [ Added December 2008].</p>	<p>reconstructed, or modified sources shall comply with the requirements of this regulation beginning fifteen months after startup and shall follow the time schedule for the solvent usage study, screening tests, and trial evaluations as specified in 45.0 of this regulation.)</p> <p>Verify that the following records are maintained in a readily accessible location for at least 5 years and made available to the Department upon verbal or written request:</p> <ul style="list-style-type: none"> <li>- detailed records of organic solvent usage for each unit operating system (UOS) incorporated in a permit</li> <li>- records of organic solvent usage and monthly VOC emission calculations for each UOS incorporated in a permit.</li> </ul> <p>Verify that an owner or operator of a source that uses organic solvents for the purpose of cleaning initially reports to the Department the total quantity of solvent that it used for the calendar year prior to September 2008.</p> <p>Verify that the initial and subsequent reports include the following information:</p> <ul style="list-style-type: none"> <li>- the name and location of the facility</li> <li>- the address and telephone number of the person responsible for the facility</li> <li>- the tons of solvent used during the calendar year prior 2008 and a copy of the calculations that were performed to estimate the amounts</li> <li>- a certification that the source is in compliance with 45.3, 45.4, and 45.5 or that these paragraphs do not apply based on the exclusions of 45. 1.1 (see AE.125.5.MA.).</li> </ul> <p>(NOTE: The provisions of 50.0 apply to any facility that emits VOCs and that is not subject to any other part of 7 1 000 1124 or to any Federally-approved State rule. A facility is subject to 50.0 if it has sources that as a group have maximum theoretical VOC emissions of 25 tons or more per calendar year in New Castle or Kent Counties, or 50 tons or more per calendar year in Sussex County, in the absence of control devices.)</p> <p>Verify that sources that as a group have maximum theoretical VOC emissions of 25 tons or more per calendar year in New Castle or Kent Counties, or 50 tons or more per calendar year in Sussex County, in the absence of control devices do one of the following:</p> <ul style="list-style-type: none"> <li>- install and operate emission capture and control techniques or, if appropriate, use complying coatings that achieve an overall reduction in VOC emissions of at least 81 weight percent ( a technical support document, adequately justifying the emission capture and control techniques, is submitted to the Department)</li> <li>- for any coating unit, limit the daily-weighted average VOC content to 0.40</li> </ul>



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<p><b>AE.125.9.DE.</b> Other facilities in New Castle, Kern, or Sussex County that emit VOCs must meet recordkeeping and reporting requirements ( DE 7 1000 1113, Sections 50.4, 50.5, and 50.6) [ Added December 2008].</p>	<p>kilograms VOC per liter ( kg VOC/L) ( 3.5 pounds VOC per gallon [ lb VOC/gal]) or less of coating, as applied ( excluding water and exempt compounds), as calculated in Appendix C of this regulation (a technical support document, adequately justifying the daily-weighted average VOC content, as applied, is submitted to the Department)</p> <ul style="list-style-type: none"> <li>- comply with an alternative control plan that has been approved by the Administrator of the U.S. EPA as part of a State Implementation Plan (SIP) or Federal Implementation Plan (FIP) revision.</li> </ul> <p>Verify that the owner or operator of any source demonstrates compliance by using the applicable test methods specified in Appendix A through Appendix F (7 1000 1124).</p> <p>(NOTE: The control requirements do not apply to coke ovens ( including by-product recovery plants), fuel combustion sources, barge loading facilities, jet engine test cells, vegetable oil processing facilities, wastewater treatment facilities, and iron and steel production. And, to the following source categories for which the U.S. EPA must issue Control Technique Guidelines (CTGs) by November 15, 1993 under the non-attainment provisions of Title I of the November 15, 1990 Clean Air Act Amendments: wood furniture coatings, industrial wastewater and shipbuilding and repair.)</p> <p>Verify that the owner or operator of a coating unit that is exempt from the emission limitations (see AE.125.7.DE.) complies with the certification, recordkeeping, and reporting requirements.</p> <p>Verify that the owner or operator of a non-coating source that is exempt from the emission limitations (see Ae.125.7.DE.) submits, upon request by the Department records that document that the source is exempt from these requirements.</p> <p>Verify that an owner or operator of a coating unit complying by the use of complying coatings comply with the certification, recordkeeping, and reporting requirements.</p> <p>Verify that an owner or operator of a coating unit complying by daily-weighted averaging comply with the certification, recordkeeping, and reporting requirements.</p> <p>Verify that an owner or operator of a coating unit complying by using control devices comply with the testing, reporting, and recordkeeping requirements.</p> <p>Verify that Non-CTG, Non-Coating Sources meet the following requirements:</p> <ul style="list-style-type: none"> <li>- perform all testing and maintain the results of all tests and calculations to demonstrate that the subject source is in compliance</li> <li>- maintain these records in a readily accessible location for a minimum of 5</li> </ul>

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	years and make these records available to the Department immediately upon verbal or written request.

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<p><b>AE.130.</b></p> <p><b>OPEN BURNING</b></p> <p><b>AE.130.1.DE.</b> [Deleted November 1996].</p> <p><b>AE.130.2.DE.</b> [Deleted November 1996].</p> <p><b>AE.130.3.DE.</b> Opening burning must comply with specific restrictions (DE 7 1000 1113, Sections 4.0 and 7.0) [Citation Revised January 2007; Revised January 2008].</p>	<p>Verify that there is no open burning of any of the following:</p> <ul style="list-style-type: none"> <li>- refuse</li> <li>- materials in a salvage operation</li> <li>- fallen leaves.</li> </ul> <p>Verify that open burning does not occur when, in the judgment of any Department employee, fire marshal or law enforcement officer one of the following situations occurs:</p> <ul style="list-style-type: none"> <li>- a condition of air stagnation exists or a Code Red or Code Orange has been issued</li> <li>- the open burning impacts a person's health, comfort, use, or enjoyment of his or her real property.</li> </ul> <p>Verify that no person causes or allows any open burning when a burn ban has been issued by the Delaware State Fire Marshal, even though the activities would have otherwise been permitted.</p> <p>Verify that prior notice is given to the Fire Call Board for the county in which the fire will occur.</p> <p>Verify that no more than the minimum amount of auxiliary fuel needed to initiate an open burn.</p> <p>Verify that tires, waste oil, off-specification oil or any oil heavier than No. 2 are not used as an auxiliary fuel for an open burn.</p> <p>Verify that any person causing or allowing open burning remains present and closely supervises all fire(s) at all times until the fire(s) are completely extinguished.</p>

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<p><b>AE.130.4.DE.</b> Open burning must meet season and time restrictions (DE 7 1 000 1113, Section 5.0) [Added November 1996 ; Citation Revised January 2007 ; Revised January 2008].</p> <p><b>AE.130.5.DE.</b> Land and yard maintenance and prescribed burning for conservation practices, wildlife habitat management, or plant, pest, or disease control must meet specific requirements (DE 7 1000 1113, Section 6. 2.1, 6.2.2, 6.2.3, and 6.2.4) (DE 7 1000 11 13, Section 6. 20) [Citation Revised January</p>	<p>Verify that no person burns for the purpose of land clearing except as permitted.</p> <p>(NOTE: The following operations are exempt from the open burning regulations provided that they are not used for the disposal of refuse and are a minimum size sufficient for their intended purpose:</p> <ul style="list-style-type: none"> <li>- fires used for cooking of food for human consumption of a size no greater than 10 cubic feet of material, in total, to be burned, where only the following materials are burned: unpainted and untreated wood, charcoal, propane, or natural gas</li> <li>- recreational fires such as campfires of a size no greater than 27 cubic feet of material, in total, to be burned, where only unpainted and untreated wood is burned</li> <li>- ceremonial fires of a size no greater than 27 cubic feet of material, in total, to be burned, by established groups or tribes, provided that only unpainted and untreated wood is burned</li> <li>- emergency signaling flares</li> <li>- emergency burning of refuse of any other appropriate technique, by governmental agencies or fire companies to control or suppress on-going fires</li> <li>- fire fighting instruction conducted by the Delaware State Fire School.)</li> </ul> <p>(NOTE: See AE.130.3.DE. for exemptions.)</p> <p>Verify that open burning is prohibited from May 1 through September 30, without prior written approval by the Department.</p> <p>Verify that open burning, occurs between the hours of 8:00 a.m. and 4:00 p.m.</p> <p>Verify that, if open burning occurs outside of the hours of 8:00am and 4:00 pm, approval to burn during the extended hours is given by the Department before such burning takes place.</p> <p>Verify that domestic burning of brush, branches, and limbs that have been cut from trees or shrubbery originating on the premises and conducted by individuals domiciled in a private dwelling on the premises meets the following criteria:</p> <ul style="list-style-type: none"> <li>- the materials are of a size no greater than 27 cubic feet in total</li> <li>- burning is conducted as far as practicable from any adjacent property.</li> </ul> <p>Verify that clearing land in agricultural use and clearing land in silvicultural operations of vegetative material in order to cultivate and/or to prepare the soil for the purpose of producing crops or supporting livestock meet the following criteria:</p> <ul style="list-style-type: none"> <li>- the applicant notifies and provides the Department with information</li> </ul>

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<p>2007; Revised January 2008].</p> <p><b>AE.130.6.DE.</b> Demolition by intentional burning for fire training must meet specific requirements ( DE 7 1000 1113, Section 6.2.5 and 6.2.6) [Added January 2008].</p>	<p>regarding the proposed open burning activity on the Department's approved form</p> <ul style="list-style-type: none"> <li>- approval to burn is given in writing by the Department before such burning takes place.</li> </ul> <p>(NOTE: The ability to utilize open burning for purposes of clearing land pursuant to 6 .2.2 above s hall not apply to la nd o n which r esidential, industrial o r commercial house, dwellings or other structures are constructed with a period of five years after the land clearing by burning takes place.)</p> <p>Verify that burning for maintaining the land (includes perimeter field maintenance and c rop r esidue m anagement i n continued a gricultural operations t o p roduce crops or support livestock) meets the following criteria:</p> <ul style="list-style-type: none"> <li>- the a pplicant n otifies a nd pr ovides t he D epartment with i nformation regarding the proposed open burning activity on the Department's approved form</li> <li>- the ap plicant r eceives co nfirmation b y t he D epartment o f r eceipt o f t he complete application before such burning takes place.</li> </ul> <p>Verify t hat p rescribed b urning for co nservation p ractices, wildlife habitat management, or plant, pest, or disease control, meets the following criteria:</p> <ul style="list-style-type: none"> <li>- the applicant documents to the satisfaction of the Department that prescribed burning is the most effective method to achieve this purpose</li> <li>- approval to burn is given by the Department before such burning takes place.</li> </ul> <p>Verify th at t he d emolition b y i ntentional b urning o f a s tructure solely for fire fighting i nstruction conducted by authorized fire companies, meets the following requirement:</p> <ul style="list-style-type: none"> <li>- the fire co mpany d ocuments t o t he satisfaction o f t he D epartment t hat a ll building fixtures such as hot water heaters, boilers and air conditioning units, all materials i n cluding household ap pliances an d/or r efuse, h ave b een removed from the building prior to burning any portion of the building</li> <li>- the fire company documents that any i nternal asbestos containing materials (including pi pe c overings a nd o t her i nsulation) a nd a ny external asbestos containing materials (including siding) have been removed from the building prior to burning any portion of the building, and that the 10-day notification of this demolition activity, as required by EPA and the Department has been submitted</li> <li>- the fire company documents that it is familiar with the Delaware State Fire Prevention Regulations and will comply with those regulations and all other applicable health and safety regulations</li> <li>- permission to b urn i s given b y t he D epartment b efore such b urning t akes place.</li> </ul>

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	<p>Verify that fire fighting instruction that involves burning materials other than structures (e.g. vegetation - wild land fires; fuels used to simulate industrial scale fires) by established fire companies or government agencies (e.g. Delaware Forest Service) meets the following criteria:</p> <ul style="list-style-type: none"> <li>- the applicant documents to the satisfaction of the Department that burning is the most effective method to achieve this purpose</li> <li>- approval to burn is given by the Department before such burning takes place.</li> </ul>

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<p><b>AE.135.</b></p> <p><b>VEHICLE EMISSIONS</b></p> <p><b>AE.135.1.DE.</b> Vehicles registered in Sussex County must pass emissions inspections (DE 7 1000 1126, Sections 1 and 6 .1) [ Revised December 2001 ; Citation Revised January 2007 ; Revised December 2008].</p> <p><b>AE.135.2.DE.</b> Inspection stations and station personnel must be approved by the State of Delaware ( DE 7 1000 1126, Section 1, 7, and 8 ) [Citation Revised January 2007; Revised December 2008].</p> <p><b>AE.135.3.DE.</b> Vehicles registered in New Castle and Kent Counties must pass emissions inspections ( DE 7 1000 1124, Sections 1(a), 4(a) and 5) [ Added December 2001; Citation Revised January 2007 ; Citation</p>	<p>(NOTE: The standards, requirements and procedures set forth in Regulation 26 are applicable to all motor vehicles, model years 1968 and newer with the exception of the 5 newest model years, titled and registered within Sussex County and as specified by the Department, including any motor vehicles owned or operated by the federal, state and local governments and their agencies.)</p> <p>Verify that vehicles registered in Sussex County have passed an emissions inspection conducted by an official inspection station.</p> <p>(NOTE: The following vehicles are exempt from emissions inspections:  - all farm vehicles displaying class FT (i.e., farm truck registration)  - all historic or antique vehicles displaying antique vehicle registration plates  - all motor vehicles with a gross vehicle weight of more than 8500 lb  - all motorcycles  - all vehicles registered in Delaware, but not operated in Delaware  - all vehicles powered solely by diesel or solely by electricity generated from solar cells and/or stored in batteries.)</p> <p>(NOTE: The standards, requirements and procedures set forth in Regulation 26 are applicable to all motor vehicles, model years 1968 and newer with the exception of the 5 newest model years, titled and registered within Sussex County and as specified by the Department, including any motor vehicles owned or operated by the federal, state and local governments and their agencies.)</p> <p>Verify that fleet inspection stations are approved by the State of Delaware.</p> <p>Verify that station personnel are certified by the State of Delaware.</p> <p>Verify that personnel training courses are approved of by the State of Delaware.</p> <p>(NOTE: These requirements apply to 1968 and later model year light duty vehicles, and 1970 and later light duty trucks (up to 8500 lb), with the exception of the 5 most recent model years, in the subject area (see applicability NOTE in AE.135.2.DE.).)</p> <p>Verify that all subject vehicles are inspected at an official inspection station at least once every 2 years.</p>

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<p>Revised January 2008 ; Citation Revised December 2008].</p>	<p>(NOTE: Subject vehicles which are registered in the program are but are primarily operated in another LEIM area will be tested, either in the area of primary operation, or in the area of registration. Alternate schedules may be established to permit convenient testing of these vehicles (e.g., vehicles belonging to students away at colleges should be rescheduled for testing during a visit home).)</p> <p>Verify that vehicles which are operated on Federal installations are tested, regardless of whether the vehicles are registered in the emission inspection jurisdiction.</p> <p>(NTOE: This requirement applies to all employee-owned or leased vehicles (including vehicles owned, leased, or operated by civilian and military personnel on Federal installations) as well as agency-owned or operated vehicles, except tactical military vehicles, operated on the installation. This requirement does not apply to visiting agency, employee, or military personnel vehicles as long as such visits do not exceed 60 calendar days per year. In areas without test fees collected in the lane, arrangements shall be made by the installation with the LEIM program for reimbursement of the costs of tests provided for agency vehicles, at the discretion of the Director.)</p> <p>Verify that the Federal installation manager provides documentation of proof of compliance to the Director, including a list of subject vehicles.</p> <p>Verify that the list of subject vehicles is updated periodically, as determined by the Director, but no less frequently than each inspection cycle.</p> <p>Verify that the installation uses one of the following methods to establish proof of compliance:</p> <ul style="list-style-type: none"> <li>- presentation of a valid certificate of compliance from the LEIM program, from any other LEIM program at least as stringent as the LEIM program described herein, or from any program deemed acceptable by the Director</li> <li>- presentation of proof of vehicle registration within the geographic area covered by the LEIM program, except for any Inspection and Maintenance program whose enforcement is not through registration denial</li> <li>- another method approved by the Director.</li> </ul> <p>(NOTE: Vehicles powered solely by a "clean fuel" such as compressed natural gas, propane, alcohol and similar nongasoline fuels are required to report for inspection to the same emission levels as gasoline powered cars until standards for clean fuel vehicles become available and are adopted by the State.)</p> <p>(NOTE: The following motor vehicles are exempt from the provisions of this regulation:</p> <ul style="list-style-type: none"> <li>- vehicles manufactured and registered as Kit Cars</li> <li>- tactical military vehicles used exclusively for military field operations</li> <li>- all motor vehicles with a manufacturer's gross vehicle weight over 8500 lb</li> </ul>



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<p><b>AE.135.4.DE.</b> On-road heavy-duty motor vehicles with a gross vehicle weight rating of greater than 8,500 pounds must meet operational requirements (DE 710001145, Section 1, 4, and 5) [ Added January 2006 ; Citation Revised January 2007; Citation Revised December 2008].</p>	<ul style="list-style-type: none"> <li>- all motorcycles and mopeds</li> <li>- all vehicles powered solely by electricity generated from solar cells and/or stored in batteries</li> <li>- non-road sources, or vehicles not operated on public roads</li> <li>- vehicles powered solely by Diesel fuel.)</li> </ul> <p>Verify that fleet owners have all non-exempted vehicles under their control inspected at an official inspection station during regular station hours.</p> <p>(NOTE: Regulation 31 applies to New Castle and Kent Counties, and applies to all vehicles registered in the following postal ZIP codes:            19701 19702 19703 19706 19707 19708 19709 19710 19711            19712 19713 19714 19715 19716 19717 19718 19720 19730            19731 19732 19733 19734 19735 19936 19703 19938 19800            19801 19802 19803 19804 19805 19806 19807 19808 19809            19810 19850 19890 19894 19896 19897 19898 19899 19901            19902 19903 19904 19934 19936 19938 19942 19943 19946            19952 19953 19954 19955 19961 19962 19963* 19964            19977 19979 19980</p> <p>* If vehicles are registered in Sussex County and with this ZIP code, this regulation is not applicable; see AE.135.1.DE. instead.)</p> <p>Verify that no on-road heavy-duty motor vehicle operates for more than 3 consecutive minutes when the vehicle is not in motion.</p> <p>(NOTE: The following are exempt from the above requirements:</p> <ul style="list-style-type: none"> <li>- any on-road heavy duty motor vehicle which is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control</li> <li>- any situation where it is necessary to bring the on-road heavy duty vehicle to the manufacturer's recommended operating temperature</li> <li>- any situation when the on-road heavy duty vehicle is being repaired</li> <li>- any emergency vehicle defined in Section 2.0 of this regulation</li> <li>- any vehicle using a auxiliary power for equipment to perform the intended operation of the vehicle, including, by way of example, a power take off generator for any utility truck</li> <li>- any vehicle idling for the necessary power for a heater, air conditioner, or any ancillary equipment during sleeping or resting in a sleeper berth such that the vehicle's location is not within 25 miles of a parking facility with available truck stop electrification equipment, either shore power or an advance system that is approved by the Department including meeting all compatibility requirements with existing onboard truck shore power equipment</li> <li>- any vehicle idling to verify that the vehicle is in safe operating condition as required by law and that all equipment is in good working order, either as part of a daily vehicle inspection or as otherwise needed, provided that such</li> </ul>

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	engine idling is mandatory for such verification - any transit or school bus for up 5 minutes prior to passenger boarding - any transit or school bus when passengers are onboard - any vehicle when providing heat to the occupant and when the temperature is between -23 and 0 C, or -10 and 32 F, an engine is not idle for more than 15 consecutive minutes; or when the temperature is below -23 C or -10 F, and where no nuisance is created, an engine is not subject to idling restrictions - any military tactical vehicle engaged in training operations.

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<p><b>AE.145.</b></p> <p><b>ASPHALT PAVING MATERIALS/ OPERATIONS</b></p>	
<p><b>AE.145.1.DE.</b> [Deleted January 2008].</p>	<p>(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Section 34 is reserved.)</p>
<p><b>AE.145.2.DE.</b> [Deleted January 2008].</p>	<p>(NOTE: DE 70 100 024 renumbered to DE 7 1000 1124 and revised. Section 34 is reserved.)</p>

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<p><b>AE.155.</b></p> <p><b>OTHER EMISSIONS/SOURCES</b></p> <p><b>AE.155.1.DE.</b> [Deleted December 2008].</p> <p><b>AE.155.2.DE.</b> [Deleted December 2008].</p> <p><b>AE.155.3.DE.</b> Sources of SO<sub>2</sub> in Kent and Sussex Counties must comply with Department directives concerning ambient air quality ( DE 7 1000 111 0) [Citation Revised January 2007; Citation Revised December 2008].</p>	<p>(NOTE: DE 70 100 021 revised and renumbered.)</p> <p>(NOTE: DE 70 100 009 revised and renumbered.)</p> <p>Verify that existing sources of SO<sub>2</sub> comply with Department-issued directives concerning ambient air quality.</p> <p>Verify that new sources of SO<sub>2</sub> comply with Department-issued directives concerning ambient air quality.</p> <p>(NOTE: New source requirements do not apply to watercraft emitting less than 3.0 lb/h of SO<sub>2</sub>. If a source is subject to 2 SO<sub>2</sub> emissions limitations, the more stringent limitation applies.)</p>

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<p><b>AEROSPACE MANUFACTURING / REWORK FACILITIES</b></p> <p><b>AE.170. General</b></p> <p><b>AE.170.1.DE.</b> Aerospace manufacturing and rework facilities must meet VOC content limits for coatings (DE 7 1000 1124, Sections 10.1, 10.3.4 through 10.3.7) [Added December 2003 ; Citation Revised January 2007; Citation Revised January 2008].</p>	<p>Verify that aerospace manufacturing and rework facilities do not exceed the VOC content limits for coatings as listed in Appendix 1-6.</p> <p>(NOTE: Facilities may choose to use alternate compliance methods that meet the requirements of AE.170.4.DE. or AE.170.5.DE.)</p> <p>(NOTE: Except as provided for below, this Section applies to any owner or operator of any aerospace manufacturing or rework facility that conducts any of the following operation(s):</p> <ul style="list-style-type: none"> <li>- hand-wipe cleaning</li> <li>- spray gun cleaning</li> <li>- flush cleaning</li> <li>- primer, topcoat, self-priming topcoat, and specialty coating application</li> <li>- the depainting of the outer surface of aerospace vehicles (except for depainting parts or units normally removed during depainting)</li> <li>- Type I or Type II chemical milling maskant application</li> <li>- handling and storage.)</li> </ul> <p>(NOTE: Except for the requirements for handling and storing solvents in AE.170.3.DE., this Section does not apply to the following operations in any aerospace manufacturing or rework facility:</p> <ul style="list-style-type: none"> <li>- chemical milling</li> <li>- metal finishing</li> <li>- electrodeposition (except for the electro-deposition of paints)</li> <li>- composite processing operations ( except for cleaning and coating of composite parts or components that become part of an Aerospace vehicle or component as well as composite tooling that comes in contact with such composite parts or components prior to cure).)</li> </ul> <p>(NOTE: The requirements of this Section do not apply to aerospace manufacturing or rework facilities whose plant-wide, actual emissions from covered operations without control devices are less than 6.8 kilograms (kg) (15 pounds) of volatile organic compounds (VOCs) per day.)</p> <p>(NOTE: Any facility that becomes or is currently subject to the provisions of this Section by exceeding the applicability threshold of 6.8 kilograms (kg) (15 pounds) of volatile organic compounds (VOCs) per day remain subject to these provisions even if its emissions later fall below the applicability threshold. Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air</p>

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<p><b>AE.170.2.DE.</b> Aerospace manufacturing and repair facilities must meet VOC control requirements for cleaning operations ( DE 7 1000 1 124, Sections 10. 3.1 through 10.3.3) [ Added December 2003 ; Citation Revised January 2007 ; Citation Revised January 2008].</p>	<p>Act Amendments of 1977 by exceeding an applicability threshold is and remains subject to these provisions, even if its throughput or emissions later fall below the applicability threshold.)</p> <p>(NOTE: See AE.170.1.DE. for applicability and exemption notes.)</p> <p>Verify that there is no use of any cleaning solvent in any hand-wipe cleaning operation that does not comply with one of the following limits:</p> <ul style="list-style-type: none"> <li>- VOC composite vapor pressure is less than 45 millimeters mercury ( 1.8 inches Hg) at 20 degrees Celsius (68 degrees Fahrenheit)</li> <li>- cleaning solvent is an aqueous cleaning solvent (i.e., a solvent in which water is at least 80 percent of the solvent, as applied).</li> </ul> <p>(NOTE: The requirements of the preceding paragraph do not apply to the following hand-wipe cleaning operations:</p> <ul style="list-style-type: none"> <li>- cleaning during the manufacture, assembly, installation, maintenance, or testing of components of breathing oxygen systems that are exposed to the breathing oxygen</li> <li>- cleaning during the manufacture, assembly, installation, maintenance, or testing of parts, subassemblies, or assemblies that are exposed to strong oxidizers or reducers (e.g., nitrogen tetroxide, liquid oxygen, and hydrazine)</li> <li>- cleaning and surface activation prior to adhesive bonding</li> <li>- cleaning of electronics and assemblies containing electronics</li> <li>- cleaning of aircraft fluid system and ground support equipment fluid systems that are exposed to the fluid, including air-to-air heat exchangers and hydraulic fluid systems</li> <li>- cleaning of fuel cells, fuel tanks, and limited-access spaces</li> <li>- surface cleaning of solar cells, coated optics, and thermal control surfaces</li> <li>- cleaning during fabrication, assembly, installation, and maintenance of upholstery, curtains, carpet, and other textile materials used on the interior of the aircraft</li> <li>- cleaning of metallic and non-metallic materials used in honeycomb cores during the manufacture or maintenance of these cores, and cleaning of the completed cores used in the manufacture of aerospace vehicles or components</li> <li>- cleaning of aircraft transparencies</li> <li>- cleaning associated with research and development, quality control, and laboratory testing.)</li> </ul> <p>Verify that there is no use of any spray gun cleaning techniques that does not comply with one of the following:</p> <ul style="list-style-type: none"> <li>- use of an enclosed spray gun cleaning system that is kept closed when not in use</li> <li>- non-atomized discharge of solvent into a waste container that is kept closed</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AE.170.3.DE.</b> Aerospace manufacturing and rework facilities must meet VOC handling and storage requirements ( DE 7 1000 1124, Sections 10.3.8) [Added December 2003 ; Citation Revised January 2007 ; Citation Revised January 2008].</p> <p><b>AE.170.4.DE.</b> Aerospace manufacturing and rework facilities choosing to meet VOC content limits through</p>	<p>when not in use</p> <ul style="list-style-type: none"> <li>- disassembly of the spray gun and placing the parts for cleaning in a vat that is kept closed when not in use</li> <li>- atomized spray into a waste container that is fitted with a device that captures atomized solvent emissions</li> <li>- any alternative technique that has been demonstrated to, and accepted by the Department as producing emissions that are equal to or less than the emissions from the techniques specified above.</li> </ul> <p>Verify that any enclosed spray gun cleaner is visually inspected for leaks, at least once per month, while the enclosed spray gun cleaner is in operation.</p> <p>Verify that leaks from any enclosed spray gun cleaner are repaired as soon as practicable, but no later than 15 days from when the leak is first discovered.</p> <p>Verify that if any leak is not repaired by the 15th day after detection, the solvent is removed and the enclosed cleaner shut down until the leak is repaired.</p> <p>Verify that any cleaning solvents used during flush cleaning operations are handled pursuant to the requirements of AE.170.3.DE. (see below).</p> <p>(NOTE : See AE.170.1.DE. for applicability and exemptions.)</p> <p>Verify that good house keeping measures are used when handling any VOC and any VOC-containing material at the facility, including:</p> <ul style="list-style-type: none"> <li>- handling and transferring all fresh and spent cleaning solvent and other VOC-containing material to or from any container, tank, vat, vessel, or piping system, etc. in such a manner that minimizes losses</li> <li>- storing all fresh and spent solvents and VOC-containing material in closed containers at all times except during filling or emptying</li> <li>- placing all solvent-laden cloths, papers, or other absorbent materials in closed containers immediately after use.</li> </ul> <p>(NOTE: These requirements do not apply to wastes that are determined to be hazardous wastes under the Resource Conservation and Recovery Act of 1976 (PL 94-580) (RCRA), as implemented by 40 Code of Federal Regulations (CFR) Parts 260 and 261, and that are subject to RCRA requirements, as implemented in 40 CFR Parts 262 through 268.)</p> <p>(NOTE: As an alternative to complying with the individual limits specified in Appendix 1 -6, coatings in any primer, topcoat, chemical milling maskant, or specialty coating application operation may be applied at the facility, so long as</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>daily-weighted averaging limitations must meet specific requirements ( DE 7 1000 1124, Sections 10. 4) [Added December 2003 ; Citation Revised January 2007 ; Citation Revised January 2008].</p> <p><b>AE.170.5.DE.</b> Aerospace manufacturing and rework facilities choosing to meet VOC content limits through use of control devices must meet specific requirements (DE 7 1000 1124, Sections 10.5) [Added December 2003; Citation Revised January 2007; Citation Revised January 2008].</p>	<p>the requirements of this checklist item are met.</p> <p>Verify that during any day, no primer, topcoat, chemical milling maskant, or specialty coating application operation is conducted where the daily-weighted average VOC content, calculated in accordance with the procedure specified in Appendix "C" of Regulation 24, exceeds the applicable emission limits listed in Appendix 1-6.</p> <p>Verify that there is no averaging between primers, topcoats, self-priming topcoats, chemical milling maskants and/or specialty coatings.</p> <p>Verify that there is no averaging between coatings used in operations where air emissions are not captured and controlled and coatings used in operations where air emissions are captured and controlled.</p> <p>(NOTE: As an alternative to complying with the individual limits specified in Appendix 1 -6, a facility may meet the requirements of this checklist item for control devices.)</p> <p>Verify that a tany facility opting to comply with VOC control requirements through the use of control devices, for any primer, topcoat, self-priming topcoat, chemical milling maskant, and/or specialty coating application operation the facility:</p> <ul style="list-style-type: none"> <li>- installs, tests, calibrates, operates, maintains, and monitors according to the manufacturer's specifications, as approved by the Department, an air pollution control device consisting of a capture and control system on that operation</li> <li>- demonstrates that the overall emission reduction efficiency achieved is equal to or greater than 81 weight percent.</li> </ul> <p>(NOTE: The procedures in Appendix "D" and Appendix "E" of Regulation 24 will be used to demonstrate compliance with paragraph (e)(1)(ii) of this Section. The method in Appendix "I" of Regulation 24 may be used to determine an alternative multi-day rolling period when calculating the efficiency of any carbon absorption system.)</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>AEROSPACE MANUFACTURING/ REWORK FACILITIES</b></p> <p><b>AE.172. Recordkeeping/Reporting</b></p> <p><b>AE.172.1.DE.</b> [Deleted December 2004].</p>	<p>(NOTE: DE 70 100 021, Section 11 is equivalent to CFR 40 61.32.)</p>

## Appendix 1-1

### Ambient Air Quality Standards for Specific Emissions

(Source: DE 7 1000 1103 Sections 3.1, 3.2, 4.1, 4.2, 5.1, 5.2, 6.1, 7.1, 8.1, 9.1, 10.1, and 11.1)  
[Revised December 2000; Citation Revised January 2007; Citation Revised December 2008]

#### A. The Primary Ambient Air Quality Standards for Particulate Matter

An annual geometric mean of 75 micrograms/m<sup>3</sup> not to be exceeded, based upon 24-h average concentrations  
A value of 260 micrograms/m<sup>3</sup> not to be exceeded more than once per year, based upon 24-h average concentrations.

#### B. The Secondary Ambient Air Quality Standards for Particulate Matter

An annual geometric mean of 60 micrograms/m<sup>3</sup> as a guideline for achieving the secondary standard based upon 24-h average concentrations  
A value of 150 micrograms/m<sup>3</sup> not to be exceeded more than once per year, based upon 24-h average concentration.

#### C. The Primary Ambient Air Quality Standards for Sulfur Oxides Measured as SO<sub>2</sub>

An annual geometric mean of 80 g/m<sup>3</sup> (0.003 ppm) not to be exceeded, based upon 24-h average concentrations  
A 24-h average value of 365 g/m<sup>3</sup> (0.14 ppm) not to be exceeded more than once per year, based upon 24-h average concentrations.

#### D. The Secondary Ambient Air Quality Standards for Sulfur Oxides Measured as SO<sub>2</sub>

A 3-h average value of 1300 micrograms/m<sup>3</sup> (0.5 ppm), not to be exceeded more than once per year.

#### E. Carbon Monoxide

The average concentration of CO taken over any consecutive 8-h must not exceed a value of 10 mg/ m<sup>3</sup> (9 ppm) more than once per year

The average concentration of CO taken over any 1-h period must not exceed 40 mg/m<sup>3</sup> (35 ppm) more than once per year.

#### F. Ozone

The average number of days per calendar year with a maximum 1-h average value exceeding 235 g/ m<sup>3</sup> (0.12 ppm) must be equal to or less than one, averaged over three consecutive years.

#### G. Hydrocarbons

To be used as a guideline in devising implementation plans to achieve the ozone standard, the average concentration of hydrocarbons, exclusive of methane, taken over a 3-h period from 6:00 p.m. to 9:00 a.m. (local time) must not exceed 160 micrograms/m<sup>3</sup> (0.24 ppm) more than once per year.

#### H. Nitrogen Dioxide

The annual arithmetic mean concentration of NO<sub>2</sub> must not exceed 100 micrograms/m<sup>3</sup> (0.005 ppm).

#### I. Hydrogen Sulfide

The average concentration of hydrogen sulfide taken over any consecutive 3 min must not exceed 0.06 ppm  
the average concentration of hydrogen sulfide taken over any consecutive 60 min must not exceed 0.03 ppm

#### J. Lead

The 24-h concentration of lead averaged over a calendar quarter must not exceed 1.5 micrograms/m<sup>3</sup>.

**K. The Primary and Secondary Ambient Air Quality Standards for PM<sub>10</sub> Particulates**

150 micrograms/m<sup>3</sup>, 24-h average concentration: The standards are attained when the expected number of days per calendar year with a 24-h average concentration above 150 micrograms/m<sup>3</sup> is equal to or less than one.

50 micrograms/m<sup>3</sup>, annual arithmetic mean: The standards are attained when the expected annual arithmetic mean concentration is less than or equal to 50 micrograms/m<sup>3</sup>.

**J. The Primary and Secondary Ambient Air Quality Standards for Particulate Matter, measured as PM<sub>2.5</sub>**

65 micrograms/m<sup>3</sup>, 24-h average concentration: The 24-hour primary and secondary PM<sub>2.5</sub> standards are met when the 98th percentile 24-h concentration, as determined in accordance with 40 CFR, Part 50, Appendix N, as found in the Federal Register dated July 18, 1997, on page 38757 -38758, is less than or equal to 65 micrograms/m<sup>3</sup>.

15.0 micrograms/m<sup>3</sup> annual arithmetic mean concentration: The annual primary and secondary PM<sub>2.5</sub> standards are met when the annual arithmetic mean concentration, as determined in accordance with 40 CFR, Part 50, Appendix N, as found in the Federal Register dated July 18, 1997, on page 38756 - 38757, is less than or equal to 15.0 micrograms/m<sup>3</sup>.

**Appendix 1-2**

**Emission Limits for HMIWIs**

(Source: DE 7 100 020 and 7 100 029(q)) [Added December 1998; Citation Revised January 2007]

Pollutant	Units (7 percent oxygen, dry basis)	Emission Limits		
		HMIWI Size		
		Small	Medium	Large
Particulate Matter	milligrams per dry standard cubic meter (grains per dry standard cubic foot)	115 (0.05)	69 (0.03)	34 (0.015)
Carbon monoxide	parts per million by volume	40	40	40
Dioxins/furans	nanograms per dry standard cubic meter total dioxins/furans (grains per billion dry standard cubic feet), or	125 (55)	125 (55)	125 (55)
	nanograms per dry standard cubic meter total dioxins/furans TEQ (grains per dry standard cubic feet)	2.3 (1.0)	2.3 (1.0)	2.3 (1.0)
Hydrogen Chloride	parts per million by volume or percent reduction	100 or 93 percent	100 or 93 percent	100 or 93 percent
Sulfur dioxide	parts per million by volume	55	55	55
Nitrogen oxides	parts per million by volume	250	250	250
Lead	milligrams per dry standard meter (grains per thousand dry standard cubic feet) or percent reduction	1.2 (0.52) or 70 percent	1.2 (0.52) or 70 percent	1.2 (0.52) or 70 percent
Cadmium	milligrams per dry standard meter (grains per thousand dry standard cubic feet) or percent reduction	0.16 (0.07) or 65 percent	0.16 (0.07) or 65 percent	0.16 (0.07) or 65 percent
Mercury	milligrams per dry standard meter (grains per thousand dry standard cubic feet) or percent reduction	0.55 (0.24) or 85 percent	0.55 (0.24) or 85 percent	0.55 (0.24) or 85 percent

### Appendix 1-3

#### Delaware RMP Regulated Substances

(Source: DE 7 1000 1201, Sections 6.2, 6.3 and 6.4)

[Added December 1999; Revised January 2007; Citation Revised January 2008]

#### Section 6.2.1 Additional Delaware Regulated Toxic Substances

Table 4 lists the extremely toxic substances and the sufficient quantities at a distance of 100 meters in pounds per hour that are regulated by the State of Delaware only.

Note: T = EPA listed toxic, F = EPA listed flammable

Table 4. Regulated Delaware Toxic Substances and Sufficient Quantities.

Chemical Name	CAS #	Sufficient Quantity (lb/hr)	EPA Listed
Acrolein	107-02-8	150	T
Acrylyl chloride	814-68-6	200	T
Allylamine	107-11-9	1,500	T
Arsine	7784-42-1	70	T
BIS (chloromethyl ether)	542-88-1	70	T
Boron trichloride	10294-34-5	2,100	T
Boron trifluoride	7637-07-2	250	T
Bromine pentafluoride	7789-38-2	1,600	
Bromine	7726-95-6	700	T
Bromine chloride	13863-41-7	1,000	
Carbon disulfide (liquid)	75-15-0	3500	
Carbonyl fluoride	353-58-4	2,100	
Chlorine	7782-50-5	1,300	T
Chlorine dioxide	10049-04-4	600	T
Chlorine pentafluoride	13637-63-3	700	
Chlorine trifluoride	7790-91-2	1,700	
Chloromethyl methyl ether	107-30-2	400	T
Chloropicrin	76-06-2	450	
Cyanogen	460-19-5	1,600	F
Cyanogen chloride	506-77-4	300	T
Cyanuric fluoride	675-14-9	40	
Diazomethane	334-88-3	400	
Diborane	19287-45-7	80	T
Dichloroacetylene	7572-29-4	200	
Dichlorosilane	4189-96-8	2,500	F
Ethylene fluorohydrin	371-62-8	20	
Ethyleneimine	151-56-4	1,000	T
Fluorine	7782-41-4	600	T
Formaldehyde	50-00-0	700	T

<b>Chemical Name</b>	<b>CAS #</b>	<b>Sufficient Quantity (lb/hr)</b>	<b>EPA Listed</b>
Furan	110-00-9	300	T
Hexafluoroacetone	684-16-2	7,500	
Hexafluoroacetone	648-16-2	6,000	
Hydrogen bromide	10035-10-6	3,700	
Hydrogen chloride (anhydrous)	7647-01-0	5,000	T
Hydrogen cyanide	74-90-8	600	T
Hydrogen fluoride	7664-39-3	900	T
Hydrogen selenide	7783-07-5	150	T
Hydrogen sulfide	7783-06-4	3,100	T
Iron pentacarbonyl	13463-40-6	200	T
Isopropyl formate	625-55-8	300	
Isopropylamine	75-35-1	4,000	
Ketene	463-51-4	70	
Methacryloyl chloride	920-46-7	150	
Methacryloyloxethyl isocyanate	30674-00-7	60	
Methane sulfenyl chloride trichloro-	594-42-3	200	
Methyl acrylonitrile	126-98-7	200	T
Methyl bromide	74-83-9	17,000	
Methyl chloroformate	79-22-1	400	T
Methyl fluoroacetate	453-18-9	60	
Methyl fluorosulfate	421-20-5	50	
Methyl hydrazine	60-34-4	90	T
Methyl isocyanate	624-83-9	80	T
Methyl mercaptan	74-93-1	4,300	T
Methyl vinyl ketone	78-94-4	15	
Methyltrichlorosilane	75-79-6	2,000	T
Nickel carbonyl	13463-39-3	150	
Nitric acid (94.5 wt percent or greater)	7697-37-2	300	
Nitric oxide	10102-43-9	200 as NO(2)	
Nitrogen oxides	10102-44-0	200 as NO(2)	
Oleum (65 wt percent or greater)	8014-95-7	700 as SO(3)	
Osmium tetroxide	20816-12-0	20	
Oxygen difluoride	7783-41-7	10	
Ozone	10028-15-6	20	
Pentaborane	19624-22-7	20	
Perchloromethyl mercaptan	594-42-3	150	T
Perchloryl fluoride	7616-94-6	3,600	
Phosgene	75-44-5	90	T
Phosphine	7803-51-2	150	T
Phosphorous trichloride	7719-12-2	1900	T
Propargyl bromide	106-96-7	10	

Chemical Name	CAS #	Sufficient Quantity (lb/hr)	EPA Listed
Sarin	107-44-8	15	
Selenium hexafluoride	7783-79-1	900	
Stibine	7803-52-3	170	
Sulfur dioxide (liquid)	7446-09-5	900	T
Sulfur pentafluoride	5714-22-7	250	
Sulfur tetrafluoride	7783-60-0	200	T
Sulfur trioxide	7446-11-9	700	T
Tellurium hexafluoride	7783-80-4	200	
Tetrafluorohydrazine	10086-47-2	4,700	
Thionyl chloride	7719-09-7	1100	
Trichloro (chloromethyl) silane	1558-25-4	70	
Trichloro (dichlorophenyl) silane	27137-85-5	1,800	
Trichlorosilane	10025-78-2	3,300	F
Trimethoxysilane	2487-98-3	600	

#### 6.2.2 Calculation of Sufficient Quantity for Toxic Mixtures.

- (1) To determine whether a mixture containing a regulated substance is to be regulated, the owner or operator shall calculate the substance hazard index (SHI) as follows:

$$\text{SHI}(\text{mixture}) = \text{SHI}(\text{pure regulated substance}) \times \text{Mole fraction of regulated substance in mixture}$$

As an alternative, the owner or operator may calculate the SHI of the mixture using equilibrium vapor pressure for the pure regulated substance above the mixture at 20°C.

- (2) If the SHI calculated for the mixture is 8000 then the mixture shall be subject to the provision of this regulation.
- (3) The sufficient quantity for the mixture shall be calculated as follows:

$$\text{SQ} = \frac{\text{SQ regulated substance}}{\text{Weight fraction of regulated substance}}$$

6.2.3 Calculation of Potential Release Quantity (PRQ). Owners or operators with a regulated toxic substance present in a process that is equal to or greater than the sufficient quantity shall calculate the maximum PRQ in accordance with the provisions of paragraph 6.50(b)(8).

6.2.4 Applicability. If any potential release quantity equals or exceeds the sufficient quantity, then the owner or operator shall develop and implement a risk management program.

### Section 6.3 Additional Delaware Regulated Flammable and Combustible Substances

6.3.1 Flammable and Combustible liquids. The following flammable and combustible liquids and gases that are handled, used, produced, or stored equal to or greater than their sufficient quantities shall be regulated:

- (1) All flammable gases (a regulated flammable substance that exists as a gas at standard pressure and temperature).
- (2) Flammable and combustible liquids that are held at or above their atmospheric boiling point (benzene, gasoline and hexane have been included in Table 5 as examples of these higher boiling combustible substances which can be regulated if enough is present to form a vapor cloud greater than the sufficient quantity); and
- (3) Flammable and combustible liquids which are held below ambient temperatures through refrigeration, but whose vapor pressure at 86°F is greater than one atmosphere.

6.3.2 Flammable and combustible liquid exemption. Flammable and combustible liquids handled, used, produced or stored in atmospheric tanks below their atmospheric boiling point without the benefit of chilling or refrigeration are not regulated herein.

6.3.3 Partial list of flammable and combustible liquids. Table 5 lists some of the most common flammable and combustible substances and their sufficient quantity release rates at a distance of 100 meters in pounds per minute.

Table 5. Partial List of Delaware Regulated Flammable Substances.

Chemical Name	CAS #	Boiling Point (°F)	Sufficient Quantity Pounds/Minute	EPA Listed
Acetaldehyde	75-07-0	69	4100	F
Acetylene	74-86-2	-118	1900	F
Ammonia	7664-41-7	-28	6700	T
Benzene	71-43-2	176	2600	
1,3 Butadiene	106-99-0	24	2800	F
Butane	106-97-8	31	3000	F
Butene	25167-67-3	21	2800	F
1-Butene	106-98-9	37.8	2700	F
2-Butene	107-01-7	37.8	2700	F
2-Butene trans	624-64-6	34	2800	F
2-Butene cis	590-18-1	38.7	2700	F
Carbon Monoxide	7791-21-1	-314	11,000	
2-Chloropropylene [1-Propene, 2-chloro]	557-98-2	73	8000	F
Cyclopropane	75-19-4	-29	2800	F
Difluoroethane [Ethane, 1,1-difluoro-]	75-37-6	-61	7300	F
Dimethylamine	124-40-3	45	3000	F
Dimethylpropane [Propane, 2,2-dimethyl-]	463-82-1	49	2900	F
Ethane	74-84-0	-128	2800	F
Ethyl acetylene	107-00-6	47	3000	F
Ethylamine	75-04-7	62	4000	F
Ethylene	74-85-1	-155	2300	F
Ethyl oxide	75-21-8	51	3300	T



Chemical Name	CAS #	Boiling Point (°F)	Sufficient Quantity Pounds/Minute	EPA Listed
Ethyl Chloride	75-00-3	54	4600	F
Gasoline	8006-61-9	100-400	3300	
Hexane	100-64-3	156	2800	
Hydrogen	1333-74-0	-422	300	F
Isobutane [Propane, 2-methyl]	75-28-5	11	2900	F
Isopentane [Butane, 2-methyl]	78-78-4	82	2900	F
Methane	74-82-8	-259	2500	F
Methylamine	74-89-5	21	3900	F
3-Methyl-1-butene	563-45-1	68	3000	F
Methyl Ether	115-10-6	-11	4200	F
2-Methylpropene [1-Propene, 2-methyl-]	115-11-7	20	2900	F
1,3 Pentadinene	504-60-9	-45	2900	F
Propane	74-98-6	-44	2700	F
Propylene	115-07-1	-53	2600	F
1-Propyne	74-99-7	-10	2200	F
Silane	7803-62-5	-169	2200	F
Tetramethylsilane	75-76-3	80	3600	F
Trimethylamine	75-50-3	38	3000	F
Vinyl chloride	75-35-4	7	5300	F
Vinyl fluoride	75-38-7	-97.5	6000	F
Vinyl methyl ether	107-25-5	43	4100	F

(d) Calculation of the sufficient quantity. The sufficient quantity release rate for all flammable and combustible substances at a distance of 100 meters from the stationary source boundary shall be calculated using the following formula and by using propane as the release rate reference substance:

$$SQR(x) = SQR(p) \frac{MW(x)}{MW(p)} \frac{LFL(x)}{LFL(p)} \frac{BP(p) + 294}{BP(x) + 294} \frac{HC(p)}{HC(x)} \frac{[0.81]}{[0.72]} \frac{[0.33]}{[0.20]}$$

where:

- SQR(x) = Sufficient Quantity Release Rate for Substance X in lbs vapor/min
- SQR(p) = Sufficient Quantity Release Rate for Propane in lbs vapor/min
- MW(x) = Molecular weight substance X
- MW(p) = Molecular Weight Propane = 44
- LFL(x) = Lower Flammable Limit of Substance x
- LFL(p) = Lower Flammable Limit of Propane = 2.1 percent
- BP(x) = Boiling Point of Substance X in °K
- BP(p) = Boiling Point of Propane in °K
- HC(p) = Heat of combustion of propane in Btu/lb = 19,944 Btu/lb
- HC(x) = Heat of combustion of substance in Btu/lb

(e) Calculation of Potential Release Quantity. Owners or operators with a regulated flammable or combustible substance present in a process that is equal to or greater than the sufficient quantity shall calculate the maximum PRQ in accordance with the provisions of paragraph 6.50(b)(8).

(f) Applicability. If any potential release quantity equals or exceeds the sufficient quantity, then the owner or operator shall develop and implement a risk management program.

#### Section 6.4 Delaware Regulated Explosive Substances

6.4.1 Delaware regulated explosive substances are listed in Table 6 with their sufficient quantities in pounds at 100 meters.

Table 6. Delaware Regulated Explosive Substances.

Substance	CAS #	Sufficient Quantity at 100 Meters or Less (Pounds)	EPA Listed
Alkylaluminums (as tri- n-butylaluminum)	1116-70-7	4700	
Ammonium perchlorate	7790-98-9	6900	
Ammonium nitrate	6484-52-0	6200	
Ammonium permanganate	13446-10-1	6900	
Bromine trifluoride	7787-71-5	15000	
3-Bromopropyne	106-96-7	6100	
Butyl Hydroperoxide (tertiary)	75-91-2	3600	
Butyl Perbenzoate (tertiary)	614-45-9	6300	
Butyl Peroxyacetate (tertiary)	107-71-1	4300	
Butyl Peroxypivalate (tertiary)	927-07-1	8600	
Cellulose nitrate (not explosive grade)	9004-70-0	2300	
Chlordiethylaluminum	96-10-6	4100	
1-Chloro-2,4-dinitrobenzene	97-00-7	3000	
Cumene hydroperoxide	80-15-9	4400	
Diacetyl peroxide (55 percent solution)	110-22-5	4200	
Dibenzoyl peroxide	94-36-0	6100	
Dibutyl peroxide (Tertiary)	110-05-4	4700	
Diethylzinc	557-20-0	7700	
Diisopropyl peroxydicarbonate	105-64-6	5200	
Dilauroyl peroxide	105-74-8	5800	
2,4-Dinitroaniline	97-02-9	3000	
1,2-Dinitrobenzene, ortho	528-29-0	2700	
1,3-Dinitrobenzene, meta	99-65-0	2700	
1,4-Dinitrobenzene, para	100-25-4	2700	

Substance	CAS #	Sufficient Quantity at 100 Meters or Less (Pounds)	EPA Listed
2,3-Dinitrotoluene	602-01-7	3100	
2,4-Dinitrotoluene	121-14-2	3100	
2,5-Dinitrotoluene	619-15-8	3100	
2,6-Dinitrotoluene	606-20-2	3100	
3,4-Dinitrotoluene	610-39-9	3100	
3,5-Dinitrotoluene	618-85-8	3100	
Ethyl methyl ketone peroxide	19393-67-0	2700	
Ethyl nitrite	109-95-5	2800	F
Hydrogen peroxide (52 percent by weight or greater)	7722-84-1	5700	
Hydroxylamine	7803-49-8	2500	
2-Nitroaniline, ortho	88-74-4	3800	
3-Nitroaniline, meta	90-09-2	3800	
4-Nitroaniline, para	100-01-6	3800	
Nitroethane	79-24-3	2800	
Nitromethane	75-52-5	2300	
Perchloric acid	7601-90-3	12000	
Peroxyacetic Acid (60 percent acetic acid solution)	79-21-0	3200	T
Picric acid	88-89-1	2500	
Propyl Nitrate (normal)	627-13-4	2700	
Tetrafluoroethylene monomer	116-14-3	7500	F
1,2,4-Trinitrobenzene		2300	
2,3,4-Trinitrotoluene	602-29-3	2600	
2,3,5-Trinitrotoluene		2600	
2,3,6-Trinitrotoluene		2600	
2,4,5-Trinitrotoluene	610-25-3	2600	
2,4,6-Trinitrotoluene	118-96-7	2600	
3,4,5-Trinitrotoluene		2600	

6.4.2 Calculation of Potential Release Quantity. The potential release quantity for explosive substances is the sum of all physical quantities which are used, handled, produced, or stored in the process and which are neither separated by a distance of 100 meters nor are barricaded as defined in the explanatory notes for NFPA 495, Table 6-4.1.

6.4.3 Applicability. If any potential release quantity equals or exceeds the sufficient quantity, then the owner or operator shall develop and implement a risk management program.

**Appendix 1-4**

**Alert Stages: Sources and Requirements**

(Source: DE 7 1000 1115, Section 3)

[Added December 2000; Citation Revised January 2007; Citation Revised 2009].

Table 1. Emission Reduction Objectives: Alert-Stage I:

<b>Source</b>	<b>Alert-Stage I</b>
1. Coal or oil-fired electric power generating facilities.	a. Substantial reduction by utilization of fuels having low ash and sulfur content. b. Maximum utilization of atmospheric mixing for boiler lancing and soot blowing at times to be specified by the Department. c. Substantial reduction by diverting electric power generation to facilities outside an Alert Area.
2. Coal or oil-fired generating facilities having a capacity to burn in excess of four tons of coal or 600 gallons of oil per hour.	a. Substantial reduction by utilization of fuels having low ash and sulfur content. b. Maximum utilization of atmospheric mixing for boiler lancing and soot blowing at times to be specified by the Department. c. Substantial reduction of steam load demands consistent with continuing plant operations.
3. A. Manufacturing industries of the following classifications which employ twenty employees at one location: Primary Metals, Petroleum Refining & Related Chemical & Allied Products Plastic Paper & Allied Products Glass, Clay and Hot Mix Plants, and  B. Other persons required by the Department to prepare plans.	a. Substantial reduction of air contaminants for manufacturing operations by curtailing, postponing or deferring production and allied operations. b. Maximum reduction by deferring trade waste disposal operations which emit particles, gases, vapors or malodorous substances. c. Maximum reduction of heat load demands for processing. d. Maximum utilization atmospheric mixing for boiler lancing and soot blowing at times to be specified by the Department.

Table II. Emission Reduction Objectives: Alert-Stage II.

Source	Alert-Stage II
1. Coal or oil-fired electric power generating facilities.	<p>a. Maximum reduction by utilization of fuels having lowest ash and sulfur content.</p> <p>b. Maximum utilization of atmospheric mixing for boiler lancing and soot blowing at times to be specified by the Department.</p> <p>c. Maximum reduction by diverting electric power generation to facilities outside Alert Area.</p>
2. Coal or oil-fired generating facilities having a capacity to burn in excess of four tons of coals or 600 gallons of oil per hour.	<p>a. Maximum reduction by utilization of fuels having the lowest available ash and sulfur content.</p> <p>b. Maximum utilization of atmospheric mixing for boiler lancing and soot blowing at times to be specified by the Department.</p> <p>c. Making ready for use a plan of action to be taken if an emergency develops.</p>
3. A. Manufacturing industries of the following classifications which employ more than twenty employees at one location: Primary Metals Petroleum Refining & Related Chemical & Allied Products Plastic Paper & Allied Products Glass, Clay & Hot Mix Plants	<p>a. Maximum reduction of air contaminants from manufacturing operations by, if necessary, assuming economic hardship by postponing production and allied operations.</p> <p>b. Maximum reduction by deferring trade waste disposal operations which emit particles, gases, vapors, or malodorous substances.</p> <p>c. Maximum reduction of heat load demands for processing.</p> <p>d. Maximum utilization of atmospheric mixing for boiler lancing and soot blowing at times to be specified by the Department.</p>
B. Other persons required by the Department to prepare plans.	

Table III. Emission Reduction Objectives: Alert-Emergency Stage.

Source	Alert-Emergency Stage
1. Coal or oil-fired electric power generating facilities.	<p>a. Maximum reduction by utilization of fuels having lowest ash and sulfur content.</p> <p>b. Maximum utilization of atmospheric mixing for boiler lancing and soot blowing at times to be specified by the Department.</p> <p>c. Maximum reduction by diverting electric power generating to facilities outside of Alert Area.</p>
2. Coal or oil-fired process steam generating facilities having a capacity to burn in excess of four tons of coal or 600 gallons of oil per hour.	a. Cease operation.
3. A. Manufacturing industries of the following classification which employ more than twenty employees at one location: Primary Metals Petroleum Refining and Related Chemical and Allied Products Paper Plastics and Allied Products Glass, Clay & Concrete Products And	b. Cease operation.
B. Other industries required by the Department to prepare stand-by plans.	

## Appendix 1-5

### Architectural Coating VOC Content Limits

(Source: DE 7 1000 1141, Section 1.3.2 and Table 1-1) [Citation Revised January 2010

[Added December 2002; Revised January 2007; Citation Revised January 2008; Citation Revised December 2008]

NOTE: If anywhere on the container of any architectural coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature supplied by the manufacturer or anyone acting on their behalf, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in the table below, then the most restrictive VOC content limit shall apply. This provision does not apply to the following coating categories:

1. Antenna coatings.
2. Anti-fouling coatings.
3. Bituminous roof primers.
4. Calcimine recoaters
5. Fire-retardant coatings
6. Flow coatings
7. High-temperature coatings
8. Impacted immersion coatings
9. Industrial maintenance coatings
10. Lacquer coatings (including clear lacquer sanding sealers)
11. Low-solids coating
12. Metallic pigmented coatings
13. Nuclear coatings
14. Pre-treatment wash primers
15. Shellacs
16. Specialty primers, sealers, and undercoaters
17. Temperature-indicator safety coatings
18. Thermoplastic rubber coatings and mastic
19. Wood preservatives

Note: Limits are expressed in grams of VOC per liter of coating thinned to the manufacturer's maximum recommendation (as indicated on the label or lid of the coating container), excluding the volume of any water, exempt compounds, or colorant added to tint bases.

Coating Category	VOC Content Limit (g/L of coating, including water and exempt compounds)
Flat Coatings	100
Non-Flat Coatings	150
Non-Flat -- High Gloss Coatings	250
<b>Specialty Coatings</b>	
Antenna Coatings	530 *
Anti-fouling Coatings	400
Bituminous Roof Coatings	300
Bituminous Roof Primers	350
Bond Breakers	350
Calcimine Recoaters	475*

<b>Coating Category</b>	<b>VOC Content Limit (g/L of coating, including water and exempt compounds)</b>
Clear Wood Coatings	
Clear Brushing Lacquers	680
Lacquers (including clear lacquer sanding sealers)	550
Sanding Sealers (other than clear lacquer sanding sealers)	350
Varnishes	350
Conversion Varnish	725 *
Concrete Curing Compounds	350 *
Concrete Surface Retarders	780*
Dry Fog Coatings	400 *
Faux Finishing Coatings	350
Fire-resistive Coatings	350
Fire-retardant Coatings	
Clear	650
Opaque	350
Floor Coatings	250
Flow Coatings	420
Form-Release Compounds	250
Graphic Arts Coatings (Sign Paints)	500 *
High-Temperature Coatings	420
Impacted Immersion Coatings	780*
Industrial Maintenance Coatings	340
Low-Solids Coatings	120 *
Magnesite Cement Coatings	450
Mastic Texture Coatings	300 *
Metallic Pigmented Coatings	500
Multi-Color Coatings	250
Nuclear Coatings	450*
Pre-Treatment Wash Primers	420
Primers, Sealers, and Undercoaters	200
Quick-Dry Enamels	250
Quick-Dry Primers, Sealers and Undercoaters	200
Recycled Coatings	250
Roof Coatings	250
Rust Preventive Coatings	400 *
Shellacs	
Clear	730
Opaque	550
Specialty Primers, Sealers, and Undercoaters	350
Stains	250

<b>Coating Category</b>	<b>VOC Content Limit (g/L of coating, including water and exempt compounds)</b>
Swimming Pool Coatings	340
Swimming Pool Repair and Maintenance Coatings	340
Temperature-Indicator Safety Coatings	550
Thermoplastic Rubber Coatings and Mastic	550 *
Traffic Marking Coatings	150 *
Waterproofing Sealers	250
Waterproofing Concrete/Masonry Sealers	400
Wood Preservatives	350

\* Indicates limits and definition unchanged from the Federal rule (40 CFR 59 Subpart D) "National Volatile Organic Compound Emission Standards for Architectural Coatings" which is still in effect.

(1) Units are grams of VOC per liter of coating, including water and exempt compounds.



## Appendix 1-6

### Aerospace Coating VOC Content Limits

(Source: DE 7 1000 1124, Section 10.1.4 through 10.1.7)

[Added December 2003; Citation Revised January 2007; Citation Revised January 2008]

(NOTE: Numbering retained from regulation to facilitate referencing.)

4. Primer, Topcoat, and Self-Priming Topcoat Application.
  - i. Except as provided for in paragraph (c)(4)(ii), (d) and (e) of this Section, no person subject to this Section shall cause or allow on any day the application of any primer, topcoat, and/or self-priming topcoat with a VOC content that does not comply with the following limits:
    - A. Primers shall have a VOC content equal to or less than 350 g/L (2.9 lb/gal), excluding water and exempt compounds, as applied.
    - B. Topcoats and self-priming topcoats shall have a VOC content equal to or less than 420 g/L (3.5 lb/gal), excluding water and exempt compounds, as applied.
  - ii. The requirements of paragraphs (c)(4)(i)(B) of this Section shall not apply to facilities that use less than 50 gallons per consecutive rolling 12-month period of a particular formulation of topcoat, or self-priming topcoat provided:
    - A. Each topcoat and self-priming topcoat shall have a VOC content equal to or less than 720 g/L (6.0 lb/gal), excluding water and exempt compounds as applied.
    - B. A total of not more than 200 gallons per consecutive rolling 12-month period of all such high VOC coatings are used at the facility.
  - iii. Except as provided for in paragraph (c)(4)(iv) of this Section, no person subject to this Section shall cause or allow on any day the use of any application technique to apply any primer, topcoat, or self-priming topcoat other than the following:
    - A. flow/curtain coat, roll coat, brush coat, dip coat, cotton-tip swab application, electrostatic spray, electrodeposition, or high volume low pressure (HVLP) spray guns;
    - B. Any alternate technique that has been demonstrated to and accepted by the Department as providing emissions that are less than or equal to the emissions from HVLP or electrostatic spray application techniques. Emissions from any alternate techniques shall be demonstrated pursuant to test protocols that are approved in advance by the Department. Such tests shall, at a minimum, compare the emission levels determined using an initial 90-day period of HVLP or electrostatic spray attraction techniques with the emission levels determined using the alternate technique for a period of time necessary to coat the equivalent amount of parts with the same coatings.
  - iv. The equipment standards and application techniques in paragraph (c)(4)(iii) of this Section shall not apply to the following primer, topcoat and self-priming topcoat application operations:
    - A. The application of coatings in any limited access space.
    - B. The application of coatings that contain fillers that adversely affect atomization with HVLP spray guns and cannot be applied by any of the application techniques specified in paragraph (c)(4)(iii) of this Section.
    - C. The application of coatings that normally have a dried film thickness of less than 0.0005 inches and cannot be applied by any of the application techniques specified in paragraph (c)(4)(iii) of this Section.
    - D. The use of airbrush application methods for stenciling, lettering, and other identification markings.
    - E. Any touch-up and repair operation.
  - v. All application equipment shall be operated according to the manufacturer's specifications at all times, even if it is exempt from the equipment standards specified in paragraph (c)(4)(iii) of this Section.
5. Depainting Operation. No person subject to this Section shall cause or allow on any day the use of any stripper that does not comply with one of the following limits:
  - i. VOC composite vapor pressure shall be less than 10 mm Hg (0.4 in. Hg) at 20(C (68(F)).
  - ii. VOC content shall be less than 400 g/L (3.3 lb/gal), excluding water and exempt compounds, as applied.

6. Chemical Milling Maskant Application. Except as provided for in paragraph (d) or (e) of this Section, no person subject to this Section shall cause or allow on any day the application of any chemical milling maskant with a VOC content that does not comply with the following emission limits:

- i. For any Type I maskant, VOC content equal or less than 622 g/L (5.2 lbs/gal), excluding water and exempt compounds, shall be applied; or
- ii. For any Type II maskant, VOC content equal or less than 160 g/L (1.3 lbs/gal), excluding water and exempt compounds, shall be applied.

7. Specialty Coatings. Except as provided for in paragraph (d) or (e) of this Section, no person subject to this Section shall cause or allow on any day the application of any specialty coating that has a VOC content, excluding water and exempt compounds, as applied, that is greater than the limits specified in Table 7-1:

**Table 7-1. VOC Content Limits for Specialty Coatings (g/L)\***

<b>Coating Type</b>	<b>Limit</b>
Ablative Coating	600
Adhesives:	
Commercial Interior Adhesive	760
Cyanoacrylate Adhesive	1,020
Fuel Tank Adhesive	620
Nonstructural Adhesive	360
Rocket Motor Bonding Adhesive	890
Rubber-based Adhesive	850
Structural Autoclavable Adhesive	60
Structural Nonautoclavable Adhesive	850
Adhesion promoter	890
Adhesive Bonding Primers:	
Cured at 250°F or below	850
Cured above 250°F	1,030
Antichafe coating	660
Bearing coating	620
Caulking and smoothing compounds	850
Chemical Agent-Resistant Coating	550
Clear Coating	720
Commercial exterior aerodynamic structure primer	650
Compatible Substrate Primer	780
Corrosion Prevention Compound	710
Cryogenic Flexible Primer	645
Cryoprotective Coating	600
Dry Lubricative Material	880
Electric or Radiation-Effect Coating	800
Electrostatic Discharge and Electromagnetic Interference (EMI) Coating	800
Elevated-Temperature Skydrol-Resistant Commercial Primer	740
Epoxy Polyamide Topcoat	660
Fire-Resistant (interior) Coating	800
Flexible Primer	640
Flight-Test Coatings:	
Missile or Single Use Aircraft	420
All other	840

<b>Coating Type</b>	<b>Limit</b>
Fuel-Tank Coating	720
High-Temperature Coating	850
Insulation Covering	740
Intermediate Release Coating	750
Lacquer	830
Maskants (excluding Type I and Type II):	
Bonding maskant	1,230
Critical Use and Line Sealer Maskant	1,020
Seal Coat Maskant	1,230
Pretreatment Coating	780
Rain Erosion-Resistant Coating	850
Rocket Motor Nozzle Coating	660
Scale Inhibitor	880
Screen Print Ink	840
Sealants:	
Extrudable/Rollable/Brushable Sealant	280
Sprayable Sealant	600
Silicone Insulation Material	850
Solid Film Lubricant	880
Specialized Function Coating	890
Temporary Protective Coating	320
Thermal Control Coating	800
Wet Fastener Installation Coating	675
Wing Coating	850

Coating limits expressed in terms of mass (grams) of VOC per volume (liters) of coating less water and less exempt solvent. To convert from g/L to lbs/gallon multiply by 0.00835.



## SECTION 2

### CULTURAL RESOURCES MANAGEMENT

#### Delaware Supplement, January 2010

This section covers the state requirements for Cultural Resources Management and is intended to supplement the TEAM Guide. Refer to the TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

#### Definitions

- *Committee* - a body consisting of the Chief of the Nanticoke Indian Tribe, two members appointed by the chief, the Director, and two members appointed by the Director and a seventh member from the private sector appointed by the Governor (Delaware Code, Title 6, Section 5402) [Citation Revised January 2007; Citation Revised December 2008].
- *Director* - Director of the Division of Historical and Cultural Affairs, Department of the State (Delaware Code, Title 6, Section 5402) [Citation Revised January 2007; Citation Revised December 2008].
- *Human Skeletal Remains or Remains* - any part of the body of a deceased human being in any stage of decomposition (Delaware Code, Title 6, Section 5402) [Citation Revised January 2007; Citation Revised December 2008].
- *Professional Archaeologist* - a person having:
  1. a graduate degree in archaeology, anthropology, history, another related field with a specialization in archaeology
  2. a minimum of 1 yr experience in conducting basic archaeological field research, including the excavation and removal of human skeletal remains
  3. designed and executed an archaeological study and presented written results and interpretations of such study (Delaware Code, Title 6, Section 5402) [Citation Revised January 2007; Citation Revised December 2008].
- *Unmarked Human Burial* - any interment of human skeletal remains for which there exists no grave marker or any other historical documentation providing information as to the identity of the deceased (Delaware Code, Title 6, Section 5402) [Citation Revised January 2007; Citation Revised December 2008].

**CULTURAL RESOURCES MANAGEMENT  
GUIDANCE FOR DELAWARE CHECKLIST USERS**

**REFER TO CHECKLIST ITEMS:**

Missing Checklist Items	CR.2.1.DE.
Archaeological/Indian Sites	CR.15.1.DE. and CR.15.2.DE.
Collection Management and Curation	CR.20.1.DE.

**COMPLIANCE CATEGORY:  
CULTURAL RESOURCES MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>CR.2.</b></p> <p><b>MISSING CHECKLIST ITEMS</b></p> <p><b>CR.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

**COMPLIANCE CATEGORY:  
CULTURAL RESOURCES MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>CR.15.</b></p> <p><b>ARCHAEOLOGICAL/ INDIAN SITES</b></p> <p><b>CR.15.1.DE.</b> The excavation or removal of archaeological resources on lands owned or controlled by the state is prohibited ( Delaware Code, Title 7, Chapter 53, Sections 5308, 5312 and 5313) [Citation Revised January 2007 ; Citation Revised December 2008 ; Citation Revised January 2010].</p> <p><b>CR.15.2.DE.</b> Specific notification requirements must be met upon the discovery of human burials or human skeletal remains (Delaware Code, Title 7, Chapter 54, Sections 5403, 5406 and 5407) [Citation</p>	<p>Verify that archaeological resources or artifacts in or on lands owned or controlled by the state are not excavated, collected, defaced, injured, destroyed or otherwise disturbed or altered from their surrounding location or context without a permit from the state.</p> <p>(NOTE: Archaeological resources and artifacts are defined to include any remains of past human life or activity that are at least 50 years old.)</p> <p>Verify that archaeological resources or artifacts are not sold, transferred, exchanged, transported, purchased, or received unless the artifact or resource has been obtained in an approved manner.</p> <p>(NOTE: The State of Delaware discourages excavations on privately owned lands and requests that the Anthropology Department of the University of Delaware or the Director is notified of any archaeological and scientific information and/or objects discovered on privately owned lands.)</p> <p>Verify that on lands owned or controlled by the state, not tools or devices designed, modified or commonly used for the excavation or removal of archaeological resources or artifact are possessed or used without a valid authorization or permit for use of such tools and devices.</p> <p>(NOTE: These regulations do not apply to the following:  - activities of state agencies that are already subject to Federal archaeological resources or artifact laws or regulations  - activities of state agencies not intended as archaeological activities such as surveying, soil testing, construction, or property maintenance  - public use areas on lands along the Atlantic Coast from Cape Henlopen south to the state line situated between the mean low water line and the base of the primary dune unless otherwise posted.)</p> <p>(NOTE: Human skeletal remains acquired from commercial biological supply houses or through medical means are exempt from these regulations.)</p> <p>Verify that the Medical Examiner or the Director is immediately notified of any unmarked human burials or human skeletal remains.</p> <p>Verify that, if unmarked burials or human skeletal remains are encountered as a</p>



**COMPLIANCE CATEGORY:  
CULTURAL RESOURCES MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>Revised January 2007 ; Citation Revised December 2008; Citation Revised January 2010].</p>	<p>result of construction or agricultural activities, the following actions are taken:</p> <ul style="list-style-type: none"> <li>- construction or agricultural activities ceases immediately</li> <li>- the Medical Examiner or the Director is notified of the discovery.</li> </ul> <p>Verify that, if human burials or human skeletal remains are encountered by a professional archaeologist as a result of survey or excavations, the following is done:</p> <ul style="list-style-type: none"> <li>- the Director is notified</li> <li>- excavation and other activities resume after obtaining approval from the Director.</li> </ul> <p>Verify that all excavations not under the jurisdiction of the Medical Examiner are either conducted by or under the supervision of a professional archaeologist.</p> <p>Verify that the Committee is notified of all skeletal remains determined to be Native American within 5 days of discovery.</p> <p>Verify that Native American skeletal remains are reinterred within 90 days unless an extension is granted by the Committee.</p> <p>Verify that the following acts do not occur (excluding actions involving remains under the jurisdiction of the Medical Examiner or a required during a approved excavations supervised by a professional archaeologist):</p> <ul style="list-style-type: none"> <li>- acquisition of any human skeletal remains removed from unmarked burials in Delaware unless appropriate approvals are obtained</li> <li>- selling of any human skeletal remains acquired from unmarked burials in Delaware</li> <li>- knowing exhibition of human skeletal remains.</li> </ul>

**COMPLIANCE CATEGORY:  
CULTURAL RESOURCES MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>CR.20.</b></p> <p><b>COLLECTION MANAGEMENT AND CURATION</b></p> <p><b>CR.20.1.DE.</b> All objects of historical or archaeological value found on state lands must be deposited in an approved repository (Delaware Code, Title 7, Chapter 53, Section 5311) [Citation Revised January 2007; Citation Revised December 2008 ; Citation Revised January 2010].</p>	<p>Verify that all objects of historical or archaeological value or interest found on archaeological sites controlled by the state, along with their related records, and researched under a permit are deposited for permanent preservation in one of the following locations:</p> <ul style="list-style-type: none"> <li>- the Archaeological Museum of the University of Delaware</li> <li>- the Division of Historical and Cultural Affairs</li> <li>- a Director-approved repository.</li> </ul>

## SECTION 3

### HAZARDOUS MATERIALS MANAGEMENT

#### Delaware Supplement, January 2010

This section covers the state requirements for Hazardous Materials Management and is intended to supplement the U.S. TEAM Guide. Refer to the U.S. TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

#### Definitions

- *Chemical Name* - the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation (Delaware Statutes, Title 16, Part II, Chapter 24, 2403) [Added December 2008].
- *Common Name* - any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name (Delaware Statutes, Title 16, Part II, Chapter 24, 2403) [Added December 2008].
- *Delaware Reportable Quantity (DRQ)* - the Reportable quantity of chemicals, substances, or mixtures listed in Appendix 3-1 not withholding any reporting requirements by other state, Federal, county, or local government statutes, regulations, or ordinances. To be reportable, the DRQ is based on the total quantity discharged over a rolling 24 hour period (DE 7 1000 1100 1.6) [Revised December 2002; Citation Revised December 2004; Citation Revised January 2008; Citation Revised December 2008].
- *Discharge* - any spilling, leaking, pumping, pouring, emitting, emptying, releasing, injecting, escaping, leaching, dumping, or disposing into the environment of any chemical or substance listed in Appendix 3-1, but excludes emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, waterborne vessel, or pipeline pumping station engine. Discharge includes any environmental release (DE 7 1000 1100 1.6) [Revised December 2002; Citation Revised December 2004; Citation Revised December 2008].
- *Employee* - any person who may be exposed to hazardous chemicals in that person's workplace under normal operating conditions or foreseeable emergencies. Office workers, grounds maintenance, security and nonresident management personnel are not included unless their job performances routinely involve potential exposure to hazardous chemicals. For the purposes of this chapter, "employee" includes persons working for the State and its political subdivisions, as well as members of volunteer emergency service organizations (Delaware Statutes, Title 16, Part II, Chapter 24, 2403) [Added December 2008].
- *Environmental Release* - any spillage, leakage, emission, discharge, or delivery into the air or waters or on or into the lands of this State, of any sewage of 10,000 gallons or more, oil, industrial waste, liquid waste, hydrocarbon chemical, hazardous substance, hazardous waste, restricted chemical material, vessel discharge, air contaminant, pollutant, regulated biological substance or other wastes reportable pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 as amended, or this Regulation (DE 7 1000 1100 1.6) [Added December 2002; Citation Revised December 2004; Citation Revised December 2008].
- *Expose or Exposure* - that an employee is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.) and includes potential (e.g., accidental or possible) exposure (Delaware Statutes, Title 16, Part II, Chapter 24, 2403) [Added December 2008].

- *Extremely Hazardous Substance (EHS)* - means substances listed in 40 CFR Part 355 Appendices A and B as amended May 7, 1996 (DE 7 1000 1100 1.6) [Citation Revised December 2004; Revised December 2008].
- *Hazardous Chemical* - any element, chemical compound or mixture of elements and/or compounds which is a physical hazard or health hazard as defined by the OSHA standard in 29 CFR 1910.1200 (c) or a hazardous substance as defined by the OSHA standard in 29 CFR 1910.1200 (d)(3) (Delaware Statute Title 16, Part II, Chapter 24, Section 2403) [Revised January 2008].
- *Hazardous Substance*: (a) any hazardous waste as defined in 7 Del.C. Ch. 63 or any hazardous waste designated by regulation promulgated pursuant to 7 Del.C. Ch. 63; (b) any hazardous substance as defined in CERCLA or regulations promulgated pursuant thereto; (c) petroleum, including crude oil or any fraction thereof; however, any release of hazardous substances from an underground storage tank which is regulated by 7 Del.C. Ch. 74 or regulations promulgated thereto is not subject to these regulations except that such a release is eligible for funding under Subsection 14.1; (d) Any substance in sufficient concentrations which the Secretary through regulation determines may present risk to the public health, welfare, or the environment (DE 7 100 0 1375, Section 2) [Added January 2010].
- *Heating Oil* - petroleum that is of one of nine technical grades. These are: (DE 7 1000 1100 1.6) [Citation Revised December 2004; Citation Revised December 2008].
  1. No. 1
  2. No. 2
  3. No. 4-light
  4. No. 4-heavy
  5. No. 5-light
  6. No. 5-heavy
  7. No. 6 technical grade of fuel oil
  8. other residual fuel oils (including Navy Special Fuel Oil and Bunker C)
  9. other fuels used as substitutes for one of these fuels such as kerosene or diesel when used for heating purposes. Heating oil is typically used in the operation of heating equipment, boilers, or furnaces.
- *Imminent Threat Of Release* - potential for a release which requires action to prevent or mitigate any adverse impact to the environment or endangerment to public health or welfare which may result from such a release (DE 7 1000 1375, Section 2) [Added January 2010].
- *Manufacturing Employer* - an employer with a workplace classified in SIC Codes 20 through 39 who manufactures or uses a hazardous chemical (Delaware Statutes, Title 16, Part II, Chapter 24, 2403) [Added December 2008].
- *Material Safety Data Sheet (MSDS)* - a document containing chemical hazard and safe handling information, provided that, after November 25, 1985, MSDS shall mean a document prepared in accordance with the requirements of the OSHA standard for such document (Delaware Statutes, Title 16, Part II, Chapter 24, 2403) [Added December 2008].
- *Nonmanufacturing Employer or Employer* - an employer with a workplace in a SIC Code, other than 20 through 39, the State, its political subdivisions, and all volunteer emergency service organizations (Delaware Statutes, Title 16, Part II, Chapter 24, 2403) [Added December 2008].
- *OSHA Standard* - the hazard communication standard issued by the Occupational Safety and Health Administration in 48 Federal Register 53280 et seq. (November 25, 1983), to be codified under Title 29 of the Code of Federal Regulations (CFR) Part 1910.1200 (Delaware Statutes, Title 16, Part II, Chapter 24, 2403) [Added December 2008].

- *Motor Fuel* - petroleum or petroleum-based substance that is motor gasoline, aviation gasoline, jet fuel, No. 1 or No. 2 diesel fuel, or any grade of gasohol, and is typically used in the operation of a motor engine (DE 7 1000 1100 1.6) [Revised December 2002; Citation Revised December 2004; citation Revised December 2008].
- *Petroleum Substance* - oil or any kind or in any form, including but not limited to petroleum, fuel oil, heating oil, sludge, oil refuse, and oil mixed with wastes other than dredge spoil. Vegetable-based oils such as soybean oil are not included (DE 7 1000 1100 1.6) [Revised December 2002; Citation Revised December 2004; Citation Revised December 2008].
- *Sewage* - water-carried human or animal wastes from septic tanks, water closets, residences, buildings, industrial establishments, or other places, together with such ground water infiltration, subsurface water, and mixtures of industrial wastes or other wastes as may be present (DE 7 1000 1100 1.6) [Revised December 2002; Citation Revised December 2004; Citation Revised December 2008].
- *Release* - any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of a hazardous substance, pollutant or contaminant into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant), but excludes: (DE 7 1000 1375, Section 2) [Added January 2010]
  1. any release which results in exposure to a person solely within his or her workplace, with respect to a claim which such person may assert against his or her employer; provided, however, that this exclusion does not apply to any such release which also results in exposure to the environment;
  2. emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel or pipeline pumping station engine;
  3. the appropriate and legal application of fertilizers and pesticides; and
  4. any discharges in compliance with State permits issued in conformance with Title 7 of the Delaware Code and federally permitted releases under CERCLA.
- *Work Area* - a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present (Delaware Statutes, Title 16, Part II, Chapter 24, 2403) [Added December 2008].
- *Workplace* - an establishment at 1 geographical location containing 1 or more work areas (Delaware Statutes, Title 16, Part II, Chapter 24, 2403) [Added December 2008].
- *Workplace Chemical List* - the list of hazardous chemicals developed pursuant to § 2406 of this title or subsection (e)(i) of the OSHA standard (Delaware Statutes, Title 16, Part II, Chapter 24, 2403) [Added December 2008].

**HAZARDOUS MATERIALS MANAGEMENT  
GUIDANCE FOR DELAWARE CHECKLIST USERS**

**REFER TO CHECKLIST ITEMS:**

Missing Checklist Items	HM.2.1.DE.
Personnel Training	HM.10.1.DE. and HN.10.2.DE.
Releases of Hazardous Materials	HM.20.1.DE. through HM.20.4.DE.
Emergency Planning	HM.25.1.DE. through HM.25.5.DE.
Right-to-Know	HM.30.1.DE. through HM.30.12.DE.

**HAZARDOUS MATERIALS MANAGEMENT  
GUIDANCE FOR DELAWARE APPENDIX USERS**

**REFER TO APPENDIX NUMBERS:**

**REFER TO APPENDIX TITLES:**

3-1	Delaware Reportable Quantities
3-2	[Deleted December 2004]
3-3	Chemicals Exempt from Emergency Planning and Right-to-Know Statutes
3-4	[Deleted December 2008]
3-5	[Deleted December 2008]
3-6	[Deleted December 2008]

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>HM.2.</b></p> <p><b>MISSING CHECKLIST ITEMS</b></p> <p><b>HM.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>HM.10.</b></p> <p><b>PERSONNEL TRAINING</b></p> <p><b>HM.10.1.DE.</b> [Deleted December 2004].</p> <p><b>HM.10.2.DE.</b> Employers must provide annual training for employees using or handling hazardous chemicals (Delaware Statutes, Title 16, Part I, Chapter 24, 2410) [Added December 2008].</p>	<p>(NOTE: The Regulation for the Management of Extremely Hazardous Substances was replaced in its entirety by the Accidental Release Prevention Regulation. See HM.25.DE. for details.)</p> <p>Verify that every employer provides, at least annually, an education and training program for employees using or handling hazardous chemicals.</p> <p>Verify that additional instruction is provided whenever the potential for exposure to hazardous chemicals is altered or whenever new and significant information is received by the employer concerning the hazards of a chemical.</p> <p>Verify that newly assigned employees are provided training before working with or in a work area containing hazardous chemicals.</p> <p>Verify that the training program includes, as appropriate, the following:</p> <ul style="list-style-type: none"> <li>- information on interpreting labels and material safety data sheets and the relationship between these 2 methods of hazards communication</li> <li>- the location, acute and chronic effects, safe handling, protective equipment to be used and first aid treatment with respect to the hazardous chemicals used by the employees</li> <li>- general safety instructions on the handling, cleanup procedures and disposal of hazardous chemicals.</li> </ul> <p>Verify that employers keep a record of the dates of training sessions given to employees.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>HM.20.</b></p> <p><b>RELEASES OF HAZARDOUS MATERIALS</b></p> <p><b>HM.20.1.DE.</b> Releases of a Delaware Reportable Quantity (DRQ) (Appendix 3 -1) must meet specific reporting requirements ( DE 7 1000 1100 2 .0 and 3. 0) [ Revised December 2002 ; Citation Revised December 2008].</p>	<p>(NOTE: See P O.15.DE. in this Supplement for petroleum release reportable quantities and reporting requirements. See S O.125.DE. for infectious waste discharge reporting requirements.)</p> <p>Verify that those responsible for an environmental release or discharge of air contaminant into the air, a pollutant into surface water, groundwater, or land, or disposal of solid waste in excess of any DRQ report the discharge immediately upon discovery to the Department.</p> <p>(NOTE: Discharges that are wholly contained in a building are exempt from reporting the incident unless there is injury or death.)</p> <p>(NOTE: Discharge in compliance with a validly issued state or federal permit or in compliance with other state and federal regulations are exempt from this regulation.)</p> <p>(NOTE: Any discharge that is continuous and stable in quantity and rate under the definitions in 40 CFR 302.8 (b) is exempt from reporting requirements of this regulation except:</p> <ul style="list-style-type: none"> <li>- initial notifications as required by 40 CFR part 302.8 (d) and (e)</li> <li>- "statistically significant increase" as defined in 40 CFR 302.8(b)</li> <li>- notification of a "new release" as defined in 40 CFR 302.8(g) (1)</li> <li>- notification of a change in the normal range of the release as required under 40 CFR 302.8(g) (2).</li> </ul> <p>Telephone notification required by 40 CFR 302.8 to the State of Delaware State Emergency Response Commission (SERC) will be fulfilled by notifying the Department. Written notification reports required by 40 CFR 302.8 and sent to the EPA regional office will serve as written notification to the State of Delaware SERC when copied to the Department.)</p> <p>(NOTE: Reports of a discharge of a DRQ of solid particles of antimony, lead, nickel, selenium, silver, thallium, zinc, or any other solid substance on the DRQ list, is not required where the particles are larger than 100 micrometers (0.004 in.).)</p> <p>Verify that any facility responsible for an incident involving the discharges of more than one chemical listed in Appendix 3 -1 figures the DRQ for the total discharge as the lowest DRQ of any constituent of the total.</p> <p>Verify that all injuries and deaths resulting from a discharge are reported to the</p>

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<p><b>HM.20.2.DE.</b> [Deleted December 2000].</p> <p><b>HM.20.3.DE.</b> When required by the Department, responsible parties must undertake appropriate response activities to abate, minimize, stabilize, mitigate,</p>	<p>Department.</p> <p>Verify that reports to the Department include:</p> <ul style="list-style-type: none"> <li>- facility name and/or location</li> <li>- type of incident</li> <li>- chemical or substance involved</li> <li>- indication of whether the substance is an extremely hazardous substance (EHS)</li> <li>- estimate of the quantity discharged</li> <li>- beginning time and duration of discharge</li> <li>- medium or media into which discharge occurred</li> <li>- known or anticipated acute or chronic health risks and medical advice necessary for exposed individuals</li> <li>- proper precautions to take as a result of the discharge</li> <li>- name of reporting person and call-back number.</li> </ul> <p>Verify that, except for petroleum substances, sewage, or infectious waste releases, the following information is included in a written report within 30 days of the incident:</p> <ul style="list-style-type: none"> <li>- actions taken to respond to and contain the discharge</li> <li>- known or anticipated acute or chronic health risks</li> <li>- medical advice necessary for exposed individuals</li> <li>- facts and circumstances leading to the environmental release including a detailed identification of the pathway through which the discharge to the environment occurred and potential environmental impacts</li> <li>- measures proposed to prevent such a discharge from occurring in the future and to remedy the deficiencies, if any, in the prevention, detection, response containment, cleanup or removal plan components</li> <li>- such other information that the Department may require.</li> </ul> <p>(NOTE: Injuries reported more than 7 days after the incident are not required to be reported.)</p> <p>Verify that the responsible party follows Departmental orders to abate, minimize, stabilize, mitigate, or eliminate the threat of, or the imminent threat of, the release of a hazardous material.</p> <p>(NOTE: Responsible parties will be identified by the Department.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>or eliminate the threat of release or imminent threat of release of hazardous substances (DE 7 100 0 1375 Section 1 and 3. 1) [ Revised December 2008 ; Revised January 2010].</p>	<p>(NOTE: Facilities with a release or imminent threat of release of hazardous substances may be identified by the Department through a variety of mechanisms including, but not limited to, any of the following:</p> <ul style="list-style-type: none"> <li>- Reports to or investigations by the Department;</li> <li>- Reports to or from, or investigations, by the Delaware Department of Health and Social Services</li> <li>- Reports to or from, or investigations, by the Delaware Department of Transportation</li> <li>- Reports to or from, or investigations, by other local government agencies</li> <li>- Reports to or from, or investigations, by the State Police or other law enforcement agencies</li> <li>- Reports to or from, or investigations, by the State Fire Marshal's Office or any Fire Department</li> <li>- Reports to or from, or investigations, by the United States Environmental Protection Agency or other Federal agencies</li> <li>- Other reporting sources including but not limited to impacted public, neighboring facilities, public contractors, consultants and other sources of information about the existing releases</li> <li>- Reports to or from, or investigations by, the Delaware Division of Emergency Planning and Operations.)</li> </ul>
<p><b>HM.20.4.DE.</b> [Deleted December 2008].</p>	<p>(NOTE: 70 100 10 3. Delaware Regulations Governing Hazardous Substance Cleanup covers the administrative processes and standards for cleanups.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>HM.25.</b></p> <p><b>EMERGENCY PLANNING</b></p> <p><b>HM.25.1.DE.</b> [Deleted December 2004].</p> <p><b>HM.25.2.DE.</b> Employers or manufacturing employers who normally store a hazardous chemical in excess of 55 gallons or 500 lbs must provide information for emergency planning (Delaware Statutes, Title 16, Part I I, Chapter 24, 2409) [Added December 2004].</p> <p><b>HM.25.3.DE.</b> [Deleted December 2008].</p> <p><b>HM.25.4.DE.</b> [Deleted December 2008].</p>	<p>(NOTE: The Regulation for the Management of Extremely Hazardous Substances was replaced in its entirety by the Accidental Release Prevention Regulation.)</p> <p>(NOTE: <i>Nonmanufacturing Employer or Employer</i> - an employer with a workplace in a SIC Code, other than 20 through 39, the State, its political subdivisions, and all volunteer emergency service organizations. ( Delaware Statutes, Title 16, Part II, Chapter 24, 2403).)</p> <p>Verify that employers who normally store a hazardous chemical in excess of 55 gallons or 500 lbs. provide the fire chief of the fire department having jurisdiction over the workplace, in writing, the name and telephone number of knowledgeable representatives of the employer who can be contacted for further information or in case of an emergency.</p> <p>Verify that each employer provides a copy of the workplace chemical list to the fire chief, upon request.</p> <p>Verify that the employer notifies the fire chief of any significant changes that occur in the workplace chemical list.</p> <p>(NOTE: The fire chief or the fire chief's representative, upon request, must be permitted on site inspections of the chemicals on the workplace chemical list for the sole purpose of preplanning fire department activities in the case of an emergency.)</p> <p>Verify that the employer provides the fire chief, upon request, a copy of the MSDS for any chemical on the workplace chemical list.</p> <p>(NOTE: See Appendix 3-3 for Exemptions from Chapter 24.)</p> <p>(NOTE: See AE.1.1.DE. and AE.1.4.US.)</p> <p>(NOTE: See AE.1.1.DE. and AE.1.4.US.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<b>HM.25.5.DE.</b> [Deleted December 2008].	(NOTE: See AE.1.1.DE. and AE.1.4.US.)

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<b>HM.30.</b>	
<b>RIGHT-TO-KNOW</b>	
<b>HM.30.1.DE.</b> [Deleted November 1996].	
<b>HM.30.2.DE.</b> [Deleted December 2000].	(NOTE: Regulation revised.)
<b>HM.30.3.DE.</b> [Deleted December 2000].	(NOTE: Regulation revised.)
<b>HM.30.4.DE.</b> [Deleted December 2004].	(NOTE: The Regulation for the Management of Extremely Hazardous Substances was replaced in its entirety by the Accidental Release Prevention Regulation.)
<b>HM.30.5.DE.</b> [Deleted December 2004].	(NOTE: The Regulation for the Management of Extremely Hazardous Substances was replaced in its entirety by the Accidental Release Prevention Regulation.)
<b>HM.30.6.DE.</b> [Deleted December 2004].	(NOTE: The Regulation for the Management of Extremely Hazardous Substances was replaced in its entirety by the Accidental Release Prevention Regulation.)
<b>HM.30.7.DE.</b> [Deleted December 2004].	(NOTE: The Regulation for the Management of Extremely Hazardous Substances was replaced in its entirety by the Accidental Release Prevention Regulation.)
<b>HM.30.8.DE.</b> [Deleted December 2004].	(NOTE: The Regulation for the Management of Extremely Hazardous Substances was replaced in its entirety by the Accidental Release Prevention Regulation.)
<b>HM.30.9.DE.</b> [Deleted	(NOTE: The Regulation for the Management of Extremely Hazardous Substances

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December 2004].	was replaced in its entirety by the Accidental Release Prevention Regulation.)
<b>HM.30.10.DE.</b> [Deleted December 2004].	(NOTE: The Regulation for the Management of Extremely Hazardous Substances was replaced in its entirety by the Accidental Release Prevention Regulation.)
<b>HM.30.11.DE.</b> [Deleted December 2004].	(NOTE: The Regulation for the Management of Extremely Hazardous Substances was replaced in its entirety by the Accidental Release Prevention Regulation.)
<b>HM.30.12.DE.</b> Employers must compile and maintain a workplace chemical list for each hazardous chemical used or stored in excess of 55 gal or 500 lbs (Delaware Statutes, Title 16, Part II, Chapter 24, 2406) [ Added December 2004; Revised December 2008].	<p>(NOTE: <i>Nonmanufacturing Employer or Employer</i> - an employer with a workplace in a SIC Code, other than 20 through 39, the State, its political subdivisions, and all volunteer emergency service organizations ( Delaware Statutes, Title 16, Part II, Chapter 24, 2403).)</p> <p>Verify that employers compile and maintain a workplace chemical list that contains the following information for each hazardous chemical normally used or stored in the workplace in excess of 55 gallons or 500 lbs:</p> <ul style="list-style-type: none"> <li>- the chemical name or the common name used on the MSDS and/or container label</li> <li>- the work area in which the hazardous chemical is normally stored or used.</li> </ul> <p>Verify that the workplace chemical list is updated as necessary but not less than annually.</p> <p>(NOTE: The workplace chemical list may be prepared for the workplace as a whole or for each work area, provided that the list is readily available to employees and their representatives.)</p> <p>Verify that new or newly assigned employees are made aware of the workplace chemical list before working with or in a work area containing hazardous chemicals.</p> <p>Verify that the workplace chemical list is maintained by the employer for 30 years.</p> <p>Verify that complete records are sent to the Secretary if the business ceases to operate within the State.</p> <p>(NOTE: The workplace chemical list must be provided to the Secretary upon request.)</p>

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	(NOTE: See Appendix 3-3 for Exemptions from Chapter 24.)



### Appendix 3-1

#### Delaware Reportable Quantities

(Source: DE 7 1000 1100, Section 3 Table A)

[Added December 1997; Revised December 2002; Revised December 2004; Citation Revised December 2008]

CAS		Name	DRQ
	DE	* Infectious waste	ALL*
	DE	* Petroleum subs., other than heating oil, motor fuel, used oil	150 gal.*
	DE	* Petroleum substances, heating oil, motor fuel, used oil	25 gal.*
	DE	* 10,000 gallons sewage	10,000 gal*.
71751412	DE	Abamectin	100
83329		Acenaphthene	100
208968		Acenaphthylene	5000
30560191	DE	Acephate	100
75070		Acetaldehyde	1000
75876		Acetaldehyde, trichloro-	5000
60355		Acetamide	100
64197		Acetic acid	5000
108247		Acetic anhydride	5000
67641		Acetone	5000
75865		Acetone cyanohydrin	10
1752303		Acetone thiosemicarbazide	1000
75058		Acetonitrile	5000
98862		Acetophenone	5000
53963		2-Acetylaminofluorene	1
506967		Acetyl bromide	5000
75365		Acetyl chloride	5000
74862	DE	Acetylene	F 1000**
591082		1-Acetyl-2-thiourea	1000
62476599	DE	Acifluorfen, sodium salt	100
107028		Acrolein	1
79061		Acrylamide	5000
79107		Acrylic acid	5000
107131		Acrylonitrile	100
814686		Acrylyl chloride	100
124049		Adipic acid	5000
111693		Adiponitrile	1000
15972608	DE	Alachlor	100
116063		Aldicarb	1
1646884		Aldicarb sulfone	1
309002		Aldrin	1
1116707	DE	Alkylaluminums	500
28057489	DE	d-trans-Allethrin	100
107119		Allylamine	50
107186		Allyl alcohol	100
107051		Allyl chloride	1000
7429905	DE	Aluminum (fume or dust)	100

<b>CAS</b>		<b>Name</b>	<b>DRQ</b>
1344281	DE	Aluminum oxide (fibrous forms)	100
20859738		Aluminum phosphide	100
10043013		Aluminum sulfate	5000
834128	DE	Ametryn	100
117793	DE	2-Aminoanthraquinone	10
60093	DE	4-Aminoazobenzene	10
92671		4-Aminobiphenyl	1
82280	DE	1-Amino-2-methylantraquinone	10
54626		Aminopterin	500
504245		4-Aminopyridine	1000
78535		Amiton	500
3734972		Amiton oxalate	100
33089611	DE	Amitraz	100
61825		Amitrole	10
7664417		Ammonia	50
6484522	DE	Ammonium nitrate	500
7790989	DE	Ammonium perchlorate	500
13446101	DE	Ammonium permanganate	500
631618		Ammonium acetate	5000
1863634		Ammonium benzoate	5000
1066337		Ammonium bicarbonate	5000
7789095		Ammonium bichromate	10
1341497		Ammonium bifluoride	100
10192300		Ammonium bisulfite	5000
1111780		Ammonium carbamate	5000
506876		Ammonium carbonate	5000
12125029		Ammonium chloride	5000
7788989		Ammonium chromate	10
3012655		Ammonium citrate, dibasic	5000
13826830		Ammonium fluoborate	5000
12125018		Ammonium fluoride	100
1336216		Ammonium hydroxide	1000
14258492		Ammonium oxalate	5000
6009707		Ammonium oxalate	5000
5972736		Ammonium oxalate	5000
131748		Ammonium picrate	10
16919190		Ammonium silicofluoride	1000
7773060		Ammonium sulfamate	5000
12135761		Ammonium sulfide	100
10196040		Ammonium sulfite	5000
3164292		Ammonium tartrate	5000
14307438		Ammonium tartrate	5000
1762954		Ammonium thiocyanate	5000
7783188		Ammonium thiosulfate	5000
7803556		Ammonium vanadate	1000
300629		Amphetamine	1000
628637		Amyl acetate	5000
123922		iso-Amyl acetate	5000
626380		sec-Amyl acetate	5000
625161		tert-Amyl acetate	5000
101053	DE	Anilazine	100

<b>CAS</b>		<b>Name</b>	<b>DRQ</b>
62533		Aniline	5000
88051		Aniline, 2,4,6-trimethyl-	500
90040		o-Anisidine	100
104949	DE	p-Anisidine	100
134292	DE	o-Anisidine hydrochloride	10
120127		Anthracene	5000
7440360		Antimony	5000
7647189		Antimony pentachloride	1000
7783702		Antimony pentafluoride	500
28300745		Antimony potassium tartrate	100
7789619		Antimony tribromide	1000
10025919		Antimony trichloride	1000
7783564		Antimony trifluoride	1000
1309644		Antimony trioxide	1000
1397940		Antimycin A	1000
86884		Antu	100
12674112		Aroclor 1016	1
11104282		Aroclor 1221	1
11141165		Aroclor 1232	1
53469219		Aroclor 1242	1
12672296		Aroclor 1248	1
11097691		Aroclor 1254	1
11096825		Aroclor 1260	1
7440382		Arsenic	1
7778394		Arsenic acid	1
1327522		Arsenic acid	1
1303328		Arsenic disulfide	1
1303282		Arsenic pentoxide	1
1327533		Arsenic trioxide	1
1303339		Arsenic trisulfide	1
7784341		Arsenous trichloride	1
7784421		Arsine	10
1332214		Asbestos (friable)	1
1912249	DE	Atrazine	10
115026		Azaserine	1
2642719		Azinphos-ethyl	100
319857		beta-BHC	1
319868		delta-BHC	1
101279		DE Barban	1
7440393		Barium	100
542621		Barium cyanide	10
22781233		Bendiocarb	1
22961826		Bendiocarb phenol	1
1861401		Benfluralin	100
17804352		Benomyl	1
225514		Benz[c]acridine	100
98873		Benzal chloride	5000
55210		Benzamide	100
56553		Benz[a]anthracene	10
98168		Benzenamine, 3-(trifluoromethyl)-	500
71432		Benzene	10

CAS		Name	DRQ
100141		Benzene, 1-(chloromethyl)-4-nitro-	500
510156		Benzeneacetic acid, 4-chloro-.alpha.-	10
		(4-chlorophenyl)-.alpha.-hydroxy-,	
		ethyl ester	
98055		Benzeneearsonic acid	10
122098		Benzeneethanamine, alpha, alpha-dimethyl-	5000
98099		Benzenesulfonyl chloride	100
92875		Benzidine	1
3615212		Benzimidazole, 4,5-dichloro-2-	500
		(trifluoromethyl)-	
205823	DE	Benzo(j)fluoranthene	10
207089		Benzo(k)fluoranthene	5000
205992		Benzo(b)fluoranthene	1
65850		Benzoic acid	5000
98077		Benzoic trichloride	10
205992		Benzo[l]fluoranthene	1
100470		Benzonitrile	5000
189559		Benzo(rst)pentaphene	10
191242		Benzo[ghi]perylene	5000
218019		Benzo(a)phenanthrene	100
50328		Benzo[a]pyrene	1
98884		Benzoyl chloride	1000
94360	DE	Benzoyl peroxide	100
100447		Benzyl chloride	100
140294		Benzyl cyanide	500
7440417		Beryllium	10
7787475		Beryllium chloride	1
7787497		Beryllium fluoride	1
7787555		Beryllium nitrate	1
13597994		Beryllium nitrate	1
191242		Benzo(g,h,i)perylene	5000
15271417		Bicyclo[2.2.1]heptane-2-carbonitrile,	500
		5-chloro-6-(((methylamino) carbonyl)	
		oxyimino)-,(1-alpha,2-beta,4-alpha,	
		5-alpha,6E))-	
82657043	DE	Bifenthrin	100
92524		Biphenyl	100
111911		Bis(2-chloroethoxy) methane	1000
111444		Bis(2-chloroethyl) ether	10
542881		Bis(chloromethyl) ether	10
534076		Bis(chloromethyl) ketone	10
108601		Bis(2-chloro-1-methylethyl)ether	1000
97745	DE	Bis(dimethylthiocarbamoyl) sulfide	1
38661722	DE	1,3-Bis(methylisocyanate)cyclohexane	100
10347543	DE	1,4-Bis(methylisocyanate)cyclohexane	100
56359	DE	Bis(tributyltin) oxide	100
4044659		Bitoscanate	500
10294345		Boron trichloride	500
7637072		Boron trifluoride	10
353424		Boron trifluoride compound with methyl	1000
		ether (1:1)	

CAS		Name	DRQ
314409	DE	Bromacil	100
53404196	DE	Bromacil, lithium salt	100
28772567		Bromadiolone	100
7726956		Bromine	100
13863417		Bromine chloride	100
7789382		Bromine pentafluoride	100
598312		Bromoacetone	1000
35691657	DE	1-Bromo-1-(bromomethyl)-1,3-propanedicarbonitrile	100
353593	DE	Bromochlorodifluoromethane	100
75252		Bromoform	100
74839		Bromomethane	1000
101553		4-Bromophenyl phenyl ether	100
106967		3-Bromopropyne	500
7787715	DE	Bromotrifluoride	500
598732		Bromotrifluoroethylene	F 1000**
75638		Bromotrifluoromethane	100
1689845	DE	Bromoxynil	100
1689992	DE	Bromoxynil octanoate	100
52517	DE	Bronopol	100
357573		Brucine	100
106990		1,3-Butadiene	10
106978	DE	Butane	1000
123739		2-Butenal, (e)-	100
25167673	DE	Butene	F 1000 **
590181	DE	2-Butene-cis	F 1000 **
624646	DE	2-Butene-trans	F 1000 **
106989	DE	1-Butene	F 1000 **
107017	DE	2-Butene	F 1000 **
75912	DE	tert-Butyl hydroperoxide	500
614459	DE	tert-Butyl perbenzoate	500
107711	DE	tert-Butyl peroxyacetate	500
927071	DE	tert-Butyl peroxy-pivalate	1000
123864		Butyl acetate	5000
110190		iso-Butyl acetate	5000
105464		sec-Butyl acetate	5000
540885		tert-Butyl acetate	5000
141322	DE	Butyl acrylate	100
71363		n-Butyl alcohol	5000
78922	DE	sec-Butyl alcohol	100
75650	DE	tert-Butyl alcohol	100
109739		Butylamine	1000
78819		iso-Butylamine	1000
513495		sec-Butylamine	1000
13952846		sec-Butylamine	1000
75649		tert-Butylamine	1000
2008415	DE	Butylate	1
85687		Butyl benzyl phthalate	100
106887	DE	1,2-Butylene oxide	100
123728	DE	Butyraldehyde	100
107926		Butyric acid	5000

CAS		Name	DRQ
79312		iso-Butyric acid	5000
75605		Cacodylic acid	1
7440439		Cadmium	10
543908		Cadmium acetate	10
7789426		Cadmium bromide	10
10108642		Cadmium chloride	10
1306190		Cadmium oxide	100
2223930		Cadmium stearate	1000
7778441		Calcium arsenate	1
52740166		Calcium arsenite	1
75207		Calcium carbide	10
13765190		Calcium chromate	10
156627		Calcium cyanamide	1000
592018		Calcium cyanide	10
26264062		Calcium dodecylbenzenesulfonate	1000
7778543		Calcium hypochlorite	10
56257		Cantharidin	100
105602	DE	Caprolactam	5000
133062		Captan	10
51832		Carbachol chloride	500
26419738		Carbamic acid, methyl-, O- (((2,4-dimethyl-1,3-dithiolan-2-yl) methylene)amino)-	1
136301	DE	Carbamodithioic acid, dibutyl-, sodium salt	1
148185	DE	Carbamodithioic acid, diethyl-, sodium salt	1
1929777	DE	Carbamothioic acid, dipropyl-, S-propyl ester	1
52888809		Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester	1
63252		Carbaryl	100
10605217		Carbendazim	1
1563662		Carbofuran	10
1563388	DE	Carbofuran phenol	1
75150		Carbon disulfide	100
353584		Carbon fluoride	100
630080	DE	Carbon monoxide	F 1000 **
353504		Carbonic difluoride	1000
109615		Carbonochloridic acid, propylester	500
56235		Carbon tetrachloride	10
463581		Carbonyl sulfide	100
786196		Carbophenothion	500
55285148		Carbosulfan	1
5234684	DE	Carboxin	100
120809		Catechol	100
9004700	DE	Cellulose nitrate	500
2439012	DE	Chinomethionat	100
133904		Chloramben	100
305033		Chlorambucil	10
57749		Chlordane	1

CAS		Name	DRQ
115286	DE	Chlorendic acid	10
470906		Chlorfenvinfos	500
90982324		Chlorimuron ethyl	100
0	DE	Chlorinated Benzenes	5000
0	DE	Chlorinated Naphthalene	5000
0	DE	Chlorinated Phenol	100
7782505		Chlorine	10
10049044		Chlorine dioxide	100
7791211	DE	Chlorine monoxide	F 100 **
13637633		Chlorine pentafluoride	1
7790912		Chlorine trifluoride	100
24934916		Chlormephos	500
999815		Chlormequat chloride	100
494031		Chlornaphazine	100
97007	DE	1-Chloro-2,4-Dinitrobenzene	500
59507		p-Chloro-m-cresol	5000
107200		Chloroacetaldehyde	1000
79118		Chloroacetic acid	100
532274		2-Chloroacetophenone	100
0	DE	Chloroalkyl ethers	1
4080313	DE	1-(3-Chloroallyl)-3,5,7-triaza-1- azoniaadamantane chloride	100
106478		p-Chloroaniline	1000
108907		Chlorobenzene	100
124481		Chlorodibromomethane	100
96106	DE	Chlorodiethylaluminum	500
75683	DE	1-Chloro-1,1-difluoroethane	100
75456	DE	Chlorodifluoromethane	100
75003		Chloroethane	1000
107073		Chloroethanol	500
627112		Chloroethyl chloroformate	1000
110758		2-Chloroethyl vinyl ether	1000
67663		Chloroform	10
74873		Chloromethane	100
107302		Chloromethyl methyl ether	10
563473	DE	3-Chloro-2-methyl-1-propene	10
91587		2-Chloronaphthalene	5000
3691358		Chlorophacinone	100
95578		2-Chlorophenol	100
104121	DE	p-Chlorophenyl isocyanate	100
7005723		4-Chlorophenyl phenyl ether	5000
76062		Chloropicrin	10
126998	DE	Chloroprene	100
542767		3-Chloropropionitrile	1000
590216	DE	1-Chloropropylene	F 1000 **
557982	DE	2-Chloropropylene	F 2000 **
7790945		Chlorosulfonic acid	1000
63938103	DE	Chlorotetrafluoroethane	100
354256	DE	1-Chloro-1,1,2,2-tetrafluoroethane	100
2837890	DE	2-Chloro-1,1,1,2-tetrafluoroethane	100
1897456	DE	Chlorothalonil	100

CAS		Name	DRQ
95692	DE	p-Chloro-o-toluidine	10
3165933		4-Chloro-o-toluidine, hydrochloride	100
75887	DE	2-Chloro-1,1,1-trifluoroethane	100
75729		Chlorotrifluoromethane	100
460355	DE	3-Chloro-1,1,1-trifluoropropane	100
1982474		Chloroxuron	500
2921882		Chlorpyrifos	1
5598130	DE	Chlorpyrifos methyl	100
64902723	DE	Chlorsulfuron	100
1066304		Chromic acetate	1000
11115745		Chromic acid	10
7738945		Chromic acid	10
10025737		Chromic chloride	1
10101538		Chromic sulfate	1000
7440473		Chromium	5000
10049055		Chromous chloride	1000
4680788	DE	C.I. Acid Green 3	100
6459945	DE	C.I. Acid Red 114	10
569642	DE	C.I. Basic Green 4	100
989388	DE	C.I. Basic Red 1	100
1937377	DE	C.I. Direct Black 38	10
28407376	DE	C.I. Direct Blue 218	100
2602462	DE	C.I. Direct Blue 6	10
16071866	DE	C.I. Direct Brown 95	10
2832408	DE	C.I. Disperse Yellow 3	100
3761533	DE	C.I. Food Red 5	10
81889	DE	C.I. Food Red 15	100
3118976	DE	C.I. Solvent Orange 7	100
97563	DE	C.I. Solvent Yellow 3	100
842079	DE	C.I. Solvent Yellow 14	100
492808	DE	C.I. Solvent Yellow 34	100
128665	DE	C.I. Vat Yellow 4	100
7440484	DE	Cobalt	10
10210681		Cobalt carbonyl	10
62207765		Cobalt, ((2,2'-(1,2-ethanediybis (nitrilomethylidyne))bis (6-fluorophenylato))(2-)-N,N',O,O')-	100
7789437		Cobaltous bromide	1000
544183		Cobaltous formate	1000
14017415		Cobaltous sulfamate	1000
0		Coke Oven Emmissions	1
64868		Colchicine	10
7440508		Copper	5000
544923		Copper cyanide	10
137291	DE	Copper, bis(dimethylcarbomodithioato-S,S')-	1
56724		Coumaphos	10
5836293		Coumatetralyl	500
8001589		Creosote	1
120718	DE	p-Cresidine	10
108394		m-Cresol	100



CAS		Name	DRQ
95487		o-Cresol	100
106445		p-Cresol	1000
1319773		Cresol (isomers and mixture)	100
535897		Crimidine	100
4170303		Crotonaldehyde	100
98828		Cumene	5000
80159		Cumene hydroperoxide	10
135206	DE	Cupferron	10
142712		Cupric acetate	100
12002038		Cupric acetoarsenite	1
7447394		Cupric chloride	10
3251238		Cupric nitrate	100
5893663		Cupric oxalate	100
7758987		Cupric sulfate	10
10380297		Cupric sulfate, ammoniated	100
815827		Cupric tartrate	100
21725462	DE	Cyanazine	100
57125		Cyanides (soluble salts and complexes) not otherwise specified	10
460195		Cyanogen	100
506683		Cyanogen bromide	1000
506774		Cyanogen chloride	10
506785		Cyanogen iodide	1000
2636262		Cyanophos	1000
675149		Cyanuric fluoride	1
1134232	DE	Cycloate	1
110827		Cyclohexane	1000
2556367	DE	1,4-Cyclohexane diisocyanate	100
108930	DE	Cyclohexanol	100
108941		Cyclohexanone	5000
66819		Cycloheximide	100
108918		Cyclohexylamine	10,000
131895		2-Cyclohexyl-4,6-dinitrophenol	100
50180		Cyclophosphamide	10
75194	DE	Cyclopropane	F 1000 **
68359375	DE	Cyfluthrin	100
68085858	DE	Cyhalothrin	100
94757		2,4-D Acid	100
1929733		2,4-D Esters	100
1928387		2,4-D Esters	100
25168267		2,4-D Esters	100
53467111		2,4-D Esters	100
1928616		2,4-D Esters	100
2971382		2,4-D Esters	100
94804		2,4-D Esters	100
94791		2,4-D Esters	100
1320189		2,4-D Esters	100
94111		2,4-D Ester	100
20830813		Daunomycin	10
533744	DE	Dazomet	1
53404607	DE	Dazomet, sodium salt	100

CAS		Name	DRQ
94826	DE	2,4-DB	100
72548		DDD	1
72559		DDE	1
3547044		DDE	5000
50293		DDT	1
17702419		Decaborane(14)	500
1163195	DE	Decabromodiphenyl oxide	100
8065483		Demeton	500
919868		Demeton-S-methyl	500
13684565		Desmedipham	100
1928434	DE	2,4-D 2-ethylhexyl ester	10
53404378	DE	2,4-D 2-ethyl-4-methylpentyl ester	10
110225	DE	Diacetyl peroxide (55% solution)	500
10311849		Dialifor	100
2303164		Diallate	100
615054	DE	2,4-Diaminoanisole	10
39156417	DE	2,4-Diaminoanisole sulfate	10
101804		4,4'-Diaminodiphenyl ether	10
496720		Diaminotoluene	10
823405		Diaminotoluene	10
95807		2,4-Diaminotoluene	10
25376458		Diaminotoluene (mixed isomers)	10
333415		Diazinon	1
334883		Diazomethane	100
226368	DE	Dibenz(a,h)acridine	10
224420		Dibenz(a,j)acridine	10
53703		Dibenz[a,h]anthracene	1
194592	DE	7H-Dibenzo(c,g)carbazole	10
5385751	DE	Dibenzo(a,e)fluoranthene	100
132649		Dibenzofuran	100
192654	DE	Dibenzo(a,e)pyrene	10
189640		Dibenzo(a,h)pyrene	10
191300	DE	Dibenzo(a,l)pyrene	10
94360	DE	Dibenzoyl peroxide	500
19287457		Diborane	10
96128		1,2-Dibromo-3-chloropropane	1
10222012	DE	2,2-Dibromo-3-nitrilopropionamide	100
124732	DE	Dibromotetrafluoroethane	100
110054		tert-Dibutyl peroxide	500
84742		Dibutyl phthalate	10
1918009		Dicamba	1000
1194656		Dichlobenil	100
117806		Dichlone	1
99309	DE	Dichloran	100
7572294		Dichloroacetylene	10
95501		1,2-Dichlorobenzene	100
541731		1,3-Dichlorobenzene	100
106467		1,4-Dichlorobenzene	100
25321226		Dichlorobenzene (mixed isomers)	100
91941		3,3'-Dichlorobenzidine	1
612839	DE	3,3'-Dichlorobenzidine dihydrochloride	10

CAS		Name	DRQ
64969342	DE	3,3'-Dichlorobenzidine sulfate	10
75274		Dichlorobromomethane	5000
110576		trans-1,4-Dichlorobutene	500
764410		1,4-Dichloro-2-butene	1
1649087	DE	1,2-Dichloro-1,1-difluoroethane	100
75718		Dichlorodifluoromethane	5000
156605		1,2-Dichloroethylene	1000
540590	DE	1,2-Dichloroethylene	100
1717006	DE	1,1-Dichloro-1-fluoroethane	100
75434		Dichlorofluoromethane	100
75092		Dichloromethane	1000
149746		Dichloromethylphenylsilane	1000
127564925	DE	Dichloropentafluoropropane	100
128903219	DE	2,2-Dichloro-1,1,1,3,3-pentafluoropropane	100
422480	DE	2,3-Dichloro-1,1,1,2,3-pentafluoropropane	100
422446	DE	1,2-Dichloro-1,1,2,3,3-pentafluoropropane	100
422560	DE	3,3-Dichloro-1,1,1,2,2-pentafluoropropane	100
507551	DE	1,3-Dichloro-1,1,2,2,3-pentafluoropropane	100
13474889	DE	1,1-Dichloro-1,2,2,3,3-pentafluoropropane	100
431867	DE	1,2-Dichloro-1,1,3,3,3-pentafluoropropane	100
136013791	DE	1,3-Dichloro-1,1,2,3,3-pentafluoropropane	100
111512562	DE	1,1-Dichloro-1,2,3,3,3-pentafluoropropane	100
97234	DE	Dichlorophene	100
120832		2,4-Dichlorophenol	100
87650		2,6-Dichlorophenol	100
696286		Dichlorophenylarsine	1
26638197		Dichloropropane	1000
8003198		Dichloropropane -- Dichloropropene (mixture)	100
78999		1,1-Dichloropropane	1000
78875		1,2-Dichloropropane	1000
142289		1,3-Dichloropropane	5000
26952238		Dichloropropene	100
10061026	DE	trans-1,3-Dichloropropene	10
78886		2,3-Dichloropropene	100
75990		2,2-Dichloropropionic acid	5000
542756		1,3-Dichloropropylene	100
4109960	DE	Dichlorosilane	100
76142	DE	Dichlorotetrafluoroethane	100
90454185	DE	Dichloro-1,1,2-trifluoroethane	100
34077877	DE	Dichlorotrifluoroethane	100
812044	DE	1,1-Dichloro-1,2,2-trifluoroethane	100
354234	DE	1,2-Dichloro-1,1,2-trifluoroethane	100
306832	DE	2,2-Dichloro-1,1,1-trifluoroethane	100
62737		Dichlorvos	10
51338273	DE	Diclofop methyl	100
115322		Dicofol	10
141662		Dicrotophos	100
77736		Dicyclopentadiene 100	
60571		Dieldrin	1
1464535		Diepoxybutane	10

CAS		Name	DRQ
111422		Diethanolamine	100
38727558	DE	Diethyl ethyl	100
109897		Diethylamine	100
91667		N,N-Diethylaniline	1000
692422		Diethylarsine	1
814493		Diethyl chlorophosphate	500
134190377	DE	Diethyldiisocyanatobenzene	100
117817		Di(2-ethylhexyl)phthalate	100
3288582		O,O-Diethyl S-methyl dithiophosphate	5000
311455		Diethyl-p-nitrophenyl phosphate	100
84662		Diethyl phthalate	1000
56531		Diethylstilbestrol	1
64675		Diethyl sulfate	10
557200	DE	Diethylzinc	1000
35367385	DE	Diflubenzuron	100
75376	DE	Difluoroethane	F 1000 **
71636		Digitoxin	100
2238075		Diglycidyl ether	1000
101906		Diglycidyl resorcinol ether	10
20830755		Digoxin	10
94586		Dihydrosafrole	10
4128738	DE	4,4'-Diisocyanatodiphenyl ether	100
75790873	DE	2,4'-Diisocyanatodiphenyl sulfide	100
105646	DE	Diisopropyl peroxydicarbonate	500
55914		Diisopropylfluorophosphate	100
105748	DE	Diluaroyl peroxide	500
115264		Dimefox	500
55290647	DE	Dimethipin	100
60515		Dimethoate	10
119904		3,3'-Dimethoxybenzidine	100
20325400	DE	3,3'-Dimethoxybenzidine dihydrochloride	10
91930	DE	3,3'-Dimethoxybenzidine-4,4'-diisocyanate	100
111984099	DE	3,3'-Dimethoxybenzidine hydrochloride	10
75183		Dimethyl sulfide	1
124403		Dimethylamine	1000
2300665	DE	Dimethylamine dicamba	100
60117		4-Dimethylaminoazobenzene	10
121697		N,N-Dimethylaniline	100
57976		7,12-Dimethylbenz[a]anthracene	1
119937		3,3'-Dimethylbenzidine	10
612828	DE	3,3'-Dimethylbenzidine dihydrochloride	10
41766750	DE	3,3'-Dimethylbenzidine dihydrofluoride	10
79447		Dimethylcarbanyl chloride	1
2524030		Dimethyl chlorothiophosphate	500
75785		Dimethyldichlorosilane	500
91974	DE	3,3'-Dimethyl-4,4'-diphenylene	100
		diisocyanate	
139253	DE	3,3'-Dimethyldiphenylmethane-4,	100
		4'-diisocyanate	
68122		N,N-Dimethylformamide	100
57147		1,1-Dimethyl hydrazine	10

<b>CAS</b>		<b>Name</b>	<b>DRQ</b>
105679		2,4-Dimethylphenol	100
576261		2,6-Dimethylphenol	100
99989		Dimethyl-p-phenylenediamine	10
131113		Dimethyl phthalate	5000
463821	DE	2,2-Dimethylpropane	F 1000 **
77781		Dimethyl sulfate	100
644644		Dimetilan	1
602017	DE	2,3-Dinitroaniline	500
97029	DE	2,4-Dinitroaniline	500
25154545		Dinitrobenzene (mixed isomers)	100
99650		m-Dinitrobenzene	100
528290		o-Dinitrobenzene	100
100254		p-Dinitrobenzene	100
88857		Dinitrobutyl phenol	1000
534521		4,6-Dinitro-o-cresol	10
25550587		Dinitrophenol	10
51285		2,4-Dinitrophenol	10
329715		2,5-Dinitrophenol	10
573568		2,6-Dinitrophenol	10
619158	DE	2,5-Dinitrotoluene	500
618858	DE	3,5-Dinitrotoluene	500
25321146		Dinitrotoluene (mixed isomers)	10
121142		2,4-Dinitrotoluene	10
606202		2,6-Dinitrotoluene	100
610399		3,4-Dinitrotoluene	10
39300453	DE	Dinocap	100
1420071		Dinoterb	500
117840		n-Dioctylphthalate	5000
123911		1,4-Dioxane	100
78342		Dioxathion	500
82666		Diphacinone	10
957517	DE	Diphenamid	100
122394	DE	Diphenylamine	100
122667		1,2-Diphenylhydrazine	10
152169		Diphosphoramidate, octamethyl-	100
2164070	DE	Dipotassium endothall	100
142847		Dipropylamine	5000
136458	DE	Dipropyl isocinchomerate	100
85007		Diquat	1000
2764729		Diquat	1000
138932	DE	Disodium cyanodithioimidocarbonate	100
97778	DE	Disulfiram	1
298044		Disulfoton	1
514738		Dithiazanine iodide	500
541537		2,4-Dithiobiuret	100
330541		Diuron	100
27176870		Dodecylbenzenesulfonic acid	1000
2439103	DE	Dodine	100
120365	DE	2,4-DP	10
2702729	DE	2,4-D sodium salt	10
316427		Emetine, dihydrochloride	1

CAS		Name	DRQ
959988		alpha -- Endosulfan	1
33213659		beta -- Endosulfan	1
115297		Endosulfan	1
1031078		Endosulfan sulfate	1
145733		Endothall	1000
2778043		Endothion	500
72208		Endrin	1
7421934		Endrin aldehyde	1
106898		Epichlorohydrin	100
51434		Epinephrine	1000
2104645		EPN	100
50146		Ergocalciferol	1000
379793		Ergotamine tartrate	500
74840	DE	Ethane	F 1000 **
1622328		Ethanesulfonyl chloride, 2-chloro-	500
76131	DE	Ethane, 1,1,2-trichloro-1,2,2,-trifluoro-	100
30558431		Ethanimidothioic acid, 2-(dimethylamino)- N-hydroxy-2-oxo-,methyl ester	1
10140871		Ethanol, 1,2-dichloro-, acetate	1000
5952261		Ethanol, 2,2'-oxybis-, dicarbamate	1
563122		Ethion	10
13194484		Ethoprop	1000
110805		2-Ethoxyethanol	1000
19393670		Ethyl methylketone peroxide	500
141786		Ethyl acetate	5000
107006	DE	Ethyl acetylene	F 1000 **
140885		Ethyl acrylate	1000
100414		Ethylbenzene	1000
538078		Ethylbis(2-chloroethyl)amine	500
541413	DE	Ethyl chloroformate	100
759944	DE	Ethyl dipropylthiocarbamate	1
74851	DE	Ethylene	F 1000 **
111546		Ethylenebisdithiocarbamic acid, salts & esters	5000
107153		Ethylenediamine	5000
60004		Ethylenediamine-tetraacetic acid (EDTA)	5000
106934		Ethylene dibromide	1
107062		Ethylene dichloride	100
371620		Ethylene fluorohydrin	1
107211		Ethylene glycol	5000
151564		Ethyleneimine	1
75218		Ethylene oxide	10
96457		Ethylenethiourea	10
60297		Ethyl ether	100
75343		Ethylidene Dichloride	1000
75081	DE	Ethyl mercaptan	F 1000 **
97632		Ethyl methacrylate	1000
62500		Ethyl methanesulfonate	1
109955		Ethyl nitrite	100
542905		Ethyl thiocyanate	10,000
14324551	DE	Ethyl Ziram	1

<b>CAS</b>		<b>Name</b>	<b>DRQ</b>
52857		Famphur	1000
22224926		Fenamiphos	10
60168889	DE	Fenarimol	100
13356086	DE	Fenbutatin oxide	100
122145		Fenitrothion	1
66441234	DE	Fenoxaprop ethyl	100
72490018	DE	Fenoxycarb	100
39515418	DE	Fenpropathrin	100
115902		Fensulfothion	500
55389		Fenthion	100
51630581	DE	Fenvalerate	100
14484641	DE	Ferbam	1
1185575		Ferric ammonium citrate	1000
55488874		Ferric ammonium oxalate	1000
2944674		Ferric ammonium oxalate	1000
7705080		Ferric chloride	1000
7783508		Ferric fluoride	100
10421484		Ferric nitrate	1000
10028225		Ferric sulfate	1000
10045893		Ferrous ammonium sulfate	1000
7758943		Ferrous chloride	100
7782630		Ferrous sulfate	1000
7720787		Ferrous sulfate	1000
69806504	DE	Fluazifop butyl	100
4301502		Fluometuron	100
2164172	DE	Fluometuron	100
206440		Fluoranthene	100
86737		Fluorene	5000
7782414		Fluorine	10
640197		Fluoroacetamide	100
144490		Fluoroacetic acid	10
359068		Fluoroacetyl chloride	10
51218		Fluorouracil	500
7789211	DE	[Fluosulfonic acid]	25
69409945	DE	Fluvalinate	100
133073	DE	Folpet	100
72178020	DE	Fomesafen	100
944229		Fonofos	500
50000		Formaldehyde	100
107164		Formaldehyde cyanohydrin	1000
23422539		Formetanate hydrochloride	1
64186		Formic acid	5000
2540821		Formothion	100
17702577		Formparanate	1
21548323		Fosthietan	500
3878191		Fuberidazole	100
110178		Fumaric acid	5000
110009		Furan	100
109999		Furan, tetrahydro-	1000
98011		Furfural	5000
13450903		Gallium trichloride	500

CAS		Name	DRQ
765344		Glycidylaldehyde	10
70257		Guanidine, N-methyl-N'-nitro-N-nitroso-	10
86500		Guthion	1
76448		Heptachlor	1
1024573		Heptachlor epoxide	1
118741		Hexachlorobenzene	10
87683		Hexachloro-1,3-butadiene	1
319846		alpha-Hexachlorocyclohexane	10
77474		Hexachlorocyclopentadiene	10
67721		Hexachloroethane	100
1335871	DE	Hexachloronaphthalene	100
70304		Hexachlorophene	100
1888717		Hexachloropropene	1000
757584		Hexaethyl tetraphosphate	100
684162		Hexafluoroacetone	100
4835114		Hexamethylenediamine, N,N'-dibutyl-	500
822060	DE	Hexamethylene-1,6-diisocyanate	100
680319		Hexamethylphosphoramide	1
110543		Hexane	5000
51235042	DE	Hexazinone	100
67485294		Hydramethylnon	100
302012		Hydrazine	1
1615801		Hydrazine, 1,2-diethyl-	10
540738		Hydrazine, 1,2-dimethyl-	1
10034932	DE	Hydrazine sulfate	10
1333740	DE	Hydrogen	F 6000 **
10035106		Hydrogen bromide	1000
7647010		Hydrogen chloride; Hydrochloric acid	5000
74908		Hydrogen cyanide	10
7664393		Hydrogen fluoride; hydrofluoric acid	100
7722841		Hydrogen peroxide	100
7783075		Hydrogen selenide	10
7783064		Hydrogen sulfide	100
123319		Hydroquinone	100
7803498		DE Hydroxylamine	500
35554440	DE	Imazalil	100
193395		Indeno(1,2,3-cd)pyrene	100
55406536	DE	3-Iodo-2-propynyl butylcarbamate	1
13463406		Iron, pentacarbonyl-	10
297789		Isobenzan	100
75285		Isobutane	F 1000 **
78831		Isobutyl alcohol	5000
78842		Isobutyraldehyde	100
78820		Isobutyronitrile	1000
102363		Isocyanic acid, 3,4-dichlorophenyl ester	500
465736		Isodrin	1
25311711	DE	Isofenphos	100
78784		Isopentane	1000
78591		Isophorone	5000
4098719		Isophorone diisocyanate	100
78795		Isoprene	100



CAS		Name	DRQ
42504461		Isopropanolamine dodecylbenzene sulfonate	1000
75351		Isopropyl amine	1000
625558		Isopropyl formate	100
75310	DE	Isopropylamine	F 1000 **
75296	DE	Isopropyl chloride	F 1000 **
108236		Isopropyl chloroformate	1000
80057	DE	4,4'-Isopropylidenediphenol	100
119380		Isopropylmethylpyrazolyl dimethylcarbamate	1
120581		Isosafrole	100
143500		Kepone	1
463514		Ketene	10
77501634	DE	Lactofen	100
78977		Lactonitrile	1000
303344		Lasiocarpine	10
7439921		Lead	10
301042		Lead acetate	10
7784409		Lead arsenate	1
7645252		Lead arsenate	1
10102484		Lead arsenate	1
7758954		Lead chloride	10
13814965		Lead fluoborate	10
7783462		Lead fluoride	10
10101630		Lead iodide	10
10099748		Lead nitrate	10
7446277		Lead phosphate	10
1072351		Lead stearate	10
56189094		Lead stearate	10
52652592		Lead stearate	10
7428480		Lead stearate	10
1335326		Lead subacetate	10
15739807		Lead sulfate	10
7446142		Lead sulfate	10
1314870		Lead sulfide	10
592870		Lead thiocyanate	10
21609905		Leptophos	500
541253		Lewisite	10
58899		Lindane	1
330552	DE	Linuron	100
554132	DE	Lithium carbonate	100
14307358		Lithium chromate	10
7580678		Lithium hydride	100
121755		Malathion	100
110167		Maleic acid	5000
108316		Maleic anhydride	5000
123331		Maleic hydrazide	5000
109773		Malononitrile	1000
12427382	DE	Maneb	100
7439965	DE	Manganese	100
15339363		Manganese, bis(dimethylcarbamodithioato-S,S')-	1

CAS		Name	DRQ
12108133		Manganese, tricarbonyl methylcyclopentadienyl	100
93652	DE	Mecoprop	10
148823		Melphalan	1
950107		Mephosfolan	500
149304	DE	2-Mercaptobenzothiazole	100
2032657		Mercaptodimethur	10
1600277		Mercuric acetate	500
7487947		Mercuric chloride	500
592041		Mercuric cyanide	1
10045940		Mercuric nitrate	10
21908532		Mercuric oxide	500
7783359		Mercuric sulfate	10
592858		Mercuric thiocyanate	10
7782867		Mercurous nitrate	10
10415755		Mercurous nitrate	10
7439976		Mercury	1
628864		Mercury fulminate	10
150505	DE	Merphos	100
10476956		Methacrolein diacetate	1000
760930		Methacrylic anhydride	500
126987		Methacrylonitrile	1000
920467		Methacryloyl chloride	10
30674807		Methacryloyloxyethyl isocyanate	10
10265926		Methamidophos	100
137428	DE	Metham sodium	1
74828	DE	Methane	F 1000 **
558258		Methanesulfonyl fluoride	1000
67561		Methanol	5000
91805		Methapyrilene	5000
20354261	DE	Methazole	100
950378		Methidathion	500
16752775		Methomyl	100
94746	DE	Methoxone	10
3653483	DE	Methoxone sodium salt	10
72435		Methoxychlor	1
109864	DE	2-Methoxyethanol	100
151382		Methoxyethylmercuric acetate	500
75221		Methyl chloroformate	1
624920		Methyl disulfide	1
453189		Methyl fluoroacetate	1
421205		Methyl fluorosulfate	1
96333	DE	Methyl acrylate	100
563462	DE	2-Methyl-1-butene	F 1000 **
563451	DE	3-Methyl-1-butene	F 1000 **
80637		Methyl 2-chloroacrylate	500
79221		Methyl chlorocarbonate	1000
56495		3-Methylcholanthrene	10
3697243	DE	5-Methylchrysene	10
75790840	DE	4-Methyldiphenylmethane-3,4-diisocyanate	100
101144		4,4'-Methylenebis(2-chloroaniline)	10

<b>CAS</b>		<b>Name</b>	<b>DRQ</b>
101611	DE	4,4'-Methylenebis(N,N-dimethyl)benzenamine	10
5124301	DE	1,1'-Methylene bis(4-isocyanatocyclohexane)	100
101688		Methylenebis(phenylisocyanate)	5000
74953		Methylene bromide	1000
101779		4,4'-Methylenedianiline	10
115106	DE	Methyl ether	F 1000 **
78933		Methyl ethyl ketone	5000
1338234		Methyl ethyl ketone peroxide	10
107313		Methyl formate	F 1000 **
60344		Methyl hydrazine	10
74884		Methyl iodide	100
108101		Methyl isobutyl ketone	5000
624839		Methyl isocyanate	10
556616		Methyl isothiocyanate	500
74931		Methyl mercaptan	100
502396		Methylmercuric dicyanamide	500
80626		Methyl methacrylate	1000
924425		N-Methylolacrylamide	100
298000		Methyl parathion	100
3735237		Methyl phenkapton	500
676971		Methyl phosphonic dichloride	100
115117	DE	2-Methylpropene	F 1000 **
109068		2-Methylpyridine	5000
872504	DE	N-Methyl-2-pyrrolidone	100
1634044	DE	Methyl tert-butyl ether (MTBE)	30
1634044		Methyl tert-butyl ether	1000
556649		Methyl thiocyanate	1000
56042		Methylthiouracil	10
75796		Methyltrichlorosilane	50
78944		Methyl vinyl ketone	1
9006422	DE	Metiram	100
1129415		Metolcarb	1
21087649	DE	Metribuzin	100
7786347		Mevinphos	10
315184		Mexacarbate	1000
90948	DE	Michler's ketone	10
50077		Mitomycin C	10
2212671	DE	Molinate	1
1313275	DE	Molybdenum trioxide	100
76153	DE	Monochloropentafluoroethane	100
6923224		Monocrotophos	10
75047	DE	Monoethylamine	100
74895		Monomethylamine	100
150685	DE	Monuron	100
2763964		Muscimol	1000
505602		Mustard gas	500
88671890	DE	Myclobutanil	100
142596	DE	Nabam	100
300765		Naled	10

<b>CAS</b>		<b>Name</b>	<b>DRQ</b>
91203		Naphthalene	100
3173726	DE	1,5-Naphthalene diisocyanate	100
1338245		Naphthenic acid	100
130154		1,4-Naphthoquinone	5000
134327		alpha-Naphthylamine	100
91598		2-Naphthylamine	10
7440020		Nickel	100
15699180		Nickel ammonium sulfate	100
13463393		Nickel carbonyl	10
7718549		Nickel chloride	100
37211055		Nickel chloride	100
0	DE	Nickel Compounds/Nickel Coated Catalysts	200
557197		Nickel cyanide	10
12054487		Nickel hydroxide	10
14216752		Nickel nitrate	100
7786814		Nickel sulfate	100
54115		Nicotine	100
54115		Nicotine, and salts	100
65305		Nicotine sulfate	100
1929824	DE	Nitrapyrin	100
7697372		Nitric acid	1000
10102439		Nitric oxide	10
139139	DE	Nitrilotriacetic acid	10
90092	DE	m-Nitroaniline	500
88744	DE	o-Nitroaniline	500
100016		p-Nitroaniline	5000
99592	DE	5-Nitro-o-anisidine	100
98953		Nitrobenzene	1000
92933		4-Nitrobiphenyl	10
1122607		Nitrocyclohexane	500
79243		Nitroethane	500
1836755	DE	Nitrofen	10
10102440		Nitrogen dioxide	10
51752		Nitrogen mustard	10
10102439		Nitrogen oxide	10
10544726		Nitrogen tetraoxide	10
55630		Nitroglycerin	10
75525	DE	Nitromethane	500
25154556		Nitrophenol (mixed isomers)	100
554847		m-Nitrophenol	100
88755		2-Nitrophenol	100
100027		4-Nitrophenol	100
79469		2-Nitropropane	10
5522430	DE	1-Nitropyrene	10
924163		N-Nitrosodi-n-butylamine	10
1116547		N-Nitrosodiethanolamine	1
55185		N-Nitrosodiethylamine	1
62759		N-Nitrosodimethylamine	10
86306		N-Nitrosodiphenylamine	100
156105	DE	p-Nitrosodiphenylamine	100
621647		N-Nitrosodi-n-propylamine	10

CAS		Name	DRQ
759739		N-Nitroso-N-ethylurea	1
684935		N-Nitroso-N-methylurea	1
615532		N-Nitroso-N-methylurethane	1
4549400		N-Nitrosomethylvinylamine	10
59892		N-Nitrosomorpholine	1
16543558	DE	N-Nitrosornicotine	10
100754		N-Nitrosopiperidine	10
930552		N-Nitrosopyrrolidine	1
1321126		Nitrotoluene	1000
99081		m-Nitrotoluene	1000
88722		o-Nitrotoluene	1000
99990		p-Nitrotoluene	1000
99558		5-Nitro-o-toluidine	100
991424		Norbormide	100
27314132	DE	Norflurazon	100
2234131	DE	Octachloronaphthalene	100
29082744	DE	Octachlorostyrene	1
8014957		Oleum (fuming sulfuric acid)	1000
0		Organorhodium Complex (PMN-82-147)	10
19044883	DE	Oryzalin	100
20816120		Osmium tetroxide	1000
630604		Ouabain	100
23135220		Oxamyl	1
78717		Oxetane, 3,3-bis(chloromethyl)-	500
301122	DE	Oxydemeton methyl	100
19666309	DE	Oxydiazon	100
2497076		Oxydisulfoton	500
42874033	DE	Oxyfluorfen	100
7783417		Oxygen difluoride	1
10028156		Ozone	1
30525894		Paraformaldehyde	1000
123637		Paraldehyde	1000
1910425		Paraquat dichloride	10
2074502		Paraquat methosulfate	10
56382		Parathion	10
1114712	DE	Pebulate	1
40487421	DE	Pendimethalin	1
19624227		Pentaborane	1
608935		Pentachlorobenzene	1
608935		Pentachlorobenzene	10
76017		Pentachloroethane	10
87865		Pentachlorophenol	10
2570265		Pentadecylamine	100
504609		1,3-Pentadiene	100
109660	DE	Pentane	F 1000 **
109671	DE	1-Pentene	F 1000 **
646048	DE	2-Pentene, (E)-	F 1000 **
627203	DE	2-Pentene, (Z)-	F 1000 **
57330	DE	Pentobarbital sodium	100
79210		Peracetic acid	100
7601903	DE	Perchloric acid	1000

CAS		Name	DRQ
594423		Perchloromethyl mercaptan	100
7616946		Perchloryl fluoride	100
52645531	DE	Permethrin	100
62442		Phenacetin	100
85018		Phenanthrene	5000
108952		Phenol	1000
64006		Phenol, 3-(1-methylethyl) -, methylcarbamate	1
4418660		Phenol, 2,2'-thiobis[4-chloro-6-methyl-	100
26002802	DE	Phenothrin	100
58366		Phenoxarsine, 10,10'-oxydi-	500
95545	DE	1,2-Phenylenediamine	100
108452		1,3-Phenylenediamine	100
106503		p-Phenylenediamine	5000
615281	DE	1,2-Phenylenediamine dihydrochloride	100
624180	DE	1,4-Phenylenediamine dihydrochloride	100
123615	DE	1,3-Phenylene diisocyanate	100
104494	DE	1,4-Phenylene diisocyanate	100
59881		Phenylhydrazine hydrochloride	1000
62384		Phenylmercuric acetate	100
90437	DE	2-Phenylphenol	100
2097190		Phenylsilatrane	100
103855		Phenylthiourea	100
57410	DE	Phenytoin	10
298022		Phorate	10
4104147		Phosacetim	100
947024		Phosfolan	100
75445		Phosgene	10
732116		Phosmet	10
13171216		Phosphamidon	100
7803512		Phosphine	100
2703131		Phosphonothioic acid, methyl-, O-ethyl O-(4-(methylthio)phenyl) ester	500
50782699		Phosphonothioic acid, methyl-, S-(2-(bis (1-methylethyl)amino)ethyl) O-ethyl ester	100
2665307		Phosphonothioic acid, methyl-, O- (4-nitrophenyl) O-phenyl ester	500
7664382		Phosphoric acid	5000
3254635		Phosphoric acid, dimethyl 4-(methylthio) phenyl ester	500
2587908		Phosphorothioic acid, O,O-dimethyl-5-(2- (methylthio)ethyl)ester	500
7723140		Phosphorus	1
10025873		Phosphorus oxychloride	1000
10026138		Phosphorus pentachloride	500
1314563		Phosphorus pentoxide	1
7719122		Phosphorus trichloride	1000
85449		Phthalic anhydride	5000
57476		Physostigmine	1
57647		Physostigmine, salicylate (1:1)	1
1918021	DE	Picloram	100

<b>CAS</b>		<b>Name</b>	<b>DRQ</b>
88891	DE	Picric acid	100
124878		Picrotoxin	500
110894		Piperidine	1000
120547	DE	Piperidine, 1,1'-	1
		(tetrathiodicarbonothioyl)-bis-	
51036	DE	Piperonyl butoxide	100
23505411		Pirimifos-ethyl	1000
29232937	DE	Pirimiphos methyl	100
1336363		Polychlorinated biphenyls	1
9016879	DE	Polymeric diphenylmethane diisocyanate	100
7784410		Potassium arsenate	1
10124502		Potassium arsenite	1
7778509		Potassium bichromate	10
7758012	DE	Potassium bromate	10
7789006		Potassium chromate	10
151508		Potassium cyanide	10
128030		Potassium dimethyldithiocarbamate	1
1310583		Potassium hydroxide	1000
51026289	DE	Potassium N-hydroxymethyl-N-	1
		methyldithiocarbamate	
137417	DE	Potassium N-methyldithiocarbamate	1
7722647		Potassium permanganate	100
506616		Potassium silver cyanide	1
41198087	DE	Profenofos	100
2631370		Promecarb	1
7287196	DE	Prometryn	100
23950585		Pronamide	5000
1918167	DE	Propachlor	100
463490	DE	Propadiene	F 1000 **
74986	DE	Propane	1000
107120		Propanenitrile	10
1120714		Propane sultone	10
709988	DE	Propanil	100
2312358		Propargite	10
107197		Propargyl alcohol	1000
106967		Propargyl bromide	1
31218834	DE	Propetamphos	100
122429		Propham	1
60207901	DE	Propiconazole	100
57578		beta-Propiolactone	10
123386		Propionaldehyde	1000
79094		Propionic acid	5000
123626		Propionic anhydride	5000
70699		Propiophenone, 4'-amino	100
114261		Propoxur	100
627134	DE	m-Propyl nitrate	500
107108		n-Propylamine	5000
115071	DE	Propylene	F 1000 **
75569		Propylene oxide	100
75558		Propyleneimine	1
74997	DE	Propyne	F 1000 **

CAS		Name	DRQ
2275185		Prothoate	100
129000		Pyrene	5000
121299		Pyrethrins	1
121211		Pyrethrins	1
8003347		Pyrethrins	1
110861		Pyridine	1000
140761		Pyridine, 2-methyl-5-vinyl-	500
1124330		Pyridine, 4-nitro-, 1-oxide	500
53558251		Pyriminil	100
91225		Quinoline	5000
106514		Quinone	10
82688		Quintozene	100
76578148	DE	Quizalofop-ethyl	100
50555		Reserpine	5000
10453868	DE	Resmethrin	100
108463		Resorcinol	5000
81072		Saccharin and salts	100
94597		Safrole	100
14167181		Salcomine	500
107448		Sarin	1
7783008		Selenious acid	10
12039520		Selenious acid, dithallium(1+) salt	1000
7782492		Selenium	100
7783791		Selenium hexafluoride	10
7446084		Selenium oxide	10
7791233		Selenium oxychloride	500
7488564		Selenium sulfide	10
144343	DE	Selenium, tetrakis (dimethyldithiocarbamate)	1
630104		Selenourea	1000
563417		Semicarbazide hydrochloride	1000
74051802	DE	Sethoxydim	100
7803625	DE	Silane	F 1000 **
3037727		Silane, (4-aminobutyl)diethoxymethyl-	1000
7440224		Silver	1000
506649		Silver cyanide	1
7761888		Silver nitrate	1
122349	DE	Simazine	100
7440235		Sodium	10
7631892		Sodium arsenate	1
7784465		Sodium arsenite	1
26628228		Sodium azide (Na(N3))	1000
10588019		Sodium bichromate	10
1333831		Sodium bifluoride	100
7631905		Sodium bisulfite	5000
124652		Sodium cacodylate	100
7775113		Sodium chromate	10
143339		Sodium cyanide	10
1982690	DE	Sodium dicamba	100
128041	DE	Sodium dimethyldithiocarbamate	1
25155300		Sodium dodecylbenzenesulfonate	1000



<b>CAS</b>		<b>Name</b>	<b>DRQ</b>
7681494		Sodium fluoride	1000
62748		Sodium fluoroacetate	10
16721805		Sodium hydrosulfide	5000
1310732		Sodium hydroxide	1000
10022705		Sodium hypochlorite	100
7681529		Sodium hypochlorite	100
124414		Sodium methylate	1000
7632000		Sodium nitrite	100
131522		Sodium pentachlorophenate	100
132274	DE	Sodium o-phenylphenoxide	10
7558794		Sodium phosphate, dibasic	5000
10140655		Sodium phosphate, dibasic	5000
10039324		Sodium phosphate, dibasic	5000
7785844		Sodium phosphate, tribasic	5000
10124568		Sodium phosphate, tribasic	5000
7601549		Sodium phosphate, tribasic	5000
10361894		Sodium phosphate, tribasic	5000
7758294		Sodium phosphate, tribasic	5000
10101890		Sodium phosphate, tribasic	5000
10028247		Sodium Phosphate, dibasic	5000
13410010		Sodium selenate	100
10102188		Sodium selenite	100
7782823		Sodium selenite	100
10102202		Sodium tellurite	500
900958		Stannane, acetoxytriphenyl-	500
7803523		Stibine	10
18883664		Streptozotocin	1
7789062		Strontium chromate	10
57249		Strychnine	10
57249		Strychnine, and salts	10
60413		Strychnine, sulfate	10
100425		Styrene	1000
96093		Styrene oxide	100
95067	DE	Sulfallate	1
3689245		Sulfotep	100
3569571		Sulfoxide, 3-chloropropyl octyl	500
7446095		Sulfur dioxide	500
7664939		Sulfuric acid	1000
12771083		Sulfur monochloride	1000
5714227		Sulfur pentafluoride	10
1314803		Sulfur phosphide	100
7783600		Sulfur tetrafluoride	10
7446119		Sulfur trioxide	20
2699798	DE	Sulfuryl fluoride	100
35400432	DE	Sulprofos	100
93765		2,4,5-T acid	1000
3813147		2,4,5-T amines	5000
6369966		2,4,5-T amines	5000
6369977		2,4,5-T amines	5000
2008460		2,4,5-T amines	5000
1319728		2,4,5-T amines	5000

<b>CAS</b>		<b>Name</b>	<b>DRQ</b>
61792072		2,4,5-T esters	1000
25168154		2,4,5-T esters	1000
93798		2,4,5-T esters	1000
1928478		2,4,5-T esters	1000
2545597		2,4,5-T esters	1000
13560991		2,4,5-T salts	1000
77816		Tabun	10
34014181	DE	Tebuthiuron	100
13494809		Tellurium	1
7783804		Tellurium hexafluoride	10
3383968	DE	Temephos	100
5902512	DE	Terbacil	100
13071799		Terbufos	100
79947	DE	Tetrabromobisphenol A	1
1634022	DE	Tetrabutylthiuram disulfide	1
95943		1,2,4,5-Tetrachlorobenzene & Isomers	5000
1746016		2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1
630206		1,1,1,2-Tetrachloroethane	100
79345		1,1,2,2-Tetrachloroethane	100
127184		Tetrachloroethylene	100
354143	DE	1,1,2,2-Tetrachloro-1-fluoroethane	100
354110	DE	1,1,1,2-Tetrachloro-2-fluoroethane	100
58902		2,3,4,6-Tetrachlorophenol	10
961115	DE	Tetrachlorvinphos	100
64755	DE	Tetracycline hydrochloride	100
78002		Tetraethyl lead	10
107493		Tetraethyl pyrophosphate	10
597648		Tetraethyltin	100
116143	DE	Tetrafluoroethylene	F 1000 **
10086472		Tetrafluoro hydrazine	100
7696120	DE	Tetramethrin	100
75741		Tetramethyllead	100
75763	DE	Tetramethylsilane	F 1000 **
509148		Tetranitromethane	10
1314325		Thallic oxide	100
7440280		Thallium	1000
563688		Thallium(I)acetate	100
10102451		Thallium(I)nitrate	100
10031591		Thallium sulfate	100
7446186		Thallium(I)sulfate	100
6533739		Thallos carbonate	100
7791120		Thallos chloride	100
2757188		Thallos malonate	100
148798	DE	Thiabendazole	100
62555		Thioacetamide	10
28249776	DE	Thiobencarb	100
2231574		Thiocarbazide	1000
139651	DE	4,4'-Thiodianiline	10
59669260		Thiodicarb	1
39196184		Thiofanox	100

CAS		Name	DRQ
297972		Thionazin	100
7719097		Thionyl chloride	10
23564069	DE	Thiophanate ethyl	100
23564058		Thiophanate-methyl	1
108985		Thiophenol	100
79196		Thiosemicarbazide	100
62566		Thiourea	10
5344821		Thiourea, (2-chlorophenyl)-	100
614788		Thiourea, (2-methylphenyl)-	500
137268		Thiram	10
1314201	DE	Thorium dioxide	100
7550450		Titanium tetrachloride	1000
108883		Toluene	1000
584849		Toluene-2,4-diisocyanate	100
91087		Toluene-2,6-diisocyanate	100
26471625		Toluene diisocyanate (unspecified isomer)	100
95534		o-Toluidine	100
106490		p-Toluidine	100
636215		o-Toluidine hydrochloride	100
8001352		Toxaphene	1
32534955		2,4,5-TP esters	100
93721		2,4,5-TP acid	100
43121433	DE	Triadimefon	100
2303175		Triallate	1
1031476		Triamiphos	500
68768		Triaziquone	100
24017478		Triazofos	500
101200480	DE	Tribenuron methyl	100
1983104	DE	Tributyltin fluoride	100
2155706	DE	Tributyltin methacrylate	100
78488		S,S,S-Tributyltrithiophosphate	100
52686		Trichlorfon	100
76028		Trichloroacetyl chloride	500
120821		1,2,4-Trichlorobenzene & Isomers	100
1558254		Trichloro(chloromethyl)silane	10
27137855		Trichloro(dichlorophenyl)silane	500
71556		1,1,1-Trichloroethane	1000
79005		1,1,2-Trichloroethane	100
79016		Trichloroethylene	100
115219		Trichloroethylsilane	500
75694		Trichlorofluoromethane	5000
327980		Trichloronate	500
25167822		Trichlorophenol	10
15950660		2,3,4-Trichlorophenol	10
933788		2,3,5-Trichlorophenol	10
933755		2,3,6-Trichlorophenol	10
95954		2,4,5-Trichlorophenol	10
88062		2,4,6-Trichlorophenol	10
609198		3,4,5-Trichlorophenol	10
98135		Trichlorophenylsilane	500
96184	DE	1,2,3-Trichloropropane	10

CAS		Name	DRQ
10025782		Trichlorosilane	F 1000 **
57213691	DE	Triclopyr triethylammonium salt	100
27323417		Triethanolamine dodecylbenzene sulfonate	1000
998301		Triethoxysilane	500
121448		Triethylamine	5000
79389		Trifluorochloroethylene	F 1000 **
1582098		Trifluralin	10
26644462		Triforine	100
2487903		Trimethoxysilane	10
75503		Trimethylamine	100
95636	DE	1,2,4-Trimethylbenzene	100
75774		Trimethylchlorosilane	1000
16938220	DE	2,2,4-Trimethylhexamethylene diisocyanate	100
15646965	DE	2,4,4-Trimethylhexamethylene diisocyanate	100
824113		Trimethylolpropane phosphite	100
540841		2,2,4-Trimethylpentane	1000
2655154	DE	2,3,5-Trimethylphenyl methylcarbamate	100
1066451		Trimethyltin chloride	500
	DE	1,2,4-Trinitrobenzene	500
99354		1,3,5-Trinitrobenzene	10
602293	DE	2,3,4-Trinitrotoluene	500
	DE	2,3,5-Trinitrotoluene	500
	DE	2,3,6-Trinitrotoluene	500
610253	DE	2,4,5-Trinitrotoluene	500
118967	DE	2,4,6-Trinitrotoluene	500
	DE	3,4,5-Trinitrotoluene	500
639587		Triphenyltin chloride	500
76879	DE	Triphenyltin hydroxide	1000
555771		Tris(2-chloroethyl)amine	100
126727		Ethanamine, 1,1-dimethyl-2-phenyl-	10
72571		Trypan blue	10
66751		Uracil mustard	10
541093		Uranyl acetate	100
10102064		Uranyl nitrate	100
36478769		Uranyl nitrate	100
51796		Urethane	100
2001958		Valinomycin	1000
7440622	DE	Vanadium (except when contained in an alloy)	100
1314621		Vanadium pentoxide	1000
27774136		Vanadyl sulfate	1000
50471448	DE	Vinclozolin	100
108054		Vinyl acetate	5000
689974	DE	Vinyl acetylene	F 1000 **
593602		Vinyl bromide	100
75014		Vinyl chloride	1
109922	DE	Vinyl ethyl ether	F 1000 **
75025	DE	Vinyl fluoride	F 1000 **
75354		Vinylidene chloride	100
75387	DE	Vinylidene fluoride	F 1000 **
107255	DE	Vinyl methyl ether	F 1000 **

CAS		Name	DRQ
81812		Warfarin	100
81812		Warfarin, & salts, conc. > 0.3%	100
129066		Warfarin sodium	100
108383		m-Xylene	100
95476		o-Xylene	100
106423		p-Xylene	100
1330207		Xylene	100
1300716		Xylenol	1000
87627	DE	2,6-Xylidine	10
28347139		Xylylene dichloride	100
7440666		Zinc	1000
557346		Zinc acetate	1000
14639975		Zinc ammonium chloride	1000
14639986		Zinc ammonium chloride	1000
52628258		Zinc ammonium chloride	1000
1332076		Zinc borate	1000
7699458		Zinc bromide	1000
3486359		Zinc carbonate	1000
7646857		Zinc chloride	1000
557211		Zinc cyanide	10
58270089		Zinc, dichloro(4,4-dimethyl-5 (((methylamino)carbonyl)oxy)imino) Pentanenitrile)-, (T-4)-	100
7783495		Zinc fluoride	1000
557415		Zinc formate	1000
7779864		Zinc hydrosulfite	1000
7779886		Zinc nitrate	1000
127822		Zinc phenolsulfonate	5000
1314847		Zinc phosphide	100
16871719		Zinc silicofluoride	5000
7733020		Zinc sulfate	1000
12122677	DE	Zineb	100
137304		Ziram	1
13746899		Zirconium nitrate	5000
16923958		Zirconium potassium fluoride	1000
14644612		Zirconium sulfate	5000
10026116		Zirconium tetrachloride	5000

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This consolidated chemical list includes chemicals subject to reporting requirements under the Emergency Planning and Community Right-to-Know Act (EPCRA), also known as Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). Chemicals listed under 112(r) of the Clean Air Act (CAA), Section 311 of the Clean Water Act of 1980, State of Delaware's Accidental Release Prevention Regulation, and EPCRA Section 313 are included with Delaware Reportable Quantities (DRQs). Some substances are listed as commonly known synonyms more than once or with different CAS numbers. For other synonyms and CAS numbers search the EPA Chemical Registry System (CRS) under chemical names or CAS numbers. The EPA CSR search page can be found on the internet at: [http://oaspub.epa.gov/crs/SEARCH\\$.STARTUP](http://oaspub.epa.gov/crs/SEARCH$.STARTUP)

Note: Substances with no DE designation must also be reported to the National Reporting Center (NRC) under federal reporting requirements with reportable quantities equal to the DRQ. The column with designation 'DE' means that the substance DRQ does not agree with the federal reportable quantity under CERCLA or EPCRA requirements to report to the (NRC). Check the EPA Lists of Lists on the NRC internet webpage to determine if and what

reportable release quantity must be reported to the NRC independently of the State of Delaware Reporting requirements.

\* No mandatory written report is required under Section 2.5 of the 6028 Reporting Regulation.

F\*\* = Flammable substances Delaware reportable quantities apply for short term releases (immediate to one hour).

<b>RCRA Codes</b>	<b>Name</b>	<b>DRQ</b>
D001	Unlisted hazardous wastes characteristic of ignitability	100
D002	Unlisted hazardous wastes characteristic of corrosivity	100
D003	Unlisted hazardous wastes characteristic of reactivity	100
D004	Arsenic	1
D005	Barium	1000
D006	Cadmium	10
D007	Chromium	10
D008	Lead	10
D009	Mercury	1
D010	Selenium	10
D011	Silver	1
D012	Endrin	1
D013	Lindane	1
D014	Methoxychlor	1
D015	Toxaphene	1
D016	2,4-D	100
D017	2,4,5-TP	100
D018	Benzene	10
D019	Carbon tetrachloride	10
D020	Chlordane	1
D021	Chlorobenzene	100
D022	Chloroform	10
D023	o-Cresol	100
D024	m-Cresol	100
D025	p-Cresol	100
D026	Cresol	100
D027	1,4-Dichlorobenzene	100
D028	1,2-Dichloroethane	100
D029	1,1-Dichloroethylene	100
D030	2,4-Dinitrotoluene	10
D031	Heptachlor (and epoxide)	1
D032	Hexachlorobenzene	10
D033	Hexachlorobutadiene	1
D034	Hexachloroethane	100
D035	Methyl ethyl ketone	5000
D036	Nitrobenzene	1000
D037	Pentachlorophenol	10
D038	Pyridine	1000
D039	Tetrachloroethylene	100
D040	Trichloroethylene	100
D041	2,4,5-Trichlorophenol	10
D042	2,4,6-Trichlorophenol	10

<b>RCRA Codes</b>	<b>Name</b>	<b>DRQ</b>
D043	Vinyl chloride	1
F001	Spent halogenated solvents used in degreasing	10
F001a	(a) Tetrachloroethylene (CAS No. 127-18-4, RCRA Waste No. U210)	100
F001b	(b) Trichloroethylene (CAS No. 79-01-6, RCRA Waste No. U228)	100
F001c	(c) Methylene chloride (CAS No. 75-09-2, RCRA Waste No. U080)	1000
F001d	(d) 1,1,1-Trichloroethane (CAS No. 71-55-6, RCRA Waste No. U226)	1000
F001e	(e) Carbon tetrachloride (CAS No. 56-23-5, RCRA Waste No. U211)	10
F001f	(f) Chlorinated fluorocarbons	5000
F002	Spent halogenated solvents	10
F002a	(a) Tetrachloroethylene (CAS No. 127-18-4, RCRA Waste No. U210)	100
F002b	(b) Methylene chloride (CAS No. 75-09-2, RCRA Waste No. U080)	1000
F002c	(c) Trichloroethylene (CAS No. 79-01-6, RCRA Waste No. U228)	100
F002d	(d) 1,1,1-Trichloroethane (CAS No. 71-55-6, RCRA Waste No. U226)	1000
F002e	(e) Chlorobenzene (CAS No. 108-90-7, RCRA Waste No. U037)	100
F002f	(f) 1,1,2-Trichloro-1,2,2-trifluoroethane (CAS No. 76-13-1)	5000
F002g	(g) o-Dichlorobenzene (CAS No. 95-50-1, RCRA Waste No. U070)	100
F002h	(h) Trichlorofluoromethane (CAS No. 75-69-4, RCRA Waste No. U121)	5000
F002i	(i) 1,1,2-Trichloroethane (CAS No. 79-00-5, RCRA Waste No. U227)	100
F003	Spent non-halogenated solvents and still bottoms from recovery:	100
F003a	(a) Xylene (CAS No. 1330-20-7)	1000
F003b	(b) Acetone (CAS No. 67-64-12)	5000
F003c	(c) Ethyl acetate (CAS No. 141-78-6)	5000
F003d	(d) Ethylbenzene (CAS No. 100-41-4)	1000
F003e	(e) Ethyl ether (CAS No. 60-29-7)	100
F003f	(f) Methyl isobutyl ketone (CAS No. 108-10-1)	5000
F003g	(g) n-Butyl alcohol (CAS No. 71-36-3)	5000
F003h	(h) Cyclohexanone (CAS No. 108-94-1)	5000
F003i	(i) Methanol (CAS No. 67-56-1, RCRA Waste No. U154)	5000
F004	Spent non-halogenated solvents and still bottoms from recovery:	100
F004a	(a) Cresols/cresylic acid (CAS No. 1319-77-3, RCRA Waste No. U052)	100
F004b	(b) Nitrobenzene (CAS No. 98-95-3, RCRA Waste No. U169)	1000
F005	Spent non-halogenated solvents and still bottoms from recovery:	100

<b>RCRA Codes</b>	<b>Name</b>	<b>DRQ</b>
F005a	(a) Toluene (CAS No. 108-88-3, RCRA Waste No. U220)	1000
F005b	(b) Methyl ethyl ketone (CAS No. 78-93-3, RCRA Waste No. U159)	5000
F005c	(c) Carbon disulfide (CAS No. 75-15-0, RCRA Waste No. P022)	100
F005d	(d) Isobutanol (CAS No. 78-83-1, RCRA Waste No. U140)	5000
F005e	(e) Pyridine (CAS No. 110-86-1, RCRA Waste No. U196)	1000
F006	Wastewater treatment sludges from electroplating operations (w/some exceptions)	10
F007	Spent cyanide plating bath solns. from electroplating	10
F008	Plating bath residues from electroplating where cyanides are used	10
F009	Spent stripping/cleaning bath solns. from electroplating where cyanides are used	10
F010	Quenching bath residues from metal heat treating where cyanides are used	10
F011	Spent cyanide soln. from salt bath pot cleaning from metal heat treating	10
F012	Quenching wastewater sludges from metal heat treating where cyanides are used	10
F019	Wastewater treatment sludges from chemical conversion aluminum coating	10
F020	Wastes from prod. or use of tri/tetrachlorophenol or derivative intermediates	1
F021	Wastes from prod. or use of pentachlorophenol or intermediates for derivatives	1
F022	Wastes from use of tetra/penta/hexachlorobenzenes under alkaline conditions	1
F023	Wastes from mat. prod. on equip. previously used for tri/tetrachlorophenol	1
F024	Wastes from production of chlorinated aliphatic hydrocarbons (C1-C5)	1
F025	Lights ends, filters from prod. of chlorinated aliphatic hydrocarbons (C1-C5)	1
F026	Waste from equipment previously used to prod. tetra/penta/hexachlorobenzenes	1
F027	Discarded formulations containing tri/tetra/pentachlorophenols or derivatives	1
F028	Residues from incineration of soil contaminated w/ F020,F021,F022,F023,F026,F027	1
F032	Wastewaters, process residuals from wood preserving using chlorophenolic solns.	1
F034	Wastewaters, process residuals from wood preserving using creosote formulations	1
F035	Wastewaters, process residuals from wood preserving using arsenic or chromium	1
F037	Petroleum refinery primary oil/water/solids	1



<b>RCRA Codes</b>	<b>Name</b>	<b>DRQ</b>
	separation sludge	
F038	Petroleum refinery secondary (emulsified)	1
	oil/water/solids separation sludge	
K001	Wastewater treatment sludge from	1
	creosote/pentachlorophenol wood preserving	
K002	Wastewater treatment sludge from prod. of chrome	10
	yellow and orange pigments	
K003	Wastewater treatment sludge from prod. of	10
	molybdate orange pigments	
K004	Wastewater treatment sludge from prod. of zinc	10
	yellow pigments	
K005	Wastewater treatment sludge from prod. of chrome	10
	green pigments	
K006	Wastewater treatment sludge from prod. of chrome	10
	oxide green pigments	
K007	Wastewater treatment sludge from prod. of iron	10
	blue pigments	
K008	Oven residue from prod. of chrome oxide green	10
	pigments	
K009	Dist. bottoms from prod. of acetaldehyde from	10
	ethylene	
K010	Dist. side cuts from prod. of acetaldehyde from	10
	ethylene	
K011	Bottom stream from wastewater stripper in	10
	acrylonitrile prod.	
K013	Bottom stream from acetonitrile column in	10
	acrylonitrile prod.	
K014	Bottoms from acetonitrile purification column in	5000
	acrylonitrile prod.	
K015	Still bottoms from the dist. of benzyl chloride	10
K016	Heavy ends or dist. residues from prod. of carbon	1
	tetrachloride	
K017	Heavy ends from the purification column in	10
	epichlorohydrin prod.	
K018	Heavy ends from the fractionation column in ethyl	1
	chloride prod.	
K019	Heavy ends from the dist. of ethylene dichloride	1
	during its prod.	
K020	Heavy ends from the dist. of vinyl chloride during	1
	prod. of the monomer	
K021	Aqueous spent antimony catalyst waste from	10
	fluoromethanes prod.	
K022	Dist. bottom tars from prod. of phenol/acetone	1
	from cumene	
K023	Dist. light ends from prod. of phthalic anhydride	5000
	from naphthalene	
K024	Dist. bottoms from prod. of phthalic anhydride from	5000
	naphthalene	
K025	Dist. bottoms from prod. of nitrobenzene by	10
	nitration of benzene	
K026	Stripping still tails from the prod. of methyl	1000

<b>RCRA Codes</b>	<b>Name</b>	<b>DRQ</b>
	ethyl pyridines	
K027	Centrifuge/dist.residues from toluene diisocyanate prod.	10
K028	Spent catalyst from hydrochlorinator reactor in prod. of 1,1,1-trichloroethane	1
K029	Waste from product steam stripper in prod. of 1,1,1-trichloroethane	1
K030	Column bottoms/heavy ends from prod. of trichloroethylene and perchloroethylene	1
K031	By-product salts generated in the prod. of MSMA and cacodylic acid	1
K032	Wastewater treatment sludge from the prod. of chlordanes	10
K033	Wastewater/scrubwater from chlorination of cyclopentadiene in chlordanes prod.	10
K034	Filter solids from filtration of hexachlorocyclopentadiene in chlordanes prod.	10
K035	Wastewater treatment sludges from the prod. of creosote	1
K036	Still bottoms from toluene reclamation distillation in disulfoton prod.	1
K037	Wastewater treatment sludges from the prod. of disulfoton	1
K038	Wastewater from the washing and stripping of phorate production	10
K039	Filter cake from filtration of diethylphosphorodithioic acid in phorate prod.	10
K040	Wastewater treatment sludge from the prod. of phorate	10
K041	Wastewater treatment sludge from the prod. of toxaphene	1
K042	Heavy ends/residues from dist. of tetrachlorobenzene in 2,4,5-T prod.	10
K043	2,6-Dichlorophenol waste from the prod. of 2,4-D	10
K044	Wastewater treatment sludge from manuf. and processing of explosives	10
K045	Spent carbon from treatment of wastewater containing explosives	10
K046	Wastewater sludge from manuf., formulating, loading of lead-based initiating compd	10
K047	Pink/red water from TNT operations	10
K048	Dissolved air flotation (DAF) float from the petroleum refining industry	10
K049	Slop oil emulsion solids from the petroleum refining industry	10
K050	Heat exchanger bundle cleaning sludge from petroleum refining industry	10
K051	API separator sludge from the petroleum refining industry	10
K052	Tank bottoms (leaded) from the petroleum refining	10

RCRA Codes	Name	DRQ
	industry	
K060	Ammonia still lime sludge from coking operations	1
K061	Emission control dust/sludge from primary prod. of steel in electric furnaces	10
K062	Spent pickle liquor generated by steel finishing (SIC codes 331 and 332)	10
K064	Acid plant blowdown slurry/sludge from blowdown slurry from primary copper prod.	10
K065	Surface impoundment solids at primary lead smelting facilities	10
K066	Sludge from treatment of wastewater/acid plant blowdown from primary zinc prod.	10
K069	Emission control dust/sludge from secondary lead smelting	10
K071	Brine purification muds from mercury cell process in chlorine production	1
K073	Chlorinated hydrocarbon waste from diaphragm cell process in chlorine production	10
K083	Distillation bottoms from aniline extraction	100
K084	Wastewater sludges from prod. of veterinary pharm. from arsenic compds.	1
K085	Distillation or fractionation column bottoms in prod. of chlorobenzenes	10
K086	Wastes/sludges from prod. of inks from chromium and lead-containing substances	10
K087	Decanter tank tar sludge from coking operations	100
K088	Spent potliners from primary aluminum reduction	10
K090	Emission control dust/sludge from ferrochromiumsilicon prod.	10
K091	Emission control dust/sludge from ferrochromium prod.	10
K093	Dist. light ends from prod. of phthalic anhydride by ortho-xylene	5000
K094	Dist. bottoms in prod. of phthalic anhydride by ortho-xylene	5000
K095	Distillation bottoms in prod. of 1,1,1-trichloroethane	100
K096	Heavy ends from dist. column in prod. of 1,1,1-trichloroethane	100
K097	Vacuum stripper discharge from the chlordane chlorinator in prod. of chlordane	1
K098	Untreated process wastewater from the prod. of toxaphene	1
K099	Untreated wastewater from the prod. of 2,4-D	10
K100	Waste leaching soln from emission control dust/sludge in secondary lead smelting	10
K101	Dist. tar residue from aniline in prod. of veterinary pharm. from arsenic compd.	1
K102	Residue from activated carbon in prod. of veterinary pharm. from arsenic compds.	1
K103	Process residues from aniline extraction from	100

RCRA Codes	Name	DRQ
	the prod. of aniline	
K104	Combined wastewater streams generated from prod. of nitrobenzene/aniline	10
K105	Aqueous stream from washing in prod. of chlorobenzenes	10
K106	Wastewater treatment sludge from mercury cell process in chlorine prod.	1
K107	Column bottoms from separation in prod. of UDMH from carboxylic acid hydrazides	10
K108	Condensed column overheads and vent gas from prod. of UDMH from -COOH hydrazides	10
K109	Spent filter catridges from purif. of UDMH prod. from carboxylic acid hydrazides	10
K110	Condensed column overheads from separation in UDMH prod. from -COOH hydrazides	10
K111	Product washwaters from prod. of dinitrotoluene via nitration of toluene	10
K112	Reaction by-product water from drying in toluenediamine prod from dinitrotoluene	10
K113	Condensed liquid light ends from purification of toluenediamine during its prod.	10
K114	Vicinals from purification of toluenediamine during its prod from dinitrotoluene	10
K115	Heavy ends from toluenediamine purification during prod. from dinitrotoluene	10
K116	Organic condensate from solvent recovery system in prod. of toluene diisocyanate	10
K117	Wastewater from vent gas scrubber in ethylene bromide prod by ethene bromination	1
K118	Spent absorbent solids in purification of ethylene dibromide in its prod.	1
K123	Process waste water from the prod. of ethylenebisdithiocarbamic acid and salts	10
K124	Reactor vent scubber water from prod of ethylenebisdithiocarbamic acid and salts	10
K125	Filtration/other solids from prod. of ethylenebisdithiocarbamic acid and salts	10
K126	Dust/sweepings from the prod. of ethylenebisdithiocarbamic acid and salts	10
K131	Wastewater and spent sulfuric acid from the prod. of methyl bromide	100
K132	Spent absorbent and wastewater solids from the prod. of methyl bromide	1000
K136	Still bottoms from ethylene dibromide purif. in prod. by ethene bromination	1
K141	Process residues from coal tar recovery in coking	1
K142	Tar storage tank residues from coke prod. from coal or recovery of coke by-prods	1
K143	Process residues from recovery of light oil in coking	1
K144	Wastewater residues from light oil refining in	1

RCRA Codes	Name	DRQ
	coking	
K145	Residues from naphthalene collection and recovery from coke by-products	1
K147	Tar storage tank residues from coal tar refining in coking	1
K148	Residues from coal tar distillation, including still bottoms, in coking	1
K149	Distillation bottoms from the prod. of chlorinated toluenes/benzoyl chlorides	10
K150	Organic residuals from Cl gas and HCl recovery from chlorinated toluene prod.	10
K151	Wastewater treatment sludge from production of chlorotoluenes/benzoyl chlorides	10
K156	Organic waste from production of carbamates and carbamoyl oximes	1
K157	Wastewaters from production of carbamates and carbamoyl oximes (not sludges)	1
K158	Bag house dusts & filter/separation solids from prod of carbamates, carb oximes	1
K159	Organics from treatment of thiocarbamate waste	1
K160	Solids from production of thiocarbamates and treatment of thiocarbamate wastes	1
K161	Purif.solids/bag house dust/sweepings from prod of dithiocarbamate acids/salts	1
K169	Crude oil storage tank sediment from petroleum operations	10
K170	Clarified slurry oil tank sediment from petroleum refining operations	1
K171	Spent hydrotreating catalyst from petroleum refining operations.	1
K172	Spent hydrorefining catalyst from petroleum refining operations.	1
K174	Wastewater treatment sludges from the production of vinyl chloride or ethylene dichloride monomer	1
K175	Wastewater treatment sludges from the production of ethylene dichloride or vinyl chloride monomer	1

Note: Delaware reportable quantities (DRQs) are based upon EPA RCRA waste streams and unlisted hazardous wastes reportable quantities (RQs) as published in EPA List of Lists as EPA publication Number: EPA 550-B-01-003.

The term hazardous waste substance includes RCRA listed and characteristic hazardous wastes. The establishments of RQs for hazardous waste differs from the methodology applied to individual hazardous substances, as the RQ for hazardous waste is based on the results of an analysis of hazardous constituents in the waste stream. When the RQ of each hazardous constituent is established, the lowest RQ of each of these constituents then becomes the adjusted RQ for the waste stream. In the event there are constituents in the hazardous waste that are not considered hazardous substances, a reference RQ is developed for these constituents in order to assign an appropriate RQ

**Appendix 3-2**

**Hazardous Substances**  
[Deleted December 2004]

### Appendix 3-3

#### **Chemicals Exempt from from Emergency Planning and Right-to-Know Statutes**

(Source: Delaware Statutes, Title 16, Part II, Chapter 24, Section 2417) [Added December 2004]

Notwithstanding any language to the contrary, this chapter shall not apply to chemicals in the following:

- (1) Any article which is formed to a specific shape or design during manufacture, which has end use function(s) dependent in whole or in part upon its shape or design during end use, and which does not release or otherwise result in exposure to a hazardous chemical under normal conditions of use;
- (2) Products intended for personal consumption by employees in the workplace;
- (3) Retail food sale establishments and all other retail trade establishments, exclusive of processing and repair areas;
- (4) A workplace where a hazardous chemical is received in a sealed package and is subsequently sold or transferred in that package if the seal remains intact while the chemical is in the workplace and if the chemical does not remain in the workplace more than 5 working days, except for the provisions of § 2409(a) and § 2410 of this title.
- (5) Any food, food additive, color additive, drug or cosmetic as such terms are defined in the Federal Food, Drug and Cosmetic Act (21 U.S.C. § 301 et seq.) or distilled spirits, wines or malt beverages as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. § 201 et seq.).
- (6) A laboratory under the direct supervision or guideline of a technically qualified individual provided that:
  - a. Labels on containers of incoming chemicals shall not be removed or defaced;
  - b. MSDSs received shall be maintained and made accessible to employees and students;
  - c. Sections 2409 and 2410 of this title are met; and
  - d. The laboratory is not used primarily to produce hazardous chemicals in bulk for commercial purposes.
- (7) The workplace of an agriculture employer or employer group if the Secretary of the Department of Agriculture certifies to the Secretary that the chemicals are covered by other federal or state laws and regulations.

**Appendix 3-4**

**Additional Delaware Regulated Toxic Substances**

[Deleted December 2008] (See Appendix 1-3 in Air Emission Management).



**Appendix 3-5**

**Delaware Regulated Explosive Substances**

[Deleted December 2008] (See Appendix 1-3 in Air Emission Management).

**Appendix 3-6**

**Delaware Regulated Flammable and Combustible Substances**  
[Deleted December 2008] (See Appendix 1-3 in Air Emission Management).



## SECTION 4

### HAZARDOUS WASTE MANAGEMENT

#### Delaware Supplement, January 2010

This section covers the state requirements for Hazardous Waste Management and is intended to supplement the U.S. TEAM Guide. Refer to the U.S. TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

NOTE: Except where specifically noted within this supplement, the Delaware hazardous waste regulations are the functional equivalent of the Federal regulations, including the same citation numbers.

#### Definitions

(NOTE: The following definitions are to supplement the definitions in the U.S. TEAM Guide. When a word is defined in this supplement and defined in the U.S. TEAM Guide, use the definition in this supplement for the purpose of compliance with Delaware state law.)

- *Component* - any constituent part of a unit or any group of constituent parts of a unit which are assembled to perform a specific function (e.g., a pump seal, pump, kiln liner, kiln thermocouple) (DE 7 1000 1302, Section 122.2) [Citation Revised January 2007; Citation Revised December 2008].
- *Disposal Facility* - a facility or part of a facility at which hazardous waste is intentionally placed into or on the land or water, and at which hazardous waste will remain after closure. The term disposal facility does not include a corrective action management unit into which remediation wastes are placed. (DE 7 1000 1302, Section 122.2) [Citation Revised January 2007; Citation Revised December 2008].
- *DNREC* - the Delaware Department of Natural Resources and Environmental Control (7 1000 1302, Section 122.2) [Citation Revised January 2007; Citation Revised December 2008].
- *New Hazardous Waste Management Facility* - a hazardous waste management facility which began operation or for which construction commenced after 19 November 1980 (7 1000 1302, Section 122.2) [Citation Revised January 2007; Citation Revised December 2008].
- *Person* - an individual, association, partnership, corporation, municipality, state, or Federal agency, or an agent or employee thereof (7 1000 1302, Section 122.2) [Citation Revised January 2007; Citation Revised December 2008].
- *Secretary* - the Secretary of the DNREC (7 1000 1302, Section 122.2) [Citation Revised January 2007; Citation Revised December 2008].

**HAZARDOUS WASTE MANAGEMENT  
GUIDANCE FOR DELAWARE CHECKLIST USERS**

**REFER TO CHECKLIST ITEMS:**

Missing Checklist Items	HW.2.1.DE.
Generators	
General	HW.55.1.DE. and HW.55.2.DE.
Contingency Plans and Emergency Coordinators	HW.65.1.DE.
Transportation of Hazardous Waste	HW.100.1.DE. through HW.100.4.DE.
All TSDFs	
General	HW.105.1.DE.
Documentation Requirements	HW.145.1.DE. and HW.145.2.DE.
Additional Requirements for Interim Status TSDFs	
Waste Piles	HW.230.1.DE.
Hazardous Waste Landfills	HW.240.1.DE.
Universal Wastes	

NOTE: Delaware has adopted regulations that are the equivalent of the Federal regulations for universal wastes found in 40 CFR 273.

<b>COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Delaware Supplement</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>HW.2.</b></p> <p><b>MISSING CHECKLIST ITEMS</b></p> <p><b>HW.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>GENERATORS</b></p> <p><b>HW.55. General</b></p> <p><b>HW.55.1.DE.</b> [Deleted December 1999].</p> <p><b>HW.55.2.DE.</b> Generators must submit an annual report by 1 March of each year (DE 7 1000 1 302, Section 262.41) [Added December 2008].</p>	<p>(NOTE: Regulation reserved.)</p> <p>Verify that generators prepare and submit a single copy of an Annual Report to the State of Delaware, Department of Natural Resources and Environmental Control by no later than March 1 for the preceding calendar year.</p> <p>Verify that the Annual Report is submitted on a form prescribed by the Department according to the instructions on the form and covers generator activities during the previous year.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>GENERATORS</b></p> <p><b>HW.65. Contingency Plans and Emergency Coordinators</b></p> <p><b>HW.65.1.DE.</b> Generators must meet requirements for contingency plans (DE 7 1000 1301, Section 265.52) [Added January 2010].</p>	<p>Verify that the plan lists names, addresses (office and home), and phone numbers (office and home) of all persons qualified to act as emergency coordinator.</p> <p>Verify that the list is kept up to date.</p>



**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>HW.100.</b></p> <p><b>TRANSPORTATION</b></p> <p><b>HW.100.1.DE.</b> Transporters of hazardous waste must have a permit ( DE 7 1000 130 2, Section 263.100) [Citation Revised January 2007].</p> <p><b>HW.100.2.DE.</b> Transporters of hazardous waste must comply with the conditions of the transporter permit ( DE 7 1000 130 2, Section 263.101) [Citation Revised January 2007].</p> <p><b>HW.100.3.DE.</b> All vehicle drivers and employees of the transporter who handle hazardous waste must receive training ( DE 7 10 00 1302, Section 263.104) [Citation Revised January 2007].</p> <p><b>HW.100.4.DE.</b> Transporters of hazardous waste must comply with specific operating requirements (DE 7 1000 130 2, Section 263.105) [Citation Revised January 2007].</p>	<p>Verify that any person managing hazardous waste, toxic waste, or used/waste oil for transport in or through the state has a transporter permit issued by the Department.</p> <p>Verify that a transporter complies with the conditions of the permit including the following requirements:</p> <ul style="list-style-type: none"> <li>- transports only those wastes specifically authorized in the permit</li> <li>- hauls hazardous waste only with vehicles so designated in the permit</li> <li>- all vehicles authorized to haul waste carry a copy of the permit at all times</li> <li>- updates the permit as information contained in the permit changes.</li> </ul> <p>Verify that all vehicle drivers and employees of the transporter who handle hazardous waste successfully complete a program of instruction on transportation duties which covers the following information:</p> <ul style="list-style-type: none"> <li>- basic knowledge of the Department of Transportation's (DOT) labeling, packing, placarding, and shipping requirements</li> <li>- safe vehicle operations to avoid creating hazards to human health or the environment</li> <li>- knowledge of proper handling procedures for the wastes being transported</li> <li>- familiarity with use of the most recent edition of the Emergency Response Guidebook for Hazardous Waste Materials published by the DOT</li> <li>- a method to assure that the instruction program has been successfully completed (e.g., written or oral tests).</li> </ul> <p>Verify that all vehicles transporting hazardous waste meet the following requirements:</p> <ul style="list-style-type: none"> <li>- comply with all applicable state and Federal regulations and do not present a hazard through unsafe vehicle conditions</li> <li>- carry safety and emergency equipment in accordance with applicable DOT regulations to ensure public safety and protection to the environment</li> <li>- equipped and operated to prevent leakage of wastes to the environment</li> </ul>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
	<p>- carry on board spill containment equipment to ensure adequate containment in the event of a release of the waste from the vehicle.</p> <p>Verify that open-bodied container vehicles carrying wastes that are subject to scattering or blowing are fully covered by a tarpaulin or other such device to prevent any discharge or release of the waste to the environment.</p> <p>Verify that the vehicles used for transporting hazardous waste meet the following identification requirements:</p> <ul style="list-style-type: none"> <li>- the full name of the transporter is displayed on both sides of the vehicle</li> <li>- the permit number is displayed: <ul style="list-style-type: none"> <li>- in figures at least 3 in. high</li> <li>- of a color which contrasts with the background color</li> <li>- in a prominent position on each side and rear of the vehicle.</li> </ul> </li> </ul> <p>Verify that operators of vehicles hauling hazardous waste attend the vehicle during loading and unloading.</p> <p>Verify that hazardous waste is not accepted for hauling in any of the following situations:</p> <ul style="list-style-type: none"> <li>- the hazardous waste shipment does not match the waste description contained in the manifest</li> <li>- waste containers are leaking or pose a potential for release during transit and are not overpacked prior to loading</li> <li>- waste containers have not been properly labeled or marked.</li> </ul> <p>Verify that hazardous waste drums are properly secured to prevent load shift during transit.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ALL TSDFS</b></p> <p><b>HW.105. General</b></p> <p><b>HW.105.1.DE.</b> All T SDFs must have a permit ( DE 7 1000 1302, Section 122.1(a)) [Citation Revised January 2007; Citation Revised December 2008].</p>	<p>Verify that all T SDFs that are not specifically exempted from this requirement have a permit during all stages of operation, including the postclosure period if the TSDf closed after 28 August 1988.</p> <p>(NOTE: The following operations are not required to obtain a Department permit if they meet specific storage-disposal requirements:</p> <ul style="list-style-type: none"> <li>- generators who accumulate hazardous waste onsite for less than 90 days</li> <li>- farmers who dispose of hazardous waste pesticides from their own use</li> <li>- small quantity generators</li> <li>- totally enclosed treatment facilities</li> <li>- elementary neutralization units or wastewater treatment units</li> <li>- transporters storing manifested shipments of hazardous waste in containers at a transfer facility for 10 days or less</li> <li>- emergency operations for the prevention or containment of an unauthorized hazardous release.)</li> </ul>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ALL TSDFS</b></p> <p><b>HW.145. Documentation Requirements</b></p> <p><b>HW.145.1.DE.</b> TSDFS must prepare and submit an annual report by 1 March of each year ( DE 7 1000 1302, Section 264.75 and 265.75) [Citation Revised January 2007].</p> <p><b>HW.145.2.DE.</b> TSDFS must meet requirements for contingency plans (DE 7 1000 1301, Section 264.62 and Section 265.52) [ Added January 2010].</p>	<p>Verify that an annual report is submitted by 1 March of each year.</p> <p>(NOTE: The Federal requirement is for biennial reports; the content of the report is the same. See the U.S. TEAM Guide (HW.145.6) for specifics.)</p> <p>Verify that the plan lists names, addresses (office and home), and phone numbers (office and home) of all persons qualified to act as emergency coordinator.</p> <p>Verify that the list is kept up to date.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ADDITIONAL REQUIREMENTS FOR INTERIM STATUS TSDFS</b></p> <p><b>HW.230. Waste Piles</b></p> <p><b>HW.230.1.DE.</b> All new waste piles and expansions or replacements of existing waste piles must meet specific liner requirements (DE 7 1000 1302, Section 265.254) [Revised December 1 997; Citation Revised January 2007].</p>	<p>(NOTE: The DNREC regulations have no equivalent to the requirements referred to in the U.S. TEAM Guide in HW.230.2.)</p> <p>Verify that the following waste piles meet the requirements for liners and leachate collection systems found in HW.190.1 and HW.190.2 of the U.S. TEAM Guide:</p> <ul style="list-style-type: none"> <li>- new units, which construction commences after 29 January 1992</li> <li>- replacements of an existing waste pile unit that is to commence reuse after 29 July 1992</li> <li>- lateral expansions of existing units on which construction commences after 29 July 1992.</li> </ul> <p>(NOTE: For purposes of Delaware requirements, there is no DNREC equivalent to construction quality assurance programs in HW.190.2 in the U.S. TEAM Guide.)</p>

<b>COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Delaware Supplement</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ADDITIONAL REQUIREMENTS FOR INTERIM STATUS TSDFS</b></p> <p><b>HW.240. Hazardous Waste Landfills</b></p> <p><b>HW.240.1.DE.</b> Interim status hazardous waste landfills must have double liners (DE 71000 130 2, Section 265.301) [Revised December 1997; Citation Revised January 2007].</p>	<p>Verify that the following landfill units have 2 or more liners and a leachate collection system and removal systems above and between the liners:</p> <ul style="list-style-type: none"> <li>- each new landfill unit on which construction commences after 29 January 1992</li> <li>- each lateral expansion of a landfill unit on which construction commences after 29 July 1992</li> <li>- each such replacement of an existing landfill unit that is to commence reuse after 29 July 1992.</li> </ul> <p>(NOTE: Landfills may obtain a waiver of the double liner requirement from the USEPA regional administrator.)</p> <p>(NOTE: The owner or operator of any replacement landfill unit is exempt from the previous requirement if:</p> <ul style="list-style-type: none"> <li>- the existing unit was constructed in compliance with the design standards of section 3004( o)(1)(A)(i) and ( o)(5) of the Resource Conservation and Recovery Act</li> <li>- there is no reason to believe that the liner is not functioning as designed.)</li> </ul> <p>Verify that the landfill maintains a run-on control system capable of preventing flow into the active portion of the landfill during peak discharge from at least a 25-yr term.</p> <p>Verify that the landfill maintains runoff management system to collect and control at least the water volume resulting from a 24-h, 25-yr storm.</p> <p>Verify that collection and holding facilities (e.g., tanks and basins) associated with run-on and runoff control systems are emptied or otherwise managed promptly after storms to maintain design capacity of the system.</p> <p>Verify that the landfill, if subject to dispersal by wind, is covered or otherwise managed to control wind dispersal of hazardous waste.</p>



## SECTION 5

### NATURAL RESOURCES MANAGEMENT

#### Delaware Supplement, January 2010

This section covers the state requirements for Natural Resources Management and is intended to supplement the U.S. TEAM Guide. Refer to the U.S. TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

#### Definitions

- *Activity* - Construction, demolition, or operation, or use of any facility, property, or device. Any dredging, filling, construction of any kind, including but not limited to, construction of a basin, channel, dock, pier, jetty, breakwater, bulkhead, revetment or other marina structure, or human induced or conducted action resulting in the making of a connection to state waters (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Activity* - any dredging, draining, filling, bulkheading, construction of any kind, including but not limited to, construction of a pier, jetty, breakwater, boat ramp, or mining, drilling, or excavation (DE 7 7000 7502) [Added December 2008].
- *Activity* - includes, but is not limited to, any human induced action, such as dredging, draining, filling, grading, bulkheading, mining, drilling, extraction of materials or excavation or construction of any kind, including, but not limited to, construction of a boat ramp or slip, breakwater, residences, bridge, bulkhead, culvert, dam, derrick, dock, groin, jetty, lagoon, gabion, rip-rap, launching facility, marina, mooring facility, pier, seawall, walkway or wharf (DE 7 7000 7504) [Added December 2008].
- *Alteration* - Any change to an existing marina which would (a) increase the number of slips by five (5) or more, or (b) involve new or additional upland or water-based activities whose construction or operation have the potential to generate pollution. Maintenance of existing serviceable structures shall not be considered an alteration (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Beach* - that portion of the shore of any body of water that extends from the mean high water mark inland 1000 ft, or to a roadway for automobiles, whichever is closer (DE 7 5000 5102, Part 1) [Citation Revised January 2008].
- *Beach Preservation* - the process of maintaining the recreational and/or storm protection value of a beach (DE 7 5000 5102, Part 1) [Citation Revised January 2008].
- *Beach Protection* - the process of preventing the decrease of recreational and/or storm protection values of a beach (DE 7 5000 5102, Part 1) [Citation Revised January 2008].
- *Board* - the State Coastal Zone Industrial Control Board (DE 7 100 101, Section 3.0) [Added December 2002; Citation Revised December 2004; Citation Revised January 2008].
- *Building* - any roofed and walled structure built for permanent or semipermanent use (DE 7 5000 5102, Part 1) [Citation Revised January 2008].



- *Building Line* - the line generally paralleling the coast, set forth on maps prepared by the Division with reference to the National Geodetic Vertical Datum (NGVD) and the Delaware State Plane Coordinate System, and based upon information provided by topographic survey. The Building Line is located as follows (DE 7 5000 5102, Part 1) [Revised January 2008]:
  1. Along beaches extending from the Delaware/Maryland line to the tip of Cape Henlopen - 100 feet landward of the adjusted seaward most 10-foot elevation contour above NGVD;
  2. Along beaches extending from the tip of Cape Henlopen to the southernmost limit of Primehook Beach - 100 feet landward of the adjusted seaward most 7-foot elevation contour above NGVD;
  3. Along beaches extending from the southernmost limit of Primehook Beach to the Old Marina Canal north of Pickering Beach - 75 feet landward of the adjusted seaward most 7-foot elevation contour above NGVD;
  4. or at the landward limits of the Beach, as defined in these Regulations, whichever is most seaward.
- *Bulk Product* - loose masses of cargo such as oil, grain, gas and minerals, which are typically stored in the hold of a vessel. Cargoes such as automobiles, machinery, bags of salt and palletized items that are individually packaged or contained are not considered bulk products in the application of this definition (DE 7 100 101, Section 3) [Added December 1999; Citation Revised January 2008].
- *Commercial Marinas* - Marinas which are operated primarily for profit (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Construction* - any work or activity that is likely to have a substantial physical effect on existing coastal conditions or natural shore processes. Construction also includes reconstruction, restoration, repair, alteration, and placement if said terms are not otherwise included for clarification (DE 7 5000 5102, Part 1) [Citation Revised January 2008].
- *Dedicated Pumpout Facility* - A semi-permanent connection made between a vessel and the shore for the purpose of removing vessel sewage from the vessel holding tank or head on a continuous or automatic intermittent basis to an approved sewage disposal facility (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Department* - the Delaware Department of Natural Resources and Environmental Control (DE 7 5000 5102, Part 1) [Citation Revised January 2008].
- *Discharge* - any release, however caused, from a vessel, pier, or other marina facility. This includes any escape, disposal, spillage, leaking, pumping, emitting, pouring, dumping, or emptying (DE 7 7000 7501) [Added December 2008].
- *Division* - the Division duly authorized by the Secretary as responsible for administering these Regulations (DE 7 5000 5102, Part 1) [Added January 2008].
- *Dock* - A fixed or floating decked structure where a vessel or vessels may be secured either temporarily or indefinitely (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Docking Facility* - any structures and/ or equipment used to temporarily secure a vessel to a shoreline or another vessel so that materials, cargo, and/or people may be transferred between the vessel and the shore, or between two vessels together with associated land, equipment, and structures so as to allow the receiving, accumulating, safekeeping, storage, and preparation of cargoes for further shipment, and administrative maintenance purposes directly related to such receiving, accumulating, safekeeping, storage, and preparation of cargoes for further shipment (DE 7 100 101, Section 3) [Added December 2002; Citation Revised December 2004; Citation Revised January 2008].

- *Dredging* - the removal or displacement, by artificial activities, of mud, soil, sand, gravel, shells or other material from subaqueous lands (DE 7 7000 7504) [Added December 2008].
- *Dune* - a mound, hill, or ridge of windblown sand, either bare or covered with vegetation, naturally or artificially accumulated (DE 7 5000 5102, Part 1) [Citation Revised January 2008].
- *Existing Marina* - Any marina structures or functions that were in operation or had a valid subaqueous lands lease or permit as of March 29, 1990 (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Harbormaster* - An officer designated for a particular facility who executes and enforces the "Rules and Regulations for Marina Users" that are included as part of the Operation and Maintenance Plan for the facility (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Lowest Living Floor* - lowest portion of the lowest horizontal support member of the lowest enclosed space used for living purposes, which includes working, sleeping, eating, cooking, recreation, or combination thereof. A floor used only for storage is not considered a living floor (DE 7 5000 5102, Part 1) [Citation Revised January 2008].
- *Maintenance Wastes* - Materials collected while maintaining or operating vessels, including, but not limited to, soot, machinery deposits, solvents, hydrocarbons, scraped paint, deck sweepings, wiping wastes, and rags (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Marina* - Those facilities on or adjacent to the water which provide for mooring, berthing, or storage of vessels, and which may include any or all of the related ancillary structures and functions of marinas such as slips, docks, finger piers, piers, berths, upland vessel storage areas, boat ramps, anchorages, shore stabilization structures, breakwaters, channels, moorings, basins, vessel repair services, vessel sales, sales of supplies which are normally associated with boating (such as fuel, bait and tackle), vessel rentals, and parking areas for users of the marina (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Oil* - any kind and in any form including, but not limited to, petroleum products, tank bottoms, oil refuse, oil mixed with other wastes, and all other liquid hydrocarbons regardless of specific gravity (DE 7 7000 7501) [Added December 2008].
- *Potential to Pollute* - the proposed use has the potential to cause short and long term adverse impacts on human populations, air and water quality, wetlands, flora and fauna, or to produce dangerous or onerous levels of glare, heat, noise, vibration, radiation, electromagnetic interference and obnoxious odors as determined in the applicant's Environmental Impact Statement accompanying the permit application. The Department will consider mitigating controls and risk management analysis reports from the applicant in evaluating a proposed use's potential to pollute. The Department shall consider probability of equipment failure or human error, and the existence of backup controls if such failure or error does occur, in evaluating an applicant's potential to pollute (DE 7 100 101, Section 3) [Added December 2002; Citation Revised December 2004; Citation Revised January 2008].
- *Private Slips or Ramps* - Facilities that are not part of a residential or planned community marina, serve a single residence, and are constructed exclusively for the personal use of the occupants of that residence (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Private Subaqueous Lands* - any subaqueous lands which are not public subaqueous lands (DE 7 7000 7504) [Added December 2008].

- *Public Beach* - any beach owned by the Federal or state government or any county, city, town, or municipality; or any beach for which the state has obtained an easement or agreement for public use (DE 7 5000 5102, Part 1) [Citation Revised January 2008].
- *Public Subaqueous Lands* - those subaqueous lands owned by the State of Delaware, including subaqueous lands which were altered or created from non-subaqueous lands by excavation or other means or through loss by natural processes or acts of God (DE 7 7000 7504) [Added December 2008].
- *Public Marinas* - Marinas owned by governmental agencies and operated with their own personnel or through a concession or other agreement with a private entity (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Public Recycling Plant* - any recycling plant or industrial facility whose primary product is recycled materials and which is owned and operated by any city, town, county, district or other political subdivision (DE 7 100 101, Section 3) [Added December 2002; Citation Revised December 2004; Citation Revised January 2008].
- *Public Sewage Treatment Plant* - any device and/or system used in conveyance, storage, treatment, disposal, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature, which systems are under the jurisdiction of a city, town, county, district or other political subdivision (DE 7 100 101, Section 3) [Added December 2002; Citation Revised December 2004; Citation Revised January 2008].
- *Pumpout Facility* - A mechanical device which is temporarily connected to a vessel for the purpose of removing vessel sewage from its holding tank or head to an approved sewage disposal facility. A Dump Station is a type of pumpout facility which receives vessel sewage from portable marine sanitation devices and from which sewage is delivered or transferred to an approved sewage disposal facility. See also Dedicated Pumpout Facility (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Recreational Marinas* - Recreational marinas include residential or planned community marinas, water sports club marinas, and all other marinas which are not commercial marinas or public marinas (DE 7 7000 7501) [Added January 2006; Citation Revised January 2008; Citation Revised December 2008].
- *Recycle* - the series of activities, including collection, separation, and processing, by which products or other materials are recovered from or otherwise diverted from the solid waste stream for use in the form of raw materials other than fuel for producing heat or power combustion (DE 7 100 101, Section 3) [Added December 2002; Citation Revised December 2004; Citation Revised January 2008].
- *Research and Development Activity* - those activities in which research and development substances are used in quantities that are not greater than reasonably necessary for the purposes of scientific experimentation or product or process development. The research and development substances must either be the focus of research and development itself, or be used in the research and development activity focusing on another chemical or product. research and development includes synthesis, analysis, experimentation or research on new or existing chemicals or products. Research and development encompasses a wide range of activities which may occur in a laboratory, pilot plants or commercial plant, for testing the physical, chemical, production, or performance characteristics of a substance, conducted under the supervision of a technically qualified individual. Research and development is distinct from ongoing commercial activities which focus on building a market for a product rather than just testing its market potential. General distribution of chemical substances or products to consumers does not constitute research and development (DE 7 100 101, Section 3) [Added December 2002; Citation Revised December 2004; Citation Revised January 2008].
- *Structure* -

1. any building, pipeline, dock, pier, wharf, boat ramp, groin, jetty, seawall, bulkhead, revetment, or any other piece of work artificially built (DE 7 5000 5102, Part 1) [Citation Revised January 2008]
  2. any pier, jetty, breakwater, boat ramp or other piece of work by humans (DE 7 7000 7502) [Added December 2008]
  3. man-made object including, but not limited to: piers, slips, docks, breakwaters, revetments, or bulkheads (DE 7 7000 7501) [Added December January 2008].
- *Subaqueous Lands* - submerged lands and tidelands (DE 7 7000 7504) [Added December 2008]
  - *Submerged Lands* - land lying below the line of mean low tide in the beds of all tidal waters within the boundaries of the State, together with the beds (channelward of or ordinary high water in non-tidal waters) of navigable rivers, streams, lakes, bays, inlets, ponds, or other waterways within the boundaries of the State (DE 7 7000 7504) [Added December 2008]
  - *Vessel* - any ship, boat or other means of conveyance that can transport goods or materials on, over, or through water (DE 7 100 101, Section 3) [Added December 2002; Citation Revised December 2004; Citation Revised January 2008].
  - *Vessel* - every type of watercraft, boat, houseboat, or other form of man-made contrivance used, or capable of being used, whether or not capable of self-propulsion, for navigation on the waters of the state (DE 7 7000 7501) [Added December January 2008].
  - *Vessel Repair/Maintenance Yards* - any facility which provides for the new construction, repair or maintenance of vessels (DE 7 7000 7501) [Added December January 2008].
  - *Wastewater* - the liquid and water-borne human and/or household waste derived from residential, industrial, institutional, or commercial sources, including vessels (DE 7 7000 7501) [Added December January 2008].
  - *Voluntary Improvements* - improvements, for example, in emissions reductions, habitat creation and spill prevention -provided that each is definite and measurable and which were made by a facility without any federal or state requirement to do so (DE 7 100 1 01, Section 3) [Added December 2002; Citation Revised December 2004; Citation Revised January 2008].
  - *Wetlands* - those lands above the mean low water elevation including any bank, marsh, swamp, meadow, flat or other low land subject to tidal action in the State of Delaware along the Delaware Bay and Delaware River, Indian River Bay, Rehoboth Bay, Little and Big Assawoman Bays, the coastal inland waterways, or along any inlet, estuary or tributary waterway or any portion thereof, including those areas which are now or in this century have been connected to tidal waters, whose surface is at or below an elevation of two feet above local mean high water, and upon which may grow or is capable of growing any but not necessarily all of the following plants: Eelgrass (*Zostera marina*), Wegeon Grass (*Ruppia maritima*), Sago Pondweed (*Potamogeton pectinatus*), Saltmarsh Cordgrass (*Spartina alterniflora*), Saltmarsh Grass (*Spartina cynosuroides*), Saltmarsh Hay (*Spartina patens*), Spike Grass (*Distichlis spicata*), Black Grass (*Juncus gerardii*), Switch Grass (*Panicum virgatum*), Three Square Rush (*Scirpus americanus*), Sea Laver (*Limonium carolinianum*), Seaside Goldenrod (*Solidago sempervirens*), Sea Blite (*Suaeda maritima*), Sea Blite (*Suaeda linearis*), Perennial Glasswort (*Salicornia virginica*), Dwarf Glasswort (*Salicornia bigelovii*), Amphire (*Salicornia europaea*), Marsh Aster (*Aster tenuifolius*), Saltmarsh Fleabane (*Pluchea purourascens* var. *succulenta*), Mock Bishop's Weed (*Ptilimnium capillaceum*), Seaside Plantain (*Plantago oliganthos*), Orach (*Atriplex patula*), var *hastata*, Marsh Elder (*Iva frutescens* var. *orbata*), Groundsel Bush (*Raccaris halimifolia*), Bladder Wrack (*Fucus vesiculosus*), Swamp Rose Mallow, Seaside Hollyhock or Marsh Mallow (*Hibiscus palustris*), Torrey Rush (*Scirpus torreyi*), Narrow-leaved Cattail (*Typha angustifolia*), and Broad-leaved Cattail (*T. latifolia*) and those lands not used for agricultural purposes in 1973, containing four hundred (400) acres or more of contiguous non-tidal swamp, bog, muck, or marsh exclusive of narrow stream valleys and tax ditches where fresh water stands most, if not all of the time due to high water table, which contribute significantly to ground water

recharge, and which would require intensive artificial drainage using equipment such as pumping stations, drain fields or ditches for the production of agricultural crops (DE 7 7000 7502) [Citation Revised December 2004; Citation Revised January 2008; Revised December 2008].

**NATURAL RESOURCES MANAGEMENT  
GUIDANCE FOR DELAWARE CHECKLIST USERS**

**REFER TO CHECKLIST ITEMS:**

Missing Checklist Items	NR.2.1.DE.
Dredging	NR.5.1.DE.
Land Management	[Deleted]
Water Resource Management	NR.15.1.DE. through NR.15.12.DE.
Wildlife	NR.20.1.DE. through NR.20.3.DE.

**NATURAL RESOURCES MANAGEMENT  
GUIDANCE FOR DELAWARE APPENDIX USERS**

**REFER TO APPENDIX NUMBERS:**

**REFER TO APPENDIX TITLES:**

5-1	Threatened and Endangered Animals
5-2	Federally Listed and Candidate Plant Species Occurring In the State of Delaware
5-3	Coastal Zone Uses

<b>COMPLIANCE CATEGORY: NATURAL RESOURCES MANAGEMENT Delaware Supplement</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>NR.2.</b></p> <p><b>MISSING CHECKLIST ITEMS</b></p> <p><b>NR.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

**COMPLIANCE CATEGORY:  
NATURAL RESOURCES MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>NR.5.</b></p> <p><b>DREDGING</b></p> <p><b>NR.5.1.DE.</b> A state permit must be obtained prior to dredging activities on private and public subaqueous lands (DE 77000 7504, Section 2) [Revised December 1997; Citation Revised January 2008; Citation Revised December 2008].</p>	<p>Verify that a state permit is secured before engaging in the following activities:</p> <ul style="list-style-type: none"> <li>- dredging, filling, excavating, or extracting subaqueous lands</li> <li>- excavation, creation, or alteration of any channel, lagoon, turning basin, or ditch on public lands which subsequently make connection with public subaqueous lands</li> <li>- the filling in of lands adjacent to public subaqueous lands.</li> </ul> <p>Verify that the terms and conditions of the state permit are met.</p>



<b>COMPLIANCE CATEGORY: NATURAL RESOURCES MANAGEMENT Delaware Supplement</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>NR.10.</b></p> <p><b>LAND MANAGEMENT</b></p> <p><b>NR.10.1.DE.</b> [Deleted December 2004].</p>	<p>(NOTE: .Management P ractice b ased o n D elaware S ediment an d S tormwater Regulations revised.)</p>

**COMPLIANCE CATEGORY:  
NATURAL RESOURCES MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>NR.15.</b></p> <p><b>WATER RESOURCE MANAGEMENT</b></p> <p><b>NR.15.1.DE.</b> Division approval is required prior to building seaward of any building line ( DE 7 50 00 5102, Parts 3. 01 and 3. 02) [Revised January 2008].</p> <p><b>NR.15.2.DE.</b> Division approval is required prior to the conduct of maintenance, repair, emergency action, or reconstruction activities (DE 7 5000 5 102, P arts 2. 06 and 2.07) [Revised January 2008].</p> <p><b>NR.15.3.DE.</b> A permit is required prior to construction of specific structures seaward of the building line (DE 7 5000 5 102, Parts 4. 03, 4. 04, and 4. 05) [Revised January 2008].</p>	<p>Verify that the Division has granted approval for any construction activities occurring seaward of the building line.</p> <p>Verify that the Division has issued a letter of approval or a permit for any building modifications or expansions occurring seaward of the building line.</p> <p>Verify that the Division has issued a letter of approval or a permit for any maintenance, repair, or emergency action activities on buildings/structures partially or entirely seaward of the building line.</p> <p>(NOTE: Departmental approval is not required in the following instances:  - building maintenance or repair work is conducted at or above the lowest living floor  - structure maintenance or repair work is conducted in response to damage caused by means other than wave action, floods, or erosion.)</p> <p>Verify that, before a person commences any emergency protection work, the Division is contacted to request approval to perform the emergency protection work.</p> <p>(NOTE: After the emergency or emergency warning period, the Division may require the removal of any emergency protection work performed.)</p> <p>Verify that the Division has issued a letter of approval or a permit for any restoration or reconstruction activities undertaken seaward of the building line following destruction.</p> <p>Verify that a permit is obtained before beginning any construction of the following structures seaward of the building line:</p> <ul style="list-style-type: none"> <li>- beach erosion control structures</li> <li>- shore protection structures</li> <li>- pipelines</li> <li>- harbor works</li> <li>- structures seaward of the building line.</li> </ul>

**COMPLIANCE CATEGORY:  
NATURAL RESOURCES MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>NR.15.4.DE.</b> Either a letter of approval or a permit is required to engage in specific activities seaward or landward of the building line (DE 7 5000 5 102, Parts 4. 06 and 4.08) [ Revised December 1997; Revised January 2008].</p> <p><b>NR.15.5.DE.</b> Specific activities are prohibited on state-owned beach property (DE 7 5000 5102, Part 3.03) [Citation Revised January 2008].</p> <p><b>NR.15.6.DE.</b> Specific activities related to public subaqueous lands must meet specific requirements (DE 7 7000 7504, Section 2. 4) [Citation Revised January 2008].</p>	<p>(NOTE: If a person intends to construct a structure, or portion thereof, that is going to be used only for the purpose of providing pedestrian access to and from the berm and foreshore across the dune zone, a permit is not required providing that a letter of approval for the construction is obtained from the Division.)</p> <p>Verify that the Division issues a letter of approval or a permit before engaging in any of the following activities seaward or landward of the building line:</p> <ul style="list-style-type: none"> <li>- conduct construction of any structure</li> <li>- alteration of any beach</li> <li>- digging</li> <li>- mining</li> <li>- removal or deposition of any substantial [ not defined] amount of beach or other materials</li> <li>- significant removal of vegetation from any beach.</li> </ul> <p>Verify that no one engages in the following activities on state-owned beach property:</p> <ul style="list-style-type: none"> <li>- operation of any motorized vehicle or machine on, over, or across any primary dune not expressly reserved for motor vehicle or machine operation</li> <li>- pedestrian traffic on, over, or across any primary dune not expressly reserved for pedestrian traffic</li> <li>- alteration, moving, or removal of any facility, improvement, or structure installed or maintained by the state for enhancement, preservation, or protection of any beach</li> <li>- damaging, destruction, or removal of any trees, shrubbery, beach grass, or other vegetation seaward of the building line.</li> </ul> <p>Verify that a lease, permit, or letter of authorization is secured before engaging in the following kinds of activities:</p> <ul style="list-style-type: none"> <li>- erecting any structure on subaqueous lands</li> <li>- installing temporary or permanent mooring buoys or private marker buoys</li> <li>- laying of any pipeline, line for the transmission of electricity, or telephone line in, on, or under the beds of public aqueous lands</li> <li>- anchoring of commercial ships for 30 or more consecutive calendar days or for 30 or more calendar days in any consecutive 3 mo</li> <li>- floating platforms anchored over public subaqueous lands if the platform is anchored for a period of 24 h or more</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>NR.15.7.DE.</b> [Deleted December 2004].</p> <p><b>NR.15.8.DE.</b> Specific activities and uses in the Coastal Zone obtain a permit and meet specific restrictions (DE 710 0101, Sections 4 and 6) [ Added December 1999; Revised December 2002; Citation Revised December 2004 ; Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- anchoring or mooring any vessel or platform for revenue-generating purposes</li> <li>- repair or replacement of existing serviceable structures (except for repairs or replacements above the mean low tide and which do not increase structural dimensions or change structural use).</li> </ul> <p>Verify that the terms and conditions of the state permit are met.</p> <p>(NOTE: Delaware Wetlands Regulations revised.)</p> <p>(NOTE: The Coastal Zone is defined in a map available from Department of Natural Resources and Environmental Control.)</p> <p>Verify that the following uses or activities do not occur in the Coastal Zone:</p> <ul style="list-style-type: none"> <li>- heavy industry use of any kind not in operation on June 28, 1971</li> <li>- expansion of any non-conforming uses beyond their footprint(s)</li> <li>- offshore gas, liquid, or solid bulk product transfer facilities which were not in operation on June 28, 1971</li> <li>- the conversion of an existing unregulated, exempted, or permitted facility to a heavy industry use</li> <li>- bulk product transfer facilities and pipelines which serve as bulk transfer facilities that were not in operation on June 28, 1971</li> <li>- the conversion or use of existing unregulated, exempt, or permitted docking facilities for the transfer of bulk products</li> <li>- the construction, establishment, or operation of offshore gas, liquid, or solid bulk product transfer facilities which were not in operation on June 28, 1971</li> <li>- individual pipelines or sets of pipelines which are not associated with a use that obtains a permit but which meet the definition of bulk product transfer facilities</li> <li>- any new tank farm greater than 5 acres in size not associated with a manufacturing use is prohibited as a new heavy industry use.</li> </ul> <p>Verify that the following uses obtain a permit prior to any land disturbing or construction activity:</p> <ul style="list-style-type: none"> <li>- the construction of pipelines or docking facilities serving as offshore bulk product transfer facilities if such facilities serve only one on-shore manufacturing or other facility</li> <li>- any public sewage treatment plant or public recycling plant</li> <li>- any new activity, with the exception of those listed in Appendix 5-3 by an existing heavy industry or a new or existing manufacturing facility that may result in any negative impact on the following factors</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>NR.15.9.DE.</b> Marinas construction and alterations require a marina permit (DE 7 7000 7501, Section 2. 2 and 4.0) [Added January 2006; Revised January 2008 ; Revised December 2008].</p>	<ul style="list-style-type: none"> <li>- environmental impact</li> <li>- economic effect</li> <li>- aesthetic effect, such as impact on scenic beauty of the surrounding area</li> <li>- number and type of supporting facilities required and the impact of such facilities</li> <li>- neighboring land uses including, but not limited to, effect on public access to tidal waters, effect on recreational areas and effect on adjacent residential and agricultural areas</li> <li>- county and municipal comprehensive plans for the development and/or conservation of their areas of jurisdiction.</li> </ul> <p>(NOTE: These Marina Regulations apply to the following:</p> <ul style="list-style-type: none"> <li>- any commercial, public, recreational, or private marina that is on or adjacent to the water and contains 5 or more slips or provides berthing for one or more headboats</li> <li>- any vessel maintenance or repair yard that is on or adjacent to the water</li> <li>- all public or commercial boat ramps</li> <li>- recreational boat ramps with five or more slips, or associated upland ancillary facilities such as fueling or vessel maintenance facilities.</li> </ul> <p>These Marina Regulations do not apply to the following:</p> <ul style="list-style-type: none"> <li>- private slips or ramps are exempt from the requirements of this Regulation, except any combination thereof that qualifies as a marina</li> <li>- recreational ramps are exempt if they are for the exclusive use of the owner(s), residents, or members and are thus designated, unless additional facilities are provided which qualify the ramp as a marina.)</li> </ul> <p>Verify that no marina is constructed, installed, modified, rehabilitated, or replaced, unless a valid permit issued by the Department is obtained.</p> <p>Verify that a updated Operations and Maintenance Plan is submitted for the entire marina at the time of application for an alternation to an existing marina.</p> <p>(NOTE: The plan must cover the operation and maintenance of the original, existing portions of the marina, as well as the new, altered portions of the marina.)</p> <p>(NOTE: The Department of Natural Resources and Environmental Control maintains a Marina Guidebook which contains useful information about the planning, design, and operation of marinas. This guidebook can be used as a public service, as an educational tool, and for technology transfer.)</p> <p>(NOTE: The applicant shall be responsible for obtaining any other local, state, or federal permits or approvals that may be required for the proposed construction or alteration.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>NR.15.10.DE.</b> All marinas must provide access to a sewage pumpout or dump station (DE 7 7000 7501, Section 14.1) [Added January 2006; Citation Revised January 2008 ; Citation Revised December 2008].</p> <p><b>NR.15.11.DE.</b> Marinas Operations and Maintenance (O &amp; M) Plans must meet posting, compliance, and review requirements (DE 7 7000 75 01, Section 14. 2) [Added January 2006 ; Citation Revised January 2008; Revised December 2008].</p>	<p>(NOTE: See applicability note in NR.15.9.DE.)</p> <p>Verify, that regardless of the number of slips, any marina providing other than transient berthing for any vessel containing a Type III marine sanitation device provides access to a sewage pumpout or dump station.</p> <p>Verify that signs are posted to identify the location of the marina's pumpout/dump stations.</p> <p>Verify that, if the marina is not required to provide this service, the marina owner posts a sign identifying the location of the nearest pumpout station.</p> <p>(NOTE: See applicability note in NR.15.9.DE.)</p> <p>Verify that once the O &amp; M plan is approved, marina owners take responsibility for:</p> <ul style="list-style-type: none"> <li>- ensuring that marina personnel comply with all aspects of the plan</li> <li>- providing copies of the plan to all marina tenants</li> <li>- taking a appropriate action to deal with marina tenants who violate any provision of the plan.</li> </ul> <p>Verify that previously approved O &amp; M plans are updated and submitted for Department review and re-approval based upon the following schedule:</p> <ul style="list-style-type: none"> <li>- marinas with 0 - 50 slips, 4 years after O&amp;M plan approval date</li> <li>- marinas with 51 - 100 slips, 3 years after O&amp;M plan approval date</li> <li>- marinas with &gt; 100, 3 years after O&amp;M plan approval date.</li> </ul> <p>Verify that copies of the Department-approved O &amp; M plan are distributed to all marina tenants (full time slip renters), and is posted in the harbormaster's office or other prominent place within the marina, where it is readily available for inspection at all times.</p> <p>Verify that all O&amp;M plans include a plan to reduce the seasonal wet storage of vessels to the maximum extent practicable, including dates for autumn vessel removal and spring launching.</p> <p>Verify that all O&amp;M plans include a plan for managing stormwater.</p> <p>(NOTE: For new marinas, the operation and maintenance of all stormwater management facilities and structures shall be discussed. For existing marinas, major retrofitting will not be required. However, where practicable, all activities</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>NR.15.12.DE.</b> A permit is required for specific activities taking place in wetlands (DE 7 7000 7502) [Added January 2008; Citation Revised December 2008].</p>	<p>that may cause or contribute to pollution such as maintenance facilities and storage areas for wastes, or for materials such as solvents, paints, oils, and greases, shall be placed under roof. In all maintenance areas, housekeeping procedures shall be instituted to minimize the accumulation of maintenance wastes and to provide proper storage for maintenance materials.)</p> <p>Verify that all O&amp;M plans describe all methods used for material storage and handling in accordance with applicable regulations.</p> <p>(NOTE: Materials of concern include fuels, paints, preservatives, pesticides, solvents, oils, greases, epoxies, corrosive cleaners, and other materials used in the maintenance of vessels or marina structures and facilities.)</p> <p>Verify that all O&amp;M plans describe methods for storage, handling, and disposal of wastes complying with Department regulations.</p> <p>Verify that copies of the Department-approved Marina Operations &amp; Maintenance plan are distributed to all marina tenants (full time slip renters), and are posted in the harbormaster's office or other prominent place within the marina, where it is readily available for inspection at all times.</p> <p>Verify that activities that take place in wetlands obtain a permit</p> <p>(NOTE: The following activities are exempt from the permit requirements:</p> <ul style="list-style-type: none"> <li>- mosquito control activities authorized by the Department</li> <li>- construction of directional aids to navigation</li> <li>- duck blinds</li> <li>- foot bridges</li> <li>- the placing of boundary stakes</li> <li>- wildlife nesting structures</li> <li>- grazing of domestic animals</li> <li>- haying</li> <li>- hunting, fishing, and trapping.)</li> </ul> <p>Verify that Type I Permits (Abbreviated Procedure) are required for:</p> <ul style="list-style-type: none"> <li>- projects for which a total of 1 acre or less of wetlands is involved, and no building of structures is included</li> <li>- the maintenance or repair of bridges, roads, highways, or the facilities of any municipality or public utility and which will permit the unobstructed flow of the tide and preserve the natural contour of the wetlands</li> <li>- maintenance dredging that does not result in deposit of spoils on wetlands.</li> <li>- maintenance work on existing wildlife management impoundments.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
	<p>Verify that Type II Permits (Full Procedure) are required for:</p> <ul style="list-style-type: none"> <li>- projects involving more than one (1) acre of wetlands.</li> <li>- projects involving the building of structures.</li> <li>- the construction and maintenance of lines for the transmission of electrical energy that require artificially solidified bases, and/or the construction of permanent access roads or other fixed works related thereto, which alter the flow of the tide or the natural contour of the wetlands.</li> <li>- the construction and maintenance of water, gas or petroleum lines.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>NR.20.</b></p> <p><b>WILDLIFE</b></p> <p><b>NR.20.1.DE.</b>                    The importation, transportation, possession or sale of any endangered species of fish or wildlife, or hides or other parts, thereof is prohibited (DE 7 300 0 39 00 Section 16.1.1) [ Citation Revised December 2004 ; Citation Revised January 2008].</p> <p><b>NR.20.2.DE.</b>                   [Deleted December 2004].</p> <p><b>NR.20.3.DE.</b>                   [Deleted December 2004]</p>	<p>Verify that the importation, transportation, possession, or sale of any species of fish or wildlife listed in Appendix 5-1, or hides or other parts thereof, or the sale or possession with intent to sell any article made in whole or in part from the skin, hide, or other parts of any endangered species of fish or wildlife does not occur, except under license or permit from the Division of Fish and Wildlife.</p> <p>(NOTE: Delaware has adopted Federal regulations.).</p> <p>(NOTE: Delaware has adopted Federal regulations.).</p>

## Appendix 5-1

### Endangered Species

(Source: DE 7 3000 3900 Section 16.2.3)

[Revised December 1999; Revised December 2000; Revised December 2001; Citation Revised December 2004;  
Citation Revised January 2008]

#### Amphibians

Eastern Tiger Salamander (*Ambystoma tigrinum tigrinum*)  
Barking Treefrog (*Hyla gratiosa*)

#### Birds

Brown Creeper<sup>BR</sup> (*Certhia americana*)  
Bald Eagle (*Haliaeetus leucocephalus*)  
Pied-billed Grebe<sup>BR</sup> (*Podilymbus podiceps*)  
Northern Harrier<sup>BR</sup> (*Circus cyaneus*)  
Cooper's Hawk<sup>BR</sup> (*Accipiter cooperii*)  
Black-Crowned Night-Heron (*Nycticorax nycticorax*)  
Yellow-Crowned Night-Heron (*Nyctanassa violacea*)  
Northern Parula<sup>BR</sup> (*Parula americana*)  
Piping Plover (*Charadrius melodus*)  
Short-eared Owl<sup>BR</sup> (*Asio flammeus*)  
American Oystercatcher (*Haematopus palliatus*)  
Black Rail (*Laterallus jamaicensis*)  
Upland Sandpiper (*Bartramia longicauda*)  
Loggerhead Shrike (*Lanius ludovicianus*)  
Black Skimmer (*Rynchops niger*)  
Sparrow, Henslow's (*Ammodramus henslowii*)  
Common Tern<sup>BR</sup> (*Sterna hirundo*)  
Forster's Tern<sup>BR</sup> (*Sterna forsteri*)  
Least Tern (*Sterna antillarum*)  
Cerulean Warbler (*Dendroica cerulea*)  
Hooded Warbler<sup>BR</sup> (*Wilsonia citrina*)  
Swainson's Warbler (*Limothlypis swainsonii*)  
Red-headed Woodpecker (*Melanerpes erythrocephalus*)  
Sedge Wren (*Cistothorus platensis*)

#### Fish

Atlantic Sturgeon (*Acipenser oxyrhynchus*)

#### Insects

Little White Tiger Beetle (*Cicindela lepida*)  
White Tiger Beetle (*Cicindela dorsalis*)  
Seth Forest Scavenger Beetle (*Hydrochus spp.*)  
Frosted Elfin (*Incisalia irus*)  
Bethany Firefly (*Photuris bethaniensis*)  
Hessel's Hairstreak (*Mitoura hesseli*)  
King's Hairstreak (*Satyrium kingi*)  
Rare Skipper (*Problema bulenta*)  
Mulberry Wing (*Poanes massasoit chermocki*)

**Mammals**

Delmarva Fox Squirrel (*Sciurus niger cinereus*)

**Mollusks**

Yellow Lampmussel (*Lampsilis cariosa*)

Eastern Lampmussel (*Lampsilis radiata*)

Dwarf Wedgemussel (*Alasmidonta heterodon*)

Eastern Pondmussel (*Ligumia nasuta*)

Brook Floater (*Alasmidonta varicosa*)

Tidewater Mucket (*Leptodea ochracea*)

**Reptiles**

Leatherback Sea Turtle (*Dermochelys coriacea*)

Atlantic Ridley Sea Turtle (*Lepidochelys kempii*)

Green Sea Turtle (*Chelonia mydas*)

Loggerhead Sea Turtle (*Caretta caretta*)

Bog Turtle (*Clemmys muhlenbergii*)

Corn Snake (*Elaphe guttata guttata*)

**Appendix 5-2**

**Federally Listed and Candidate Plant Species Occurring  
In the State of Delaware**

[Deleted January 2008]

(NOTE: Does not support any checklist item.)

### Appendix 5-3

#### Coastal Zone Uses That Are Not Regulated

(Source: DE 7 100 101 Section 5.0)

[Added December 1999; Citation Revised December 2004; Revised January 2008]

The construction and/or operation of the following types of facilities and/or activities shall be deemed not to constitute initiation, expansion or extension of heavy industry or manufacturing uses under these regulations:

1. The raising of agricultural commodities or livestock.
2. Warehouses or other storage facilities, not including tank farms.
3. Tank farms of less than five acres.
4. Parking lots or structures, health care and daycare facilities, maintenance facilities, commercial establishments not involved in manufacturing, office buildings, recreational facilities and facilities related to the management of wildlife.
5. Facilities used in transmitting, distributing, transforming, switching, and otherwise transporting and converting electrical energy.
6. Facilities used to generate electric power directly from solar energy.
7. The repair and maintenance of existing electrical generating facilities providing such repair or maintenance does not result in any negative environmental impacts.
8. Backup emergency and stand-by source of power generation to adequately accommodate emergency industry needs when outside supply fails.
9. The continued repair, maintenance and use of any non-conforming bulk product transfer facility where that facility transfers the same products and materials, regardless of the amount of such products or materials, as those transferred on June 28, 1971.
10. Bulk product transfer operations at dock facilities owned by the Diamond State Port Corp. (DSPC), or acquired by the DSPC at any time in the future, and which are located within the Port of Wilmington as shown in Appendix B.
11. Docking facilities used as bulk product transfer facilities located on privately owned lands within the Port of Wilmington which have been granted a status decision extending the bulk product transfer exemption prior to the effective date of these regulations.
12. Docking facilities which are not used as bulk product transfer facilities.
13. Any pipeline that originates outside the Coastal Zone, traverses the Coastal Zone without connecting to a manufacturing or heavy industry use and terminates outside the Coastal Zone.
14. Maintenance and repair of existing equipment and structures.
15. Replacement in-kind of existing equipment or installation of in-line spares for existing equipment.
16. Installation and modification of pollution control and safety equipment for nonconforming uses within their designated footprint providing such installation and modification does not result in any negative environmental impact over and above impacts associated with the present use.
17. Any facilities which have received, prior to the promulgation of these regulations, a status decision which provided an exemption for the activity in question.
18. Research and development activities within existing research and development facilities.
19. Any other activity which the Secretary determines, through the status decision process outlined in Section G of these regulations, is not an expansion or extension of a non-conforming use or heavy industry use.

## SECTION 6

### OTHER ENVIRONMENTAL ISSUES

#### Delaware Supplement, January 2010

This covers the state requirements for Other Environmental Issues and is intended to supplement the U.S. TEAM Guide. Refer to the U.S. TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

#### Citations

The definitions and requirements for Other Environmental Issues are taken from the following [Added January 2010]:

- Delaware Department Of Natural Resources And Environmental Control, Regulations Governing The Control Of Noise, which is hereafter abbreviated as NRSD.

#### Definitions

- *Ambient Noise* - the all-encompassing background noise associated with a given environment without the sound contribution of the specific source in question (NRSD, Section 71-I-3).
- *A-Weighted Sound Level* - the sound pressure level in decibels as measured with a sound level meter using the A-weighting network, which compensates for human hearing characteristics. The level so read is designated dB(A) or dBA (NRSD, Section 71-I-3).
- *Commercial Areas* - land used for purposes such as retail sales, personal services, civic centers, hotels, offices and office buildings, wholesale and warehouse storage (NRSD, Section 71-I-3).
- *Construction* - any site preparation, assembly, erection, placement, demolition, substantial repair, alteration, or similar action for public or private rights-of-way, structures, utilities, or similar property (NRSD, Section 71-I-3).
- *Day* - the hours between 7:00 a.m. and 10:00 p.m. (NRSD, Section 71-I-3).
- *Decibel (dB)* - a standard unit for measuring the sound pressure level. It is equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to a reference pressure, which is 20 micropascals (NRSD, Section 71-I-3).
- *Emergency* - any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate actions (NRSD, Section 71-I-3).
- *Equivalent A-Weighted Sound Level or  $Leq(x)dB(A)$*  - the constant sound level that, in a given situation and time period (x), contains the same sound energy as the actual time-varying A-weighted sound (NRSD, Section 71-I-3).
- *Farm Vehicle* - a wheeled device used for transportation in farming operations (NRSD, Section 71-I-3).
- *Hertz (Hz)* - a unit of measurement of frequency formerly stated as, and numerically equal to cycles per second (NRSD, Section 71-I-3).

- *Impulse Sound* - sound of short duration, much less than 1 s, with an abrupt onset and rapid decay, separated in time by at least 1 s (NRSD, Section 71-I-3).
- *Industrial Area* - land used for purposes such as publishing, research, development, testing, manufacturing, processing, fabricating, or repairing, and may include residential land use, for a caretaker, watchman, or janitor (NRSD, Section 71-I-3).
- *Infrasonic Sound* - sound pressure levels having frequencies below 16 Hz (NRSD, Section 71-I-3).
- *Intrusion Alarm* - a device with an audible signal which, when activated, indicates intrusion by an unauthorized person (NRSD, Section 71-I-3).
- *Intrusive Noise* - unwanted sound which intrudes over and above the existing noise at a given location. The relative intrusiveness of the sound depends upon its amplitude, duration, frequency, time of occurrence, and tonal or informational content as well as the prevailing ambient noise level. A sound pressure level of 3 dB(A) above the ambient level is normally just discernible, with level so f5 dB(A) to 10 dB(A) the lower level region for complaints (NRSD, Section 71-I-3).
- *Land Use Classifications* - classification of land according to use:
  1. Class A Noise Zone - generally residential areas where human beings sleep or areas where serenity and tranquility are essential to the intended use of the land. The land uses in this category include single and multiple family homes, hotels, prisons, hospitals, religious facilities, cultural activities, forest preserves, and land intended for residential or special uses requiring such protection.
  2. Class B Noise Zone - generally commercial in nature, areas where human beings converse, and such conversation is essential to the intended use of the land. The land uses in this category shall include retail trade, personal, business and legal services, educational institutions, government services, amusements, agricultural activities, and lands intended for such commercial or institutional uses.
  3. Class C Noise Zone - generally industrial where protection against damage to hearing is essential, and the necessity for conversation is limited. The land uses in this category includes manufacturing activities, transportation facilities, warehousing, military bases, mining, and other lands intended for such uses (NRSD, Section 71-I-5).
- *Motorboat* - any vessel which operates on water and is propelled by machinery (NRSD, Section 71-I-3).
- *Night* - the hours between 10:00 p.m. and 7:00 a.m. (NRSD, Section 71-I-3).
- *Noise* - any sound which annoys or disturbs humans or which causes or tends to cause an adverse psychological or physiological effect on humans, excluding all aspects of noise regulated by the Occupational Safety and Health Administration (NRSD, Section 71-I-3).
- *Noise Disturbance* - any sound that:
  1. endangers or injures the safety or health of humans or animals
  2. annoys or disturbs a reasonable person of normal sensitivities
  3. jeopardizes the value of property and erodes the integrity of the environment (NRSD, Section 71-I-3).
- *Octave* - the interval embracing eight diatonic degrees between two sounds having a basic frequency ratio of two (one unit of the musical scale) (NRSD, Section 71-I-3).
- *Person* - any individual(s), corporation, company, association, society, firm, partnership, or joint stock company, and includes the state and all of its political subdivisions, agencies, and instrumentalities as well as any department, board, or agency of the government of the United States (NRSD, Section 71-I-3).

- *Pure Tone* - any sound that can be distinctly heard as a single pitch or a set of single pitches. For the purpose of these regulations, a pure tone shall exist if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the sound pressure levels of the two contiguous one-third octave bands by 15 dB for bands with center frequencies less than 160 Hz, by 8 dB for bands with center frequencies of 160 Hz to 400 Hz, and by 5 dB for bands with center frequencies greater than 400 Hz (NRSD, Section 71-I-3).
- *Real Property Boundary* - an imaginary line along the ground surface and its vertical extension, which separates the real property owned by one person from that owned by another person, but not including intra-building real property divisions (NRSD, Section 71-I-3).
- *Residential Area* - land used for the primary purpose of providing human living accommodations (NRSD, Section 71-I-3).
- *Sound* - an oscillation in pressure, particle displacement, particle velocity, or other physical parameters, in a medium with internal forces that causes compression and rarefaction of that medium. The description of sound may include any characteristic of such sound, including duration, intensity, and frequency (NRSD, Section 71-I-3).
- *Sound Amplifying Equipment* - any device for increasing the magnitude of the human voice, music, or other sound (NRSD, Section 71-I-3).
- *Sound Level* - the sound pressure level obtained by the use of a sound level meter and frequency weighting network, such as A, B, or C as specified in American National Standards Institute specifications for sound level meters (i.e., S1.4-1971), or the latest revision thereof). The unit of measurement is the decibel. If the frequency weighting employed is not indicated, the A-weighting shall apply (NRSD, Section 71-I-3).
- *Sound Pressure* - the instantaneous difference between the actual pressure and the average or barometric pressure at a given point in space, as produced by sound energy (NRSD, Section 71-I-3).
- *Stationary Noise Source* - a device which creates sound while fixed in position, including but not limited to residential, commercial, or industrial machinery, pumps, fans, compressors, air conditioners, and refrigeration equipment (NRSD, Section 71-I-3).
- *Ultrasonic Sound* - sound pressure levels having frequencies above 20,000 Hz (NRSD, Section 71-I-3).
- *Vibration* - an oscillatory motion of solid bodies of deterministic or random nature described by displacement velocity, or acceleration with respect to a reference point, such that:
  - $v = 2\pi f d$  where  $v$  = velocity,  $f$  = frequency, and  $d$  = peak displacement amplitude
  - $a = 2\pi f v$  where  $a$  = acceleration (NRSD, Section 71-I-3).
- *Weekday* - any day Monday through Friday that is not a legal holiday (NRSD, Section 71-I-3).



**OTHER ENVIRONMENTAL ISSUES  
GUIDANCE FOR DELAWARE CHECKLIST USERS**

**REFER TO CHECKLIST ITEMS:**

NEPA	
Missing Checklist Items	01.2.1.DE.
Environmental Noise	
Missing Checklist Items	02.2.1.DE.
State-Specific Requirements	02.5.1.DE. through 02.5.3.DE.
CERCLA Cleanup Sites	
Missing Checklist Items	03.2.1.DE.
Pollution Prevention	
Missing Checklist Items	04.2.1.DE.

**OTHER ENVIRONMENTAL ISSUES  
GUIDANCE FOR DELAWARE APPENDIX USERS**

**REFER TO APPENDIX NUMBERS:**

**REFER TO APPENDIX TITLES:**

6-1

Sound Levels by Receiving Land Use Zones, Leq  
(24) dBA

<b>COMPLIANCE CATEGORY: OTHER ENVIRONMENTAL ISSUES Delaware Supplement</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>THE NEPA PROCESS</b></p> <p><b>O1.2. Missing Checklist Items</b></p> <p><b>O1.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

<b>COMPLIANCE CATEGORY: OTHER ENVIRONMENTAL ISSUES Delaware Supplement</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ENVIRONMENTAL NOISE</b></p> <p><b>O2.2. Missing Checklist Items</b></p> <p><b>O2.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

**COMPLIANCE CATEGORY:  
OTHER ENVIRONMENTAL ISSUES  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ENVIRONMENTAL NOISE</b></p> <p><b>O2.5. State-Specific Requirements</b></p> <p><b>O2.5.1.DE.</b> Specific noise disturbance restrictions must not be violated (NRSD, 71-I-4, 4.0.1, 4.0.2 and 71-I-7) [Revised January 2008].</p>	<p>(NOTE: Noise regulations do not apply to the following:</p> <ul style="list-style-type: none"> <li>- FAA controlled operations</li> <li>- recreational, sports, and musical activities authorized by the political subdivision or government entity having jurisdiction</li> <li>- noise caused during an emergency</li> <li>- testing of emergency signaling devices provided that it does not occur more than once in each calendar month</li> <li>- religious activities</li> <li>- public celebrations not extending more than 1 day or as authorized</li> <li>- the operation of all farm vehicles</li> <li>- the unamplified human voice</li> <li>- noise caused by railway operations preempted by the Federal Government.)</li> </ul> <p>Verify that no person makes, continues, or causes any noise disturbance.</p> <p>(NOTE: Noncommercial public speaking and public assemblies conducted on any public space or public right-of-way that conforms to all local ordinances.)</p> <p>Verify that any radio, television, phonograph, drum, musical instrument, sound amplifier, automobile radio, automobile stereo, or high fidelity equipment, or similar devices are not allowed to produce, reproduce, or amplify sound in a manner that creates a noise disturbance:</p> <ul style="list-style-type: none"> <li>- within a receiving property</li> <li>- within any receiving property when operated in or on a motor vehicle on a public right-of-way or public space, or in a boat on public waters</li> <li>- to any person other than the operator of the device, when operated by any passenger on a common carrier.</li> </ul> <p>Verify that any animal or bird is not allowed to make a noise disturbance within a receiving property continuously or incessantly for a period of 10 min or intermittently for 0.5 h or more.</p> <p>(NOTE: Noise disturbances caused by animals or birds responding to people who are trespassing, threatening to trespass, or engaging in teasing or other provocative behavior are excluded from regulation.)</p> <p>Verify that the loading, unloading, opening, closing, or handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours</p>

**COMPLIANCE CATEGORY:  
OTHER ENVIRONMENTAL ISSUES  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>O2.5.2.DE.</b> Noise standards for motor vehicles must be met (NRSD, 71-I-4, 4.0.3).</p>	<p>of 10:00 p.m. and 7:00 a.m. do not cause a noise disturbance inside a Class A receiving property except during an emergency.</p> <p>Verify that the use of tools or equipment in construction, drilling, or demolition work (except for the use of domestic power tools) does not cause the following noise disturbances:</p> <ul style="list-style-type: none"> <li>- a noise disturbance within a Class A receiving property between the hours of 10:00 p.m. and 7:00 a.m. on weekdays and Saturdays, or at any time on Sundays or holidays except during an emergency</li> <li>- a sound level within any receiving property exceeding a Leq of 85 dBA for a period of 1 h at any other times.</li> </ul> <p>Verify that the repairing, rebuilding, or testing of any motor vehicle, motorcycle, motorboat, or aircraft causes a noise disturbance within a Class A receiving property between the hours of 10:00 p.m. and 7 a.m.</p> <p>Verify that places of public entertainment do not permit the playing of any radio, television, phonograph, drum, musical instrument, sound amplifier, or any other device which produces a sound level greater than 85 dBA unless a legible sign is posted outside each public entrance stating, "WARNING: SOUND LEVELS WITHIN MAY CAUSE PERMANENT HEARING IMPAIRMENT."</p> <p>Verify that explosives, firearms, or similar devices which create impulsive sound do not cause a noise disturbance within a Class A receiving property or on a public right-of-way, except for licensed game-hunting activities on property authorized for hunting.</p> <p>Verify that the operation of mechanically powered saw, drills, sanders, grinders, lawn or garden tools, snow blowers, or other similar devices in residential areas do not cause a noise disturbance within a Class A receiving property between the hours of 10:00 p.m. and 7:00 a.m.</p> <p>Verify that the following types of tampering do not occur:</p> <ul style="list-style-type: none"> <li>- operating equipment without all the noise and/or vibration control devices installed fully operational</li> <li>- tampering, circumventing, or removing of sound level monitoring instruments, meters, or devices positioned by or for the Department</li> <li>- removal or defacing a noise label on any product.</li> </ul> <p>(NOTE: See O2.5.1.DE. for exemptions.)</p> <p>Verify that the operation of motor vehicles and motorcycles on public rights-of-way does not emit a sound level that exceeds the Delaware Motor Vehicle Noise</p>

**COMPLIANCE CATEGORY:  
OTHER ENVIRONMENTAL ISSUES  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>O2.5.3.DE.</b> Noise disturbances that exceed specific levels must not be created (NRSB, 71-I-6, 6.0.1 through 6.1.0).</p>	<p>Regulation.</p> <p>Verify that standing motor vehicles, motorcycles, or attached auxiliary equipment do not cause a noise disturbance within a Class A receiving property for a period longer than 20 min in any hour during which the vehicle is stationary for reasons other than traffic congestion.</p> <p>Verify that horns or other warning devices of a vehicle do not cause a noise disturbance within a Class A receiving property except when necessary as a warning while actually driving the vehicle.</p> <p>(NOTE: See O2.5.1.DE. for exemptions.)</p> <p>Verify that the operation of any stationary source of sound does not create a noise disturbance as defined by one of the following occurrences:</p> <ul style="list-style-type: none"> <li>- a 24-h equivalent A-weighted sound level that exceeds the levels specified in Appendix 6 -1 when measured at the point of complaint origination within the receiving property boundary</li> <li>- sources of sound other than an impulse, infrasonic, or ultrasonic sound does not exceed the ambient noise level by 10 dBA when measured at the point of complaint origination within the receiving property and constitute a noise disturbance.</li> </ul> <p>(NOTE: For any stationary source of sound that emits a pure tone, cyclically varying sound, or repetitive impulse sound, the limits set forth are reduced by 5 dBA.)</p> <p>Verify that any source of sound which emits an impulse including metal-to-metal impacts or exploding impacts does not exceed the following peak levels when measured at the point of complaint origination within the receiving property:</p> <ul style="list-style-type: none"> <li>- class A zone, nighttime, 80 dB</li> <li>- any other time or zone, 100 dB.</li> </ul> <p>(NOTE: An impulse is defined as a duration less than 1 s with an abrupt onset and rapid decay.)</p> <p>Verify that, for any source of sound which emits infrasound (below 16 Hertz) or ultrasound (above 20 kHz) frequencies, the sound pressure level does not exceed 100 dB when measured at the point of complaint origination within the receiving property.</p> <p>Verify that no single vibration source or combination of sources is operated in a manner that causes a vibration which exceeds the following vibration levels as measured at the point of complaint origination within the boundary of the</p>

<b>COMPLIANCE CATEGORY: OTHER ENVIRONMENTAL ISSUES Delaware Supplement</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
	receiving property: <ul style="list-style-type: none"> <li>- class A zone stationary source, velocity of 0.15 in./s</li> <li>- class A zone temporary or mobile source, velocity of 0.7 in./s</li> <li>- class B zone, velocity of 0.7 in./s</li> <li>- any zone under any condition, velocity of 3 in./s.</li> </ul>

<b>COMPLIANCE CATEGORY: OTHER ENVIRONMENTAL ISSUES Delaware Supplement</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>CERCLA CLEANUP SITES</b></p> <p><b>O3.2. Missing Checklist Items</b></p> <p><b>O3.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>



<b>COMPLIANCE CATEGORY: OTHER ENVIRONMENTAL ISSUES Delaware Supplement</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>POLLUTION PREVENTION</b></p> <p><b>O4.2. Missing Checklist Items</b></p> <p><b>O4.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

### Appendix 6-1

#### Sound Levels by Receiving Land Use Zones, Leq (24) dBA

(Source: NRSD, Section 71-I-6, 6.0.1, Table 1)

<b>Emitter(s)</b>	<b>Receptor Zone C</b>	<b>Receptor Zone B</b>	<b>Receptor Zone A 7 a.m. to 10 p.m.</b>	<b>Receptor Zone A 7 a.m. to 10 p.m.</b>
Zone A	65	65	65	55
Zone B	75	75	65	55
Zone C	85	75	65	55



## SECTION 7

### PESTICIDE MANAGEMENT

#### Delaware Supplement, January 2010

This section covers the state requirements for Pesticide Management and is intended to supplement the U.S. TEAM Guide. Refer to the U.S. TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

#### Citations

The definitions and requirements for Pesticide Management are taken from [Added January 2008]:

- Title 3 Delaware Department of Agriculture, 600 Pesticides, 601 Pesticide Rules and Regulations, which is hereafter abbreviated DE 3 600 601.

#### Definitions

- *Accident* - an unexpected, undesirable event resulting in the presence of a pesticide that adversely affects man or the environment (DE 3 600 601, Section 3.0) [Citation Revised December 2004; Citation Revised January 2007; Citation Revised January 2008].
- *Apartment Building* - a building that contains four or more dwelling units that are rented primarily for nontransient, permanent dwelling purposes, with rental paid by intervals of one week or longer (DE 3 600 601 Section 21.1) [Added January 2008].
- *Certification* - the recognition by the Department that a person is competent and thus authorized to use pesticides for the specified types of pest control (DE 3 600 601, Section 3.0) [Citation Revised December 2004; Citation Revised January 2007; Citation Revised January 2008].
- *Child Day-care Center* - a facility, other than a school as defined elsewhere herein, which provides care, education, protection, supervision and guidance on a regular basis for children. Services are provided for part of the 24 hour day, unattended by parent or guardian, and for compensation. Provided, nevertheless, that "child day-care center" shall not include any such facility which is operated within a private home (DE 3 600 601 Section 21.1) [Added January 2008].
- *Competent* - properly qualified to perform functions associated pesticide application, the degree of capability required being directly related to the nature of the activity and the associated responsibility (DE 3 600 601, Section 3.0) [Citation Revised December 2004; Citation Revised January 2007; Citation Revised January 2008].
- *Fumigant* - a gaseous or readily volatilizable chemical (as hydrogen cyanide or methyl bromide) used as a pesticide (DE 3 600 601, Section 3.0) [Citation Revised December 2004; Citation Revised January 2007; Citation Revised January 2008].
- *Fumigation* - the application of a fumigant to one or more rooms in a structure, or to the entire structure, or to a localized space within a structure or outside of a structure such as a box car, aircraft, truck, ship, or any object sealed or covered. Excluded is the use of a fumigant in or on soil (DE 3 600 601, Section 3.0) [Citation Revised December 2004; Citation Revised January 2007; Citation Revised January 2008].
- *General Use Pesticide* - all pesticides as defined by 3 Del.C. § 1202(27), with the following exceptions (DE 3 600 601 Section 21.1) [Added January 2008]:
  1. any Restricted Use Pesticides, as defined by 3 Del.C. § 1202 (30);

2. any State Restricted Use Pesticide, as defined by 3 Del.C. § 1202 (31);
  3. any anti-microbial pesticide used for controlling bacteria, viruses, or other microorganisms.
- *Institutional and Maintenance Applicator* - any person who owns, operates or maintains a school, apartment building, nursing home, hospital or child day-care center, or is an employee of a school, apartment building, nursing home, hospital, or child day-care center; and who applies general use pesticides inside the school, apartment building, nursing home, hospital, or child day-care center (DE 3 600 601 Section 21.1) [Added January 2008].
  - *Law* - Delaware Pesticide Law, 3 DEL. C., Part II, Chapter 2 (DE 3 600 601, Section 3.0) [Citation Revised December 2004; Citation Revised January 2007; Citation Revised January 2008].
  - *Private Home* - a non-public residence such as a house, duplex, townhouse, apartment, or mobile home where the provider of child day-care services lives and has control over the furnishings and use of space. An individual unit in public housing and university housing complexes is considered a private home (DE 3 600 601 Section 21.1) [Added January 2008].
  - *Regulated Pest* - specific organism considered by the state or by a Federal agency to be a pest requiring regulatory restrictions, regulations, or control procedures in order to protect man or the environment (DE 3 600 601, Section 3.0) [Citation Revised December 2004; Citation Revised January 2007; Citation Revised January 2008].
  - *School* - a completed structure utilized as a public or private school, grades kindergarten through post graduate (DE 3 600 601 Section 21.1) [Added January 2008].
  - *Service Vehicle* - any vehicle used by a license to transport pesticides for the purpose of their application (DE 3 600 601, Section 3.0) [Citation Revised December 2004; Citation Revised January 2007; Citation Revised January 2008].

**PESTICIDE MANAGEMENT  
GUIDANCE FOR DELAWARE CHECKLIST USERS**

**REFER TO CHECKLIST ITEMS:**

Missing Checklist Items	PM.2.1.DE.
Pesticide Applicators	PM.5.1.DE. through PM.5.8.DE.
Pesticide Application	
Equipment	PM.15.1.DE. and PM.15.2.DE.
Other	[Deleted]
Documentation	PM.40.1.DE. through PM.40.3.DE.
Storage/Mixing/Handling	PM.45.1.DE.
Disposal	PM.55.1.DE.

**OTHER ENVIRONMENTAL ISSUES  
GUIDANCE FOR DELAWARE APPENDIX USERS**

**REFER TO APPENDIX NUMBERS:**

**REFER TO APPENDIX TITLES:**

7-1

Categorization of Commercial Applicators

<b>COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Delaware Supplement</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>PM.2.</b></p> <p><b>MISSING CHECKLIST ITEMS</b></p> <p><b>PM.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

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<p><b>PM.5.</b></p> <p><b>PESTICIDE APPLICATORS</b></p> <p><b>PM.5.1.DE.</b> U.S. Government employees who are qualified in any category to apply restricted-use pesticides under the Government Agency Plan or other plans judged by the Secretary to be at least equal to the Delaware plan, must also be certified by the Secretary in the same category to perform pesticide application in the State of Delaware ( DE 3 600 601, Section 11) [ Revised December 2002 ; Citation Revised January 2007].</p> <p><b>PM.5.2.DE.</b> All employees applying pesticides must be registered with the Department, within 30 days of employment ( DE 3 600 60 1, Section 4.2.1) [ Revised December 1997; R evised December 2002 ; Citation Revised D ecember 2 004; Citation R evised J anuary 2007].</p> <p><b>PM.5.3.DE.</b> All personnel applying pesticides, other than certified applicators, must successfully complete a training program approved by the D epartment within 3 0</p>	<p>Verify that all Federal agency pesticide applicators are certified by the Secretary before performing pesticide application in the State of Delaware.</p> <p>(NOTE: I f, i n a n e mergency s ituation, f ederal e mployees a re b rought i nto Delaware t o co ntrol o r er adicate p ests an d when t hese e mployees have b een properly qualified to use restricted use pesticides under the plan of another state or under a n accep table federal government ag ency p lan, these employees will b e considered to be certified in Delaware and he or his agency must, within 10 days, present qualifying credentials to the Secretary. At this time state credentials will be issued if the employee is to remain in Delaware as an applicator of restricted use pesticides.)</p> <p>(NOTE: The provisions of this section do n ot apply to non-federal e mployees contracted t o p erform p esticide ap plication f or t he f ederal government. I n a n emergency, however, and with the concurrence of the Secretary, a non-certified person may apply pesticides under the d irect s upervision of a properly certified federal a pplicator. Within 10 d ays s uch p erson working within t he s tate boundaries must apply for Delaware certification in the normal manner.)</p> <p>Verify t hat al l e mployees o f co mmercial p esticide l icense h olders who ar e involved in pesticide application are registered with the Department when making an application or within 30 days after employment.</p> <p>Verify t hat al l p ersonnel a pplying p esticides have s uccessfully co mpleted a training program approved by the Department within 30 days of employment and before registration with the department, including:</p> <ul style="list-style-type: none"> <li>- pesticide law and regulation</li> <li>- label comprehension</li> </ul>



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<p>days of employment and before the employee is registered with the Department ( DE 3 600 601, Section 4.2.2 and 4. 2.3) [Revised December 1997; Revised December 2002; Citation Revised December 2004; Citation Revised January 2007].</p>	<ul style="list-style-type: none"> <li>- safety and emergency procedures</li> <li>- proper pesticide handling, storage, and disposal</li> <li>- pest identification and control procedures</li> <li>- pesticide application techniques</li> <li>- environmental and health concerns</li> <li>- integrated pest management principles.</li> </ul> <p>Verify that the Department has been provided with the name and address of each employee registered with the Department.</p> <p>(NOTE: Written verification that a new employee has completed an approved training course must be provided to the Department upon request.)</p>
<p><b>PM.5.4.DE.</b> Personnel involved in pesticide application must carry a Department-issued registration card during all working hours (DE 3 600 601, Section 4. 2.3) [ Revised December 1997; Revised December 2002 ; Citation Revised December 2004; Citation Revised January 2007].</p>	<p>Verify that all employees of commercial pesticide license holders who are involved in pesticide application carry their Department-issued registration card during all working hours and display it upon request.</p>
<p><b>PM.5.5.DE.</b> Commercial pesticides license holders must post all pesticide control license numbers, and their full name on all service vehicles used by people holding a commercial pesticide license (DE 3 600 601 , Section 5.5) [Revised December 1997; Citation Revised December 2002; Citation Revised December 2004 ; Citation Revised January 2007].</p>	<p>Verify that the commercial pesticide license holder posts its full name and all pest control license numbers on all service vehicles used by persons holding a commercial pesticide applicators license.</p> <p>Verify that license numbers are bold and readable numbers not less than 2 in. or more than 6 in. high.</p> <p>(NOTE: Vehicles used by persons holding a commercial pesticide license in the following categories are excluded: agriculture plant pest control, agriculture animal pest control, forest pest control, seed treatment, aquatic pest control, public health pest control, regulatory pest control, and demonstration and research pest control. See Appendix 7-1 for a listing of all pesticide categories and subcategories.)</p>
<p><b>PM.5.6.DE.</b> [Deleted</p>	<p>(NOTE: DE 3 600 601 revised.)</p>

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<p>January 2008].</p> <p><b>PM.5.7.DE.</b> All pesticide applications performed by a noncertified applicator must be directly supervised by a certified applicator (DE 3 600 601, Section 10) [Revised December 1997; Citation Revised December 2 002; Citation Revised January 2007].</p> <p><b>PM.5.8.DE.</b> All pesticide applications performed by a noncertified applicator must be directly supervised by a certified applicator (DE 3 600 601, Sections 21.2 and 21.3) [Added January 2008].</p>	<p>Verify that pesticide applications performed by a noncertified applicator are directly supervised by a certified applicator who demonstrated practical knowledge of Federal and state supervisory requirements, including labeling, regarding application of restricted-use pesticides by noncertified applicators.</p> <p>(NOTE: The availability of the certified applicator must be directly related to the hazard of the situation, the complexity of the application or the ability to readily communicate with the noncertified applicator. In many situations, where the certified applicator is not required to be physically present, direct supervision includes verifiable instructions to the competent person as follows:</p> <ul style="list-style-type: none"> <li>- detailed guidance for applying the pesticide properly, and</li> <li>- provisions for contacting the certified applicator in the event he is needed.)</li> </ul> <p>(NOTE: The actual physical presence of a certified applicator may be required when application is made by a noncertified applicator by law.)</p> <p>Verify that a person certified as an Institutional and Maintenance applicator does not engage in the business of pest control outside the scope of their employment at a school, a apartment building, nursing home, hospital, or child day-care center, unless the person becomes certified as otherwise provided.</p> <p>Verify that an owner or manager of a building that is a school, apartment building, nursing home, hospital, or child day-care center obtains Institutional and Maintenance pest control services for the building from a person only by:</p> <ul style="list-style-type: none"> <li>- contracting with a licensed business</li> <li>- having the services performed by an Institutional and Maintenance applicator with a valid certification in General Pest Control or Institutional and Maintenance pest control.</li> </ul>

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<p><b>PESTICIDE APPLICATION</b></p> <p><b>PM.15. Equipment</b></p> <p><b>PM.15.1.DE.</b> All pesticide application, dispensing, or use equipment or application apparatuses must be in sound mechanical condition and capable of satisfactory operation ( DE 3 600 601, Section 18.1) [ Citation Revised December 2 002; Citation Revised December 2004; Citation Revised January 2007].</p> <p><b>PM.15.2.DE.</b> All hoses, pumps, and other equipment used to fill pesticide handling, storage, or a application equipment must be fitted with an effective valve or device to prevent backflow of pesticides into water or material supply systems ( DE 3 600 601, Section 18.2) [Citation Revised December 2002; Citation Revised December 2004 ; Citation Revised January 2007].</p>	<p>Verify that all equipment or application apparatuses used for application or storage of pesticides are in sound mechanical condition and capable of satisfactory operation.</p> <p>(NOTE: Sound mechanical condition and capable of satisfactory operation includes:</p> <ul style="list-style-type: none"> <li>- application equipment is equipped to dispense the proper amount of material</li> <li>- pesticide mixing, storage, or holding tanks, whether on a application equipment or not, do not leak pesticide</li> <li>- spray distribution systems do not leak pesticides</li> <li>- pumps for spray distribution systems do not leak pesticide and are capable of operating at sufficient pressure to assure uniform and adequate rate of discharge</li> <li>- pesticide application equipment is equipped with whatever cut-off valves and discharge orifices necessary to enable the operator to pass over nontarget areas without contaminating them.)</li> </ul> <p>Verify that all hoses, pumps, or other equipment used to fill pesticide handling, storage, or application equipment are fitted with an effective valve or device to prevent backflow of pesticides or pesticide use-dilutions into water supply systems, lakes, streams, other sources of water, or materials.</p> <p>(NOTE: Backflow devices or valves are not required for separate water storage tanks used to fill agricultural pesticide application equipment by gravity systems when the fill spout, tube, or pipe does not contact or fall below the water level of the application equipment being filled and no other means of backflow or backsiphon exists.)</p>

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<p><b>PESTICIDE APPLICATION</b></p> <p><b>PM.35. Other</b></p> <p><b>PM.35.1.DE.</b> [Deleted January 2008].</p>	<p>(NOTE: DE 3 600 601 revised and Section 19 reserved.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>PESTICIDE APPLICATION</b></p> <p><b>PM.40. Documentation</b></p> <p><b>PM.40.1.DE.</b> Commercial applicators must, for a period of 2 yr from the date of pesticide application, keep records detailing the application ( DE 3 600 601, Section 14.1.1 through 6, and 14.1.8) [ Citation Revised December 2002 ; Citation Revised December 2 004; Revised January 2007 ; Revised January 2008].</p> <p><b>PM.40.2.DE.</b> A copy of the label of the pesticide being used must be available at the site of a pesticide application (DE 3 6 00 601, Section 14.1.7) [ Citation Revised December 2002 ; Citation Revised December 2 004; Citation Revised January 2007].</p> <p><b>PM.40.3.DE.</b> Records of general use pesticide applications made in a school, apartment building, nursing home, hospital, or child day-care center must meet</p>	<p>Verify that the commercial applicator keeps, for a period of 2 yr from the date of application, records detailing each application of a pesticide.</p> <p>Verify that records include:</p> <ul style="list-style-type: none"> <li>- brand name of the pesticide</li> <li>- in the case of a Restricted use pesticide, the EPA Registration Number</li> <li>- the dilution rate of the pesticide and the amount of diluted material applied per unit (e.g., gal/acre, lb/acre, etc.)</li> <li>- date and specific area treated</li> <li>- pest against which the pesticide was used</li> <li>- applicator's name and, when applicable, the name of the certified applicator responsible for the applicators supervision</li> <li>- when label directions advise precautions in regard to drift, onsite weather conditions to include wind velocity and direction, temperature, and relative humidity.</li> </ul> <p>Verify that these records are logged within 24 hours of completion of pesticide application (unless good cause is shown).</p> <p>Verify that a copy of the label of the pesticide being used is available at the site of a pesticide application.</p> <p>Verify that records of " general use pesticide" applications made in a school, apartment building, nursing home, hospital, or child day-care center are kept for 2 years from the date of application.</p> <p>Verify that records include:</p>

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<p>specific requirements (DE 3600 60 1, Sections 21. 4 and 14.1) [Added January 2008].</p>	<ul style="list-style-type: none"> <li>- brand name of the pesticide</li> <li>- in the case of a Restricted use pesticide, the EPA Registration Number</li> <li>- the dilution rate of the pesticide and the amount of diluted material applied per unit (e.g., gal/acre, lb/acre, etc.)</li> <li>- date and specific area treated</li> <li>- pest against which the pesticide was used</li> <li>- applicator's name and, when applicable, the name of the certified applicator responsible for the applicators supervision</li> <li>- when label directions advise precautions in regard to drift, onsite weather conditions to include wind velocity and direction, temperature, and relative humidity.</li> </ul> <p>Verify that these records are logged within 24 hours of completion of pesticide application (unless good cause is shown).</p>

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<p><b>PM.45.</b></p> <p><b>STORAGE/ MIXING/ HANDLING</b></p> <p><b>PM.45.1.DE.</b> All pesticides, pesticide containers, or pesticide container residue must be stored in an appropriate manner (DE 3 600 601, Section 16.1 and 16.3) [Citation Revised December 2002; Citation Revised December 2004 ; Citation Revised January 2007].</p>	<p>Verify that all pesticides, pesticide containers, or pesticide container residue is stored according to the following criteria:</p> <ul style="list-style-type: none"> <li>- in a manner consistent with its labeling</li> <li>- without the open dumping of pesticides or pesticide containers</li> <li>- without the dumping of pesticides in any stream, river, pond, sewer, or lake, except in conformance with permits issued by the Delaware Department of Agriculture or other state agency having jurisdiction regarding water pollution</li> <li>- without violating any applicable state or Federal pollution control standard</li> <li>- without contaminating food, feed, and/or water</li> <li>- outside the reach of children</li> <li>- in accordance with the recommended procedures as detailed in Regulations promulgated by the USEPA.</li> </ul>

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<p><b>PM.55.</b></p> <p><b>DISPOSAL</b></p> <p><b>PM.55.1.DE.</b> All pesticides, pesticide containers, or pesticide container residue must be disposed of in an appropriate manner (DE 3 600 601, Section 16.1 and 16.2) [Revised December 1997; Citation Revised December 2002; Revised December 2004; Citation Revised January 2007].</p>	<p>Verify that all pesticides, pesticide containers, or pesticide container residues are disposed of:</p> <ul style="list-style-type: none"> <li>- in a manner consistent with its labeling</li> <li>- without the open dumping of pesticides or pesticide containers</li> <li>- without the open burning of pesticide or pesticide containers</li> <li>- without the dumping of pesticides in any stream, river, pond, sewer, or lake, except in conformance with permits issued by the Delaware Department of Agriculture or other state agency having jurisdiction regarding water pollution</li> <li>- in a manner that does not violate any applicable state or Federal pollution control standard.</li> </ul> <p>Verify that, before disposal, containers are triple rinsed according to the following procedure:</p> <ul style="list-style-type: none"> <li>- empty container is drained at least 30 s after steady flow of pesticide formulation has ceased and after individual drops are evident</li> <li>- drained materials are added to the spray tank mix and are applied in accordance with label instructions</li> <li>- a solvent, usually water, specified by the manufacturer is then added to the drained container in an amount equal to 10 percent of its capacity</li> <li>- containers are then shaken, agitated, or rolled vigorously to dislodge residues from the top, bottom, and sides</li> <li>- liquid residue is drained into the spray tank mix, and the container is again drained for 30 s after the steady flow has ceased and after individual drops are evident</li> <li>- the above procedure is performed 2 more times.</li> </ul> <p>Verify that, in cases in which undiluted formulations are used and rinsate cannot be added to the spray tank, the residue is disposed of in accordance with applicable Department of Natural Resources and Environmental Control requirements.</p> <p>(NOTE: In cases of containers with removable inner liners that prevent contact between the pesticide and the container, removal of the empty liner is considered the equivalent of triple rinsing. Removed liners may be disposed of in a sanitary landfill. Empty liners removed from pesticide containers that held pesticides listed as hazardous wastes are also considered hazardous waste unless the liners are triple rinsed using a solvent capable of removing the pesticide or another method approved as equivalent. Once rinsed, these liners are disposed of in a sanitary</p>



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	<p>landfill.)</p> <p>Verify that, following rinsing, cleaning, or liner removal procedure, plastic or metal containers not destined for return to manufacturers or shipment reconditioners are punctured prior to disposal to ensure they are empty and to prevent reuse (this does not include glass containers, and plastic containers may be burned if allowed by the State and local authorities).</p> <p>Verify that pesticide containers labeled for commercial or farm use, which have been triple rinsed and handled according to prescribed procedures, are disposed of at a sanitary landfill or through a Department accepted recycling program.</p> <p>Verify that unused or unwanted farm or commercial-use pesticides which qualify as hazardous waste are disposed of in accordance with Delaware hazardous waste requirements.</p> <p>(NOTE: The following pesticide containers are not covered by the above regulations:</p> <ul style="list-style-type: none"> <li>- paper, cardboard, and fiberboard containers, whose contents have been removed from the container using practical methods</li> <li>- empty aerosol containers and empty gas cylinders, provided that the empty aerosol containers contain a non-reactive propellant and are disposed of according to the product labeling and the empty compressed gas cylinder is returned for reuse</li> <li>- containers which are labeled as returnable and are returned to the manufacturer for refill</li> <li>- pesticides and pesticide containers which are intended solely for home and garden use, provided they are securely wrapped in several layers of paper and disposed of singly through routine municipal solid waste disposal or at a sanitary landfill.)</li> </ul> <p>Verify that paper, cardboard, and fiberboard containers are stored, handled, and disposed of according to label directions, applicable Department of Natural Resources and Environmental Control requirements, and/or local ordinances.</p>

**Appendix 7-1**  
**Categorization of Commercial Applicators**  
(DE 3 600 601, Section 7.0) [Added January 2008]

Categories and subcategories of applicators (other than private applicators) who use or supervise the use of pesticides are identified below.

**Agricultural Pest Control Category**

**Agricultural Plant (1A)** - This subcategory includes commercial applicators using or supervising the use of pesticides in the production of agricultural crops, including without limiting the following: feed grains, soybeans, forage, vegetables, small fruits and tree fruits; as well as on grasslands and non-crop agricultural lands.

**Agricultural Animal (1B)** - This subcategory includes commercial applicators using or supervising the use of pesticides on swine, sheep, horses, goats, poultry and livestock, and to places on or in which animals are confined. Doctors of Veterinary Medicine engaged in the business of applying pesticides for hire, or publicly holding themselves out as pesticide applicators or engaged in large scale use are included in this category.

**Fumigation of Soil and Agricultural Products (1C)** - This subcategory includes commercial applicators using or supervising the use of pesticides for soil fumigation in the production of an agricultural commodity and/or for fumigation of agricultural products in storage or transit.

**Forest Pest Control Category (02)**

This category includes commercial applicators using or supervising the use of pesticides in forests, forest nurseries, and forest seed producing areas.

**Ornamental and Turf Pest Control Category (03)**

This category includes commercial applicators using or supervising the use of pesticides to control pests in the maintenance and production of ornamental trees, shrubs, flowers and turf.

**Seed Treatment Category (04)**

This category includes commercial applicators using or supervising use of pesticides on seeds.

**Aquatic Pest Control Category**

**Aquatic Weed (5A)** - This subcategory includes commercial applicators using or supervising the use of any pesticide purposefully applied to standing or running water, excluding applicators engaged in public health related activities.

**Antifouling Paint (5B)** - This subcategory includes commercial applicators using or supervising the use of any anti-fouling paints for the protection of boats hulls. This subcategory also includes applicators using or supervising the use of anti-fouling paints on containers that they sell, lease, or use for the purpose of harvesting shellfish.

**Mosquito Control (5C)** - This subcategory includes applicators using or supervising the use of pesticides for the management and control of mosquitoes.

**Right-of-way Pest Control Category (06)**

This category includes commercial applicators using or supervising the use of pesticides in the maintenance of roads, electric power lines, pipelines, railway rights-of-way or similar areas.

**Industrial, Institutional, Structural and Health Related Pest Control Category**

This category includes commercial applicators using or supervising the use of pesticides in, on, or around food handling establishments, including warehouses and grain elevators, and any other structures and adjacent areas, public or private; human dwellings, institutions, such as schools and hospitals, industrial establishments; and for the protection of stored, processed or manufactured products. This category contains the following subcategories:

General Pest Control (7A). This subcategory includes commercial applicators who use or supervise the use of pesticides to control household pests, including pests that infest structures, stored products, and residential food preparation areas, and pests that infest or contaminate food and any stage of processing in food processing facilities. This includes treatment of food processing areas and control of vertebrate structural invaders. This category does not include control of wood-destroying pests, or the use of fumigants.

Wood Destroying Pest Control (7B). This subcategory includes commercial applicators using or supervising the use of pesticides, other than fumigants, in or around structures for the prevention, suppression, or control of wood destroying organisms.

Fumigation Pest Control (non-agricultural) (7C). This subcategory includes commercial applicators using or supervising the use of fumigant pesticides to control pests in structures other than soils and agricultural products/commodities.

Wood Preservatives (7D). This subcategory includes commercial applicators using or supervising the use of pesticides for the preservation of wood or wood products. This would include, but not be limited to, the pressure treatments, non-pressure treatments, or brush-on applications with wood preservatives. Commercial applicators certified in another category of pest control and who use or supervise the use of wood preservatives on an incidental basis may apply these products under their current certification. Private applicators using wood preservative products for purposes related to agricultural production may also apply wood preservatives under their current certification.

Institutional and Maintenance Pest Control (7E). Except as otherwise provided in these regulations, this subcategory includes any individual using pesticides on a property they own, or are employed or otherwise engaged to maintain, including but not limited to janitors, general maintenance personnel, sanitation personnel, and grounds maintenance personnel. This subcategory does not include private applicators as defined in Section 9 below, individuals who use anti-microbial pesticides, or individuals who use pesticides which are not classified as "restricted use pesticides" in or around their dwelling.

Cooling Tower Pest Control (7F). This subcategory includes commercial applicators using or supervising the use of pesticides to control microbial and other pests in cooling towers or related areas.

Miscellaneous Pest Control (7G). This subcategory includes commercial applicators using or supervising the use of pesticides in a category not previously covered in these regulations.

Public Health Pest Control Category (08). This category includes, but is not limited to, State, Federal and other governmental employees who use or supervise the use of pesticides in public health programs for the management and control of pests having medical or public health importance.

Regulatory Pest Control Category (09). This category includes State, Federal and other governmental employees who use or supervise the use of restricted use pesticides in the control of regulated pests.

Demonstration and Research Pest Control Category (10)

Individuals who demonstrate to the public the proper use and technique of a application of a restricted use pesticide or supervises such demonstrations, and/or

Persons conducting field research with pesticides, and in doing so, use or supervise the use of restricted use pesticides. Included in the first group are persons such as extension specialists and county agents, commercial representatives demonstrating pesticide products, and those individuals demonstrating methods used in public programs. The second group includes State, Federal, commercial and other persons conducting field research when utilizing pesticides.

## SECTION 8

### PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT

#### Delaware Supplement, January 2010

This section covers the state requirements for POL Management and is intended to supplement the U.S. TEAM Guide. Refer to the U.S. TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

#### Definitions

- *DNREC* - the Delaware Department of Natural Resources and Environmental Control (DE 7 1000 1302, Section 122.2) [Citation Revised January 2007; Citation Revised December 2008].
- *Secretary* - the Secretary of the DNREC (DE 7 1000 1302, Section 122.2) [Citation Revised January 2007; Citation Revised December 2008].
- *Used Oil* - any oil that has been refined from crude oil, or any synthetic oil, that has been used and as a result of such use, is contaminated by physical or chemical impurities (DE 7 10 00 1302, Section 122.2) [Citation Revised January 2007; Citation Revised December 2008].

**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT  
GUIDANCE FOR DELAWARE CHECKLIST USERS**

**REFER TO CHECKLIST ITEMS**

Missing Checklist Items	PO.2.1.DE.
Discharges/Spills	PO.15.1.DE. and PO.15.2.DE.
Used Oil Burners	PO.80.1.DE. through PO.80.6.DE.
Used Oil Marketing	PO.85.1.DE.

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<p><b>PO.2.</b></p> <p><b>MISSING CHECKLIST ITEMS</b></p> <p><b>PO.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

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<p><b>PO.15.</b></p> <p><b>DISCHARGES/ SPILLS</b></p> <p><b>PO.15.1.DE.</b> Persons responsible for the release of a petroleum substance must follow reporting requirements (DE 710 00 1203, Section 3.5) [ Revised December 2002; Revised December 2003; Citation Revised January 2010].</p> <p><b>PO.15.2.DE.</b> [Deleted December 2000].</p>	<p>(NOTE: See H.M.20.DE. and Appendix 3 -1 in the Hazardous Materials Management chapter in this Supplement for hazardous material release reportable quantities and reporting requirements.)</p> <p>Verify that in all cases, discharges of petroleum substances of any quantity or of any type are reported to the Department, unless the petroleum substance is contained in such a manner as to prevent the immediate or eventual discharge or leaking into surface water or groundwater, or is confined to the location of the discharge on an impervious surface.</p> <p>Verify that, for discharges of petroleum substances that are contained so as to prevent the immediate or eventual discharge or leaking into surface water or groundwater or are confined to the location of the discharge on an impervious surface, the following reporting requirements are met:</p> <ul style="list-style-type: none"> <li>- discharges of 25 gallons or more on land of motor fuel, jet fuel, heating oil, used oil or used petroleum substances are reported</li> <li>- discharges of 150 gallons or more to land of any other petroleum substance not listed above (or not uniquely identified in Appendix 3 -1 in the <i>Hazardous Materials Management</i> chapter in this Supplement), are reported.</li> </ul>

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<p><b>PO.80.</b></p> <p><b>USED OIL BURNERS</b></p> <p><b>PO.80.1.DE.</b> Off-specification used oil may be marketed for energy recovery only to persons meeting specific qualifications ( DE 7 100 0 1302, Section 297.71 and 279.66) [ Revised December 1997; Citation Revised January 2007 ; Revised December 2008].</p>	<p>Verify that off-specification used oil is marketed for energy recovery only to persons meeting the either of the following requirements:</p> <ul style="list-style-type: none"> <li>- burners or other marketers who have notified DNREC of their used oil management activities and who have a USEPA identification number</li> <li>- burners who burn the used oil in an approved industrial furnace or boiler</li> <li>- the above requirement certifications are maintained for 3 years from the date the burner last receives off-specification used oil.</li> </ul> <p>(NOTE: Used oil burned for energy recovery is subject to regulation under this subheading, rather than treated as hazardous waste fuel, if it is classified as a hazardous waste solely for either of the following reasons:</p> <ul style="list-style-type: none"> <li>- exhibits a characteristic of hazardous waste identified in Subpart C of Part 261 (see U.S. TEAM Guide HW.10.1 and Appendix 4-3), provided that it is not mixed with a hazardous waste</li> <li>- contains hazardous waste generated only by a small quantity generator.)</li> </ul> <p>(NOTE: Used oil that does not exceed any of the following specification levels is exempt from the requirements of this subheading other than those for analysis and recordkeeping.</p> <ul style="list-style-type: none"> <li>- arsenic, 5ppm</li> <li>- cadmium, 2 ppm</li> <li>- chromium, 10 ppm</li> <li>- lead, 100 ppm</li> <li>- flash point, 100 °F (minimum)</li> <li>- total halogens, 4000 ppm<sup>2</sup> (DE 7 1000 1302, Section 279.11.)</li> </ul> <p>(NOTE: The specification does not apply to used oil fuel mixed with a hazardous waste other than small quantity generator hazardous waste.)</p> <p>(NOTE: Used oil containing more than 1000 ppm total halogens is rebuttably presumed to be hazardous waste. To ensure that used oil managed at a used oil burner facility is not hazardous waste under the rebuttable presumption, a used oil burner must demonstrate whether the total halogen content of used oil managed at the facility is above or below 1000 ppm. Methods to determine the halogen level include:</p> <ul style="list-style-type: none"> <li>- testing the oil</li> <li>- applying knowledge of the halogen content in light of the materials or processes used</li> <li>- using information provided by the processor (DE 7 1000 1302, Section 279.63.(b).)</li> </ul>



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<p><b>PO.80.2.DE.</b> [Moved December 2008].</p> <p><b>PO.80.3.DE.</b> Burners of used oil burned for energy recovery must meet specific requirements ( DE 7 1000 1302, Section 279.71, 279. 75 (a) and (b)) [Revised December 1997 ; Citation Revised January 2007].</p> <p><b>PO.80.4.DE.</b> All burners must meet specific requirements if treating used oil fuel by processing, blending, or methods to meet specification levels ( DE 7 1000 1302 , Section 279.72.(a)) [ Citation Revised December 1 997; Citation Revised January</p>	<p>(NOTE: Generation of used oil burned for energy recovery is not subject to this subheading.)</p> <p>(NOTE: Moved to PO.85.1.DE.)</p> <p>(NOTE: See applicability note under PO.80.1.DE.)</p> <p>Verify that a used oil fuel marketer may initiate a shipment of off-specification used oil only to a used oil burner who:</p> <ul style="list-style-type: none"> <li>- has an EPA identification number</li> <li>- burns the used oil in an industrial furnace or boiler identified in P.O. 80.1 in the U.S. TEAM Guide.</li> </ul> <p>(NOTE: If the burner is the original generator of the used oil they are burning or the burner is burning the oil in used oil-fired space heaters, then it is exempt from the above notification requirement.)</p> <p>Verify that, prior to accepting the first shipment of off-specification used oil fuel from each marketer, the burner provides a one-time written and signed notice certifying that:</p> <ul style="list-style-type: none"> <li>- the burner has notified DNREC stating the location and general description of used oil management activities</li> <li>- the burner will burn the off-specification used oil only in an industrial furnace or boiler identified in P.O. 80.1 in the U.S. TEAM Guide.</li> </ul> <p>Verify that records of the certification described above are maintained for 3 yr from the date the last shipment of off-specification used oil is shipped to the burner.</p> <p>(NOTE: See applicability note under PO.80.1.DE.)</p> <p>Verify that all burners of used oil fuel, even if they are the generator, obtain analyses documenting the used oil meets the specification levels if the burner is treating the used oil by processing, blending, or some other method to meet the specification levels.</p>

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<p>2007].</p> <p><b>PO.80.5.DE.</b> A burner of used oil fuel must keep specific records ( DE 7 1000 130 2, Section 279.65) [ Revised December 1997 ; C itation Revised January 2007].</p> <p><b>PO.80.6.DE.</b> Waste oil burning must meet permit and combustion requirements (DE 7 100 0 11 22) [Revised January 2008 ; C itation Revised December 2008].</p>	<p>(NOTE: See applicability note under PO.80.1.DE.)</p> <p>Verify that a burner of off-specification used oil maintains the following records for each shipment:</p> <ul style="list-style-type: none"> <li>- name and address of transporter of used oil</li> <li>- name and address of generator or processor/re-refiner of used oil</li> <li>- the EPA identification number and Delaware Waste Transporter Permit number of the transporter who delivered the used oil</li> <li>- the EPA identification number of the used oil generator</li> <li>- the quantity of the oil accepted</li> <li>- the date of acceptance.</li> </ul> <p>(NOTE: These records should be kept in the form of a log, invoice, manifest, bill or lading, or other shipping documentation).</p> <p>Verify that records are retained:</p> <ul style="list-style-type: none"> <li>- for 3 yr, invoices from all used oil fuel shipments</li> <li>- for 3 yr after the final transaction with the relevant party, copies of each certification notice sent to a marketer.</li> </ul> <p>Verify that waste oil is not burned in fuel burning equipment or in an incinerator without first obtaining a permit from the Department.</p> <p>Verify that any equipment used for the combustion of waste oil unless it will cause the complete combustion of the oil and will control the emission of air contaminants to the extent necessary to prevent adverse affects to the environment.</p>

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<p><b>PO.85.</b></p> <p><b>USED OIL MARKETING</b></p> <p><b>PO.85.1.DE.</b> Marketers of used oil burned for energy recovery must meet specific requirements ( DE 7 1000 1302, Section 279. 70) [Revised December 1997; Citation Revised January 2007; Added December 2008].</p>	<p>(NOTE: Moved from PO.80.2.DE.)</p> <p>Verify that marketers of used oil inform the DNREC of the location and general description of used oil management activities.</p> <p>Verify that marketers of used oil notify the Secretary (using a State of Delaware Notification of Regulated Waste Activity Form (8700-12)) at least 10 days prior to changing any of the following:</p> <ul style="list-style-type: none"> <li>- name</li> <li>- mailing address</li> <li>- contact person</li> <li>- contact address</li> <li>- telephone number</li> <li>- ownership</li> <li>- type of regulated waste activity</li> <li>- changes in the description of regulated wastes managed</li> <li>- permanently cessation of regulated waste activity.</li> </ul> <p>Verify that marketers of off-specification used oil prepare and send an invoice to the receiving facility.</p> <p>Verify that, prior to making an initial shipment of off-specification used oil to a burner or to another marketer, a one-time written and signed certification is received from the intended recipient.</p> <p>Verify that marketers claiming that used oil fuel meets the above stated specification levels maintain the following records for at least 3 yr:</p> <ul style="list-style-type: none"> <li>- copies of an analysis of the used oil which verified the oil meets the specifications</li> <li>- the following information on each shipment of used oil meeting the specifications:             <ul style="list-style-type: none"> <li>- name and address of the facility receiving the shipment</li> <li>- quantity of used oil fuel delivered</li> <li>- date of shipment or delivery</li> <li>- cross-reference to the record of used oil analysis</li> <li>- EPA identification number</li> <li>- Delaware Waste Transporter Permit number.</li> </ul> </li> </ul> <p>Verify that a marketer of off-specification used oil maintains the following</p>

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	records: <ul style="list-style-type: none"> <li>- for 3 yr, invoices of both incoming and outgoing shipments</li> <li>- for 3 yr after the final transaction with the relevant party, copies of each certification notice that is sent or received.</li> </ul>



## SECTION 9

### SOLID WASTE MANAGEMENT

#### Delaware Supplement, January 2010

This section covers the state requirements for Solid Waste Management and is intended to supplement the U.S. TEAM Guide. Refer to the U.S. TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

#### Definitions

- *100-Year Flood* - a flood that has a one percent or greater chance of recurring in any given year or a flood of a magnitude equaled or exceeded once in 100 years on the average over a significantly long period (DE 7 1000 1301, Section 3) [Added December 1999; Citation Revised January 2008].
- *Action Leakage Rate* - the quantity of liquid collected from a leak detection system of a double liner system over a specified period of time which, when exceeded, requires certain actions to be taken as described in the Action Leakage Rate response plan approved by the Department (DE 7 1000 1301, Section 3) [Added December 1999; Citation Revised January 2008].
- *Active Portion* - that portion of a facility that presently has an operating permit issued by the Department of Natural Resources and Environmental Control (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Agricultural Waste* - carcasses of poultry or livestock, crop residue, or animal excrement (DE 7 1000 1301, Section 3) [Added December 1999; Revised December 2001; Citation Revised January 2008].
- *ASTM* - the American Society for Testing and Materials (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Authorized Representative* - the person responsible for the overall operation of a facility or an operational unit (i.e., part of a facility), e.g., the plant manager, landfill manager, superintendent, or person of equivalent responsibility (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Autoclave Tape* - tape that demonstrates an evidentiary visible physical change when subjected to temperatures that will provide evidence of sterilization of materials during treatment in an autoclave or similar device (DE 7 1000 1301, Section 11.3) [Citation Revised January 2008].
- *Bottom Ash* - the residue remaining in the bottom of the combustion chamber of an incinerator after the combustion of fuel or waste (DE 7 1000 1301, Section 3) [Revised December 2001; Citation Revised January 2008].
- *Buffer Zone* - those onsite areas adjacent to the facility property line which shall be left undeveloped during the active life as well as the inactive life of the facility (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Bulky Waste* - items whose large size or weight precludes or complicates their handling by normal collection, processing, or disposal methods (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Cap or Capping System* - the material used to cover the top and sides of a sanitary or industrial landfill when operations cease (DE 7 1000 1301, Section 3) [Citation Revised January 2008].

- *Cell* - a discrete engineered area that is designed for the disposal of solid waste and that is a subpart of a landfill (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Certification* - a statement of professional opinion based upon knowledge and belief (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *CFR* - the Code of Federal Regulations (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Clay* - as a soil separate, means the mineral soil particles less than 0.002 mm in diameter. As a soil textured class, “clay” means soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt. Clay used as a liner or cap should be classifiable as a CL or CH (Unified Soil Classification System) with a liquid limit between 30 and 60, should place above the A-line on the plasticity chart, and should have a minimum plastic index of 15. A clay liner should have a cation exchange capacity greater than 15 meq/100 g and be in the neutral pH range (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Clean Fill* - a nonwater-soluble, nondecomposable, environmentally inert solid such as rock, soil, gravel, concrete, broken glass, and/or clay or ceramic products (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Closed Portion* - that portion of a facility which an owner or operator has closed in accordance with the approved closure plan and all other applicable closure requirements (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Closure* - the cessation of operation of a facility or a portion thereof and the act of securing such a facility so that it will pose not significant threat to human health of the environment (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Closure Plan* - written reports and engineering plans detailing those actions that will be taken by the owner and operator of a facility to effect proper closure of that facility or a portion thereof (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Compost* - a product of composting that has been stabilized to a humus-like product, is free of pathogens at an infectious level and of viable plant seeds, that does not attract insects or vectors, can be handled and stored without nuisance, and is beneficial to the growth of plants (DE 7 1000 1301, Section 3) [Added December 2001; Citation Revised January 2008].
- *Composting* - the biological decomposition and stabilization of organic material, under conditions that allow development of thermophilic temperatures as a result of biologically produced heat, to produce a final product that is stable, free of pathogens and viable plant seeds, and can be beneficially applied to the land (DE 7 1000 1301, Section 3) [Added December 2001; Citation Revised January 2008].
- *Composting Facility* - a facility where organic material is processed using composting technology which may include but is not limited to physical turning, windrowing, in vessel composting, or other mechanical handling of organic material (DE 7 1000 1301, Section 3) [Added December 2001; Citation Revised January 2008].
- *Container* - any portable enclosure in which a material is stored, managed, or transported (DE 7 1000 1301, Section 11.3) [Citation Revised January 2008].
- *Contaminant* - any substance that enters the environment at a concentration which has the potential to endanger human health or degrade the environment (DE 7 1000 1301, Section 3) [Citation Revised January 2008].

- *Contamination* - the degradation of naturally occurring water, air, or soil quality either directly or indirectly as a result of the transfer of diseased organisms, blood, or other matter that may contain disease organisms from one material or object to another (DE 7 1000 1301, Section 11.3) [Citation Revised January 2008].
- *Controlling Slopes* - slopes on those areas of a liner that have a direct influence on the maximum leachate head, or slopes that are perpendicular to the collection laterals (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Daily Cover* - a layer of compacted earth, or other suitable material as approved by the Department, used to enclose a volume of solid waste each working day (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Department* - the Department of Natural Resources and Environmental Control (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Discharge* - the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of a substance into or onto any land, water, or air (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Discharge* – with respect to infectious waste, any spilling, leaking, pumping, pouring, emitting, emptying, releasing, injecting, escaping, leaching, dumping, or disposing into the environment of any chemical or substance listed in Appendix 3-1, but excludes emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, waterborne vessel, or pipeline pumping station engine. Discharge includes any environmental release (DDPAC, Section 1.6) [Revised December 2002].
- *Disposal* - the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste into or upon any land or water (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Disposal Facility* - any facility or portion of a facility at which solid waste is intended to be and/or is intentionally placed into or onto any land and at which solid waste will remain after closure has taken place (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Double Liner System* - a liner system consisting of two liners with a leachate detection and collection system in between (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Dry Waste* - (formerly called “Inert Solid Waste”) wastes including, but not limited to, plastics, rubber, lumber, trees, stumps, vegetative matter, asphalt pavement, asphaltic products incidental to construction/ demolition debris, or other materials which have reduced potential for environmental degradation and leachate production (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Environmentally Unsound* - characterized by any condition, resulting from the methods of operation or design of a facility, which impairs the quality of the environment when compared to the surrounding background environment or any appropriate promulgated Federal, state, county, or municipal standard (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Environmental Release* - any spillage, leakage, emission, discharge, or delivery into the air or waters or on or into the lands of this State, of any sewage of 10,000 gallons or more, oil, industrial waste, liquid waste, hydrocarbon chemical, hazardous substance, hazardous waste, restricted chemical material, vessel discharge, air contaminant, pollutant, regulated biological substance or other wastes reportable pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 as amended, or this Regulation (DDPAC, Section 1.6) [Added December 2002].
- *Existing Facility* - a facility which was in operation or for which construction had commenced on or before the date of enactment of these regulations, provided that the facility was being constructed or



operated pursuant to all permits and/or approvals required by the Department at the time of enactment. A facility has commenced construction if either (DE 7 1000 1301, Section 3) [Citation Revised January 2008]:

1. an onsite physical construction program has begun and is moving toward completion within a reasonable time
  2. the owner or operator has entered into contractual obligations--which cannot be cancelled or modified without substantial loss--or physical construction to be completed within a reasonable time.
- *Expansion* - the process of increasing the areal dimensions, vertical elevations, or slopes beyond the original approved limits of the facility (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Facility* - all contiguous land and structures, other appurtenances, and improvements on the land, used in resource recovery and/or the treatment, handling, composting, storage, or disposal of solid waste. A facility may consist of several operational units (e.g., one or more landfills, cells, incinerators, compactors, or combinations thereof) (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Final Cover* - the material used to cover the top and sides of a landfill cell when fill operations cease (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Flood Plain* - the lowland and relatively flat areas adjoining inland and coastal waters, that are inundated by the 100-Year Flood (DE 7 1000 1301, Section 3) [Added December 1999; Citation Revised January 2008].
  - *Fly Ash* - a powdery residue resulting from the combustion of fuels or waste and captured by air pollution control equipment prior to exiting the smokestack (DE 7 1000 1301, Section 3) [Revised December 2001; Citation Revised January 2008].
  - *Garbage* - any putrescible solid and semisolid animal and/or vegetable wastes resulting from the production, handling, preparation, cooking, serving, or consumption of food or food materials (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Generation* - the act or process of producing solid waste (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Generator* - one of the following:
    1. the producer or the source of the solid waste (DE 7 1000 1301, Section 3) [Citation Revised January 2008]
    2. hospital, in or out patient clinics, laboratories, medical offices, dental offices, nursing homes, and in-patient residential facilities serving persons with diseases that may be transmitted through contact with infectious waste as well as veterinarian facilities and research laboratories operating within the State of Delaware (DE 7 1000 1301, Section 11.3) [Citation Revised January 2008].
  - *Geomembrane* - a prefabricated continuous sheet of flexible polymeric or geosynthetic material (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Groundwater* - any water naturally found under the surface of the earth (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Hazardous Waste* - a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating irreversible, illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Without limitation, included within this definition are those hazardous wastes described in Sections 261.31, 261.32, and 261.33 of the

Delaware Regulations Governing Hazardous Waste (DE 7 1000 1301, Section 3) [Citation Revised January 2008].

- *Household Waste* - any solid waste derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas) (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Hydraulic Conductivity* - the capacity to transmit water. It is expressed as the volume of water that will move in a unit of time under a unit hydraulic gradient through a unit area (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Impermeable* - having a hydraulic conductivity equal to or less than  $1 \times 10^{-7}$  cm/s as determined by field and laboratory permeability tests made according to standard test methods which may be correlated with soil densification as determined by compaction test (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Incinerator* - any enclosed device used to destroy waste material by using controlled flame combustion (DE 7 1000 1301, Section 11.3) [Citation Revised January 2008].
- *Industrial Landfill* - a land site at which industrial waste is deposited on or into the land as fill for the purpose of permanent disposal, except that it will not include any facility that has been approved for the disposal of hazardous waste under the Delaware Regulations Governing Hazardous Waste (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Industrial Waste* - any waterborne liquid, gaseous, solid, or other waste substance or a combination thereof resulting from any process of industry, manufacturing, trade, or business, or from the development of any agricultural or natural resource (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Infectious Waste* - those solid wastes which may cause human disease and may reasonably be suspected of harboring human pathogenic organisms, or may pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Types of solid wastes designated as infectious include but are not limited to the following (DE 7 1000 1301, Section 11.3) [Revised December 1999; Citation Revised January 2008]:
  1. Biological wastes:
    - a. biological liquid wastes means blood and blood products, excretions, exudates, secretions, suctionings and other body fluids including liquid wastes from renal dialysis
    - b. pathological wastes means all human tissues and anatomical remains, including human fetal remains, which emanate from surgery, obstetrical procedures, autopsy, and laboratory procedures
    - c. cultures and stocks of etiologic agents and associated biologicals wastes means, but is not limited to, specimen cultures, cultures and stocks of etiologic agents, and wastes from production of biologicals and serums
    - d. laboratory wastes mean those wastes which have come in contact with pathogenic organisms or blood or body fluids. Such wastes include, but are not limited to, disposable materials; culture dishes; devices used to transfer, inoculate, and mix cultures; paper and cloth which has come in contact with specimens or cultures which have not been sterilized or rendered noninfectious; or laboratory wastes, including cultures of etiologic agents, which pose a substantial threat to health due to their volume and virulence
    - e. animal tissue, bedding, and other waste from animals known or suspected to be infected with a pathogen which also causes human disease, provided that prevailing evidence indicates that such tissue, bedding, or other waste may act as a vehicle of transmission to humans
    - f. human dialysis waste materials including blood lines and dialysate membranes.

2. Sharps mean any discarded article that may cause puncture or cuts. Such wastes include but are not limited to, needles, intravenous (IV) tubing with needles attached, scalpel blades, glassware, and syringes that have been removed from their original sterile containers.
  3. Discarded biologicals mean serums and vaccines produced by pharmaceutical companies for human or veterinary use. These products may be discarded because of a bad manufacturing lot (i.e., off-specification material that does not pass quality control or that is recalled), out-dating, or removal of the product from the market or other reasons. Because of the possible presence of etiologic agents in these products, the discarded material constitutes infectious waste.
  4. Isolation wastes means discarded materials contaminated with blood, excretions, exudates and/or secretions from humans who are isolated to protect others from highly communicable diseases (those diseases identified as caused by Class 4 etiologic agents).
  5. Other infectious waste means any residue or contaminated soil, water, or other debris resulting from the cleanup of a spill of any infectious waste.
- *Intermediate Cover* - a layer of compacted earth, or other suitable material as approved by the Department, applied to a partially completed landfill (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Landfill* - a natural topographic depression and/or manmade excavation and/or diked area, formed primarily of earthen materials, which has been lined with manmade and/or natural materials or remains unlined and which is designed to hold an accumulation of solid wastes (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Large Incinerator* - an incinerator which has a capacity of greater than 1000 lb/h (DE 7 1000 1301, Section 11.3) [Citation Revised January 2008].
  - *Leachate* - liquid that has passed through, contacted, or emerged from solid waste and contains dissolved, suspended, or miscible materials, chemicals, and microbial waste products removed from the solid waste (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Lift* - a completed series of compacted layers within a cell (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Liner* - a continuous layer of impermeable material beneath and on the sides of a landfill or landfill cell (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Liquid Waste* - a waste that contains less than 20 percent solids or releases free liquids (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Local Agency* - any special district, authority, municipality, county, or any other political subdivision (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Manifest* - a tracking document designed to record the movement of solid waste from the generator through its trip with a transporter to an approved offsite treatment or disposal facility (DE 7 1000 1301, Section 11.3) [Citation Revised January 2008].
  - *Materials Recovery Facility* - a facility at which materials, other than source separated materials, are recovered from solid waste for recycling or for use as an energy source (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
  - *Municipal Solid Waste* - household waste and solid waste that is generated by commercial, institutional, and industrial sources and is similar in nature to household waste (DE 7 1000 1301, Section 3) [Added December 2004; Citation Revised January 2008].

- *New Solid Waste Facility* - a facility which was not in operation or for which construction had not commenced on or before the date of enactment of these regulations (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Noninfectious* - a state in which potentially harmful microorganisms are absent; free of pathogens (DE 7 1000 1301, Section 11.3) [Citation Revised January 2008].
- *Onsite* - on the same or geographically contiguous property that may be divided by public or private right-of-way. Noncontiguous properties owned by the same person but connected by a right-of-way which the owner controls and to which the public does not have access are also considered onsite property (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Operator* - the person responsible for the overall operation of a solid waste facility (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Owner* - the person who owns a facility or any part of a facility (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Permittee* - a person holding a permit issued by the Department pursuant to this regulation (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Person* - any individual, trust, firm, joint stock company, Federal agency, partnership, corporation (including a government corporation), association, state, municipality, commission, political subdivision of a state, any interstate body, company, society, or any organization of any form (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Personnel or Facility Personnel* - all persons who work at, or oversee the operations of, a solid waste facility, and whose actions or failure to act may result in noncompliance with the requirements of the Delaware Solid Waste Regulations or other regulations under the jurisdiction of the State of Delaware (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Postclosure Care* - maintenance and long-term monitoring of, and financial responsibility for, a closed facility (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Recyclable Material* - a solid waste that exhibits the potential to be used repeatedly in place of a virgin material (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Recycling* - the process by which recyclable materials, which would otherwise be disposed of as solid waste, are returned to the economic mainstream in the form of raw materials or products (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Refuse* - any putrescible or nonputrescible solid waste, except human excreta, but including garbage, rubbish, ashes, street cleanings, dead animals, offal and solid agricultural, commercial, industrial, hazardous and institutional wastes, and construction wastes (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Regulated Medical Waste* - see "infectious waste".
- *Resource Recovery* - the process by which materials, excluding those under control of the Nuclear Regulatory Commission, which still have useful physical or chemical properties after serving a specific purpose are reused or recycled for the same or another purpose, including use as an energy source (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Resource Recovery Facility* - a facility that is either a "Materials Recovery Facility" or a "Thermal Recovery Facility" (DE 7 1000 1301, Section 3) [Citation Revised January 2008].

- *Rubbish* - any nonputrescible solid waste, excluding ashes, such as cardboard, paper, plastic, metal, or glass food containers, rags, waste metal, yard clippings, small pieces of wood, excelsior, rubber, leather, crockery, and other waste materials (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Runoff* - any precipitation that drains over land from any part of a facility (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Run-On* - any precipitation that drains over land onto any part of a facility (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Salvaging* - the controlled removal of solid waste from any facility for reuse of the waste material (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Sanitary Landfill* - a land site at which solid waste is deposited on or into the land as fill for the purpose of permanent disposal, except that it will not include any facility that has been approved for the disposal of hazardous waste under the Delaware Regulations Governing Hazardous Waste (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Scavenging* - the uncontrolled and/or unauthorized removal of solid waste from any facility (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Secretary* - the Secretary of the Department of Natural Resources and Environmental Control or his or her duly authorized designee (DE 7 1000 1301, Section 3) [Revised December 2001; Citation Revised January 2008].
- *Setback* - the area between the actual disposal area and the property line which can be used for construction of environmental control systems such as runoff diversion ditches, monitoring wells, or scales (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Site* - the area of land or water within the property boundaries of a facility where one or more solid waste treatment, resource recovery, recycling, storage, or disposal areas are located (DE 7 1000 1301, Section 3).
- *Small Incinerator* - an incinerator which has a capacity equal to or less than 1000 lb/h (DE 7 1000 1301, Section 11.3) [Citation Revised January 2008].
- *Small Quantity Infectious Waste Generator* - a private practice physician, dentist, veterinarian, and any other generator of infectious waste in which three or fewer professionals are in practice and generates less than 50 lb/mo; or a generator who can demonstrate that their facility generates less than 50 lb/mo of infectious waste (DE 7 1000 1301, Section 11.3) [Citation Revised January 2008].
- *Solid Waste* - any garbage, refuse, rubbish, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or solidified material in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under 7 Delaware Code, Chapter 60, as amended, or source, special nuclear, or byproduct material as defined by the *Atomic Energy Act* of 1954, as amended (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Source Separated* - divided into its separate recyclable components at the point of generation (DE 7 1000 1301, Section 3) [Citation Revised January 2008].

- *Special Solid Wastes* - those wastes that require extraordinary management. They include but are not limited to abandoned automobiles, white goods, used tires, waste oil, sludges, dead animals, agricultural and industrial wastes, infectious waste, municipal ash, septic tank pumpings, and sewage residues (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Storage* - the holding of solid waste for a temporary period, at the end of which time the solid waste is treated, disposed of, or stored elsewhere (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Storage Area* - an area designated for the holding of waste for a temporary period, at the end of which time the waste is treated, disposed of, or stored elsewhere (DE 7 1000 1301, Section 11.3) [Citation Revised January 2008].
- *Subbase* - the supporting soil layers beneath a liner (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Surface Water* - water occurring generally on the surface of the earth (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Thermal Recovery Facility* - a facility designed to thermally break down solid waste and to recover energy from the solid waste (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Topsoil* - the friable dark upper portion of a soil profile that contains mineral substances and organic material in varying degrees of decomposition and is capable of supporting vegetation (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Transfer Station* - any facility where quantities of solid waste delivered by vehicle are consolidated or aggregated for subsequent transfer by vehicle for processing, recycling, or disposal (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Transportation* - the movement of solid waste by air, rail, water, over the roadway, or on the ground (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Transporter* - any person engaged in the transportation of solid waste (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Treatment* - the process of altering the physical, chemical, or biological condition of the waste to prevent pollution of water, air, or soil or to render the waste safe for transport, disposal, or reuse (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Variance* - a permitted deviation from an established rule or regulation, or plan, or standard or procedure, as provided in 7 Delaware Code, Chapter 60 (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Vector* - a carrier organism that is capable of transmitting a pathogen from one organism to another (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Water Table* - that surface in a groundwater body at which the water pressure is atmospheric. It is defined by the levels at which water stands in wells that penetrate the water body just far enough to hold standing water (DE 7 1000 1301, Section 3) [Citation Revised January 2008].
- *Working Face* - that portion of a landfill where waste is discharged, spread, and compacted prior to placement of daily cover (DE 7 1000 1301, Section 3) [Citation Revised January 2008].

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GUIDANCE FOR DELAWARE CHECKLIST USERS**

**REFER TO CHECKLIST ITEMS:**

Missing Checklist Items	SO.2.1.DE.
State-Specific Requirements	
Permits/Notifications/Exemptions	SO.6.1.DE. and SO.6.2.DE.
Design	SO.7.1.DE.
Transfer Facilities	SO.15.1.DE. through SO.15.17.DE.
Transportation	SO.20.1.DE. through SO.20.11.DE.
Resource Recovery Facilities	SO.95.1.DE. through SO.95.20.DE.
Medical Waste	
Generators	SO.105.1.DE. and SO.105.3.DE.
Containers/Labeling/Storage Areas	SO.110.1.DE. through SO.110.14.DE.
Transportation	SO.115.1.DE. through SO.115.4.DE.
Treatment/Disposal	SO.120.1.DE. through SO.120.10.DE.
Documentation	SO.125.1.DE. through SO.125.4.DE.
Landfills	SO.135.1.DE. through SO.135.57.DE.
Inert Waste Landfills	SO.140.1.DE. through SO.140.44.DE.
Industrial Waste Management	SO.150.1.DE. through SO.150.56.DE.
Yard Waste/Composting	SO.165.1.DE.

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>SO.2.</b></p> <p><b>MISSING CHECKLIST ITEMS</b></p> <p><b>SO.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>



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<p><b>STATE-SPECIFIC REQUIREMENTS</b></p> <p><b>SO.6. Permits/ Notifications/ Exemptions</b></p> <p><b>SO.6.1.DE.</b> Construction, operation, material alteration, and closure of a solid waste facility must be permitted (DE 7 1000 1301, Sections 2.2, 2.3, 4.1.1.1, 4.1.1.3, 4.2.1, 4.4.1, 4.5.1, and 4.6.1) [Revised December 1999; Revised December 2001; Revised December 2004; Revised January 2008].</p> <p><b>SO.6.2.DE.</b> The collection,</p>	<p>(NOTE: This checklist applies to any person using land or allowing the use of land for the purposes of storage, collection, processing, transfer, or disposal of solid waste; and to any person transporting solid waste in or through the State of Delaware. The following are subject to these requirements:</p> <ul style="list-style-type: none"> <li>- sanitary landfills</li> <li>- industrial landfills</li> <li>- resource recovery facilities</li> <li>- transfer stations</li> <li>- special wastes handling</li> <li>- transportation of solid waste</li> <li>- storage of solid waste.</li> </ul> <p>The following activities are exempt from permit requirements:</p> <ul style="list-style-type: none"> <li>- disposal or land application on a farm of the agricultural wastes that are generated on the farm or result from the operation of the farm, provided that the disposal or land application is conducted in a manner that is in compliance with all Federal, State and local regulations and does not threaten human health or the environment</li> <li>- composting, on a private property, the leaves, grass clippings, and other vegetation originating on the property</li> <li>- disposal of clean fill</li> <li>- creation of brush piles on the property on which the material was generated</li> <li>- the use of vegetative matter and untreated ground wood products if prior written approval is obtained from the Department.)</li> </ul> <p>Verify that persons (see definition) engaging in the construction, operation, material alteration, or closure of a solid waste facility have a valid permit from the Department.</p> <p>Verify that all of the conditions of the permit are met.</p> <p>Verify that letters of intent are submitted to the Department for the following facilities:</p> <ul style="list-style-type: none"> <li>- sanitary and industrial landfills</li> <li>- resource recovery facilities</li> <li>- transfer stations</li> <li>- infectious waste management.</li> </ul> <p>Verify that a license is obtained from the Delaware Solid Waste Authority</p>

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<p>transportation, and/or delivery of solid waste must be licensed and meet reporting requirements (DE 1 500 501, Sections 3.1 and 3.25) [Added December 2004; Revised January 2008; Revised January 2010].</p>	<p>(DSWA) before collecting, transporting, and or delivering solid waste in the State of Delaware except for the following conditions:</p> <ul style="list-style-type: none"> <li>- persons transporting and delivering solid waste that they created on their premises resulting from their activities</li> <li>- persons collecting, transporting and/or delivering solid waste in the course of their employment by a person holding a license from DSWA</li> <li>- for the collection, transportation, or delivery exclusively of dry waste, leaves, street and storm sewer cleaning materials, agricultural wastes.</li> </ul> <p>Verify that each licensee submits a report for the preceding calendar year on February 1 of each year to DSWA stating the quantities and types of waste, disposed of, the names and address of the facility where it was disposed of and only other information required on a form supplied by DSWA.</p> <p>(NOTE: The Delaware Solid Waste Authority is a separate governmental entity from the Department of Natural Resources and Environmental Control that also promulgates regulations governing solid waste. Some of the responsibilities of the Solid Waste Authority include:</p> <ul style="list-style-type: none"> <li>- issuance of permits for all commercial and residential vehicles to dispose of trash at the Transfer Station</li> <li>- monitoring of trash at the Transfer Stations and enforcement of County ordinances dealing with refuse collection, permitting and disposal</li> <li>- planning developing, designing and administering the expansion and modification of facilities for which solid Waste is responsible.)</li> </ul>

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<p><b>STATE-SPECIFIC REQUIREMENTS</b></p> <p><b>SO.7. Design</b></p> <p><b>SO.7.1.DE.</b> A permanent alternative water supply must be constructed when the construction or operation of a solid waste facility contaminates any drinking water supply (DE 7 1000 1301, Section 4.1.10) [Citation Revised January 2008].</p>	<p>Verify that, if the Department determines that any drinking water supply is contaminated as a result of the construction or operation of a solid waste facility, the owner or operator of the facility constructs and maintains a permanent alternative water supply of comparable quantity and quality to the source before contamination.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>SO.15.</b></p> <p><b>TRANSFER FACILITIES</b></p> <p><b>SO.15.1.DE.</b> Transfer stations must meet specific siting requirements (DE 7 1000 1301, Section 10.1.2 and 10.2) [Revised December 2004; Revised January 2008].</p> <p><b>SO.15.2.DE.</b> Transfer stations must meet specific design requirements (DE 7 1000 1301, Section 10.3) [Citation Revised January 2008].</p>	<p>(NOTE: The following types of facilities are not considered to be transfer stations:</p> <ul style="list-style-type: none"> <li>- facilities that accept only source separated materials for the purpose of recycling those materials</li> <li>- materials recovery facilities</li> <li>- small load collection areas located at permitted landfill sites</li> <li>- individual dumpsters used for waste generated onsite</li> <li>- compaction equipment being used exclusive for solid waste generated onsite</li> <li>- temporary debris collection and reduction sites established by Delaware Emergency Management Authority (DEMA) lasting no longer than 90 days from the start of accumulation of wastes at the temporary debris collection and reduction site and a written record documents accumulation of debris at each site.)</li> </ul> <p>Verify that transfer stations are located only in areas where the potential for degradation of the quality of air, land, and water is minimal.</p> <p>Verify that transfer stations are located adjacent to access roads capable of withstanding anticipated load limits.</p> <p>Verify that no new transfer station is located in an area such that solid waste is at any time handled:</p> <ul style="list-style-type: none"> <li>- within the 100-yr floodplain</li> <li>- within any state or Federal wetland</li> <li>- so as to be in conflict with any locally adopted land use plan or zoning requirement.</li> </ul> <p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that all transfer stations are designed to include at least the following:</p> <ul style="list-style-type: none"> <li>- a leachate collection and disposal system</li> <li>- a means for weighing or measuring all solid waste handled at the facility</li> <li>- tipping and loading areas contained within structures capable of preventing the development of nuisance conditions if such areas are within 300 ft of a commercial, institutional, or residential structure that is designed for human occupancy and that is in existence at the time of initial permit application</li> <li>- if tipping and loading areas are not within 300 ft of a structure designed for human occupancy, the impact to the surrounding area of handling the solid waste in a nonenclosed facility are evaluated, and the need for exhaust systems in enclosed areas is evaluated, and such systems are installed if</li> </ul>



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<p>Revised January 2008].</p> <p><b>SO.15.5.DE.</b> Transfer stations must follow solid waste storage regulations (DE 7 1000 1301, Section 10.5.2.1) [Citation Revised January 2008].</p> <p><b>SO.15.6.DE.</b> Solid waste leaving transfer stations must be disposed of in a specific manner (DE 7 1000 1301, Section 10.5.2.2) [Citation Revised January 2008].</p> <p><b>SO.15.7.DE.</b> Transfer stations must meet certain requirements concerning the control of nuisances and hazards (DE 7 1000 1301, Section 10.5.2.3) [Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.15.8.DE.</b> Transfer stations must follow access regulations (DE 7 1000 1301, Section 10.5.2.4) [Citation</p>	<p>Department approved Plan of Operation.</p> <p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that solid waste does not remain at the transfer station for more than 72 h without the written approval of the Department.</p> <p>Verify that solid waste kept on the site overnight is stored in an impervious, enclosed structure.</p> <p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that solid waste accepted at transfer stations is, upon leaving the station, delivered to a processing or disposal facility authorized by the Department (or by the appropriate environmental agency, if outside Delaware) to accept that type of waste.</p> <p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that transfer stations provide for routine maintenance and general cleanliness of the entire site, as well as litter removal along roads approaching the site if accumulations of litter along the approach roads are clearly the result of the operation of the transfer station.</p> <p>Verify that the transfer station implements a vector control plan which prevents the establishment of habitats for nuisance organisms (e.g., flies, maggots, roaches, rodents, and similar vermin) and mitigates nuisances and hazards to human health and the environment.</p> <p>Verify that equipment is available onsite to control fires, and arrangements are made with the local fire protection agency to provide immediate services when needed.</p> <p>Verify that, if deemed necessary by the Department, a separate area is provided for temporary placement of hot loads received at the facility, and that the hot load area is located away from trees, bushes, and structures, and loads are extinguished immediately upon unloading.</p> <p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that access to transfer stations is limited to those times when an attendant is</p>

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<p>Revised January 2008].</p> <p><b>SO.15.9.DE.</b> Transfer station personnel must meet specific requirements (DE 7 1000 1301, Section 10.5.2.5) [Citation Revised January 2008].</p> <p><b>SO.15.10.DE.</b> Transfer stations must meet health and safety regulations (DE 7 1000 1301, Section 10.5.2.6) [Citation Revised January 2008].</p> <p><b>SO.15.11.DE.</b> Transfer station equipment must meet specific standards (DE 7 1000 1301, Section 10.5.2.7) [Citation Revised January 2008].</p> <p><b>SO.15.12.DE.</b> Transfer stations must meet specific recordkeeping requirements (DE 7 1000 1301, Section 10.5.3) [Citation Revised January 2008].</p>	<p>on duty and to those persons authorized to use the site for disposal of solid waste.</p> <p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that sufficient numbers and types of personnel are available at the transfer station to ensure capability for operation in accordance with these regulations.</p> <p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that employees at the transfer station work under all appropriate health and safety guidelines established by the Occupational Safety and Health Administration (OSHA).</p> <p>Verify that first aid equipment is available at the transfer station.</p> <p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that adequate numbers and types of equipment commensurate with the size of the operation are available at the site, ensuring operation of the facility in accordance with the provisions of these regulations and the plan of operation.</p> <p>Verify that all waste handling equipment is cleaned routinely and maintained according to the manufacturer's recommendations.</p> <p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that the following information is recorded in a timely manner and that the records are retained by the transfer station for at least 3 yr:</p> <ul style="list-style-type: none"> <li>- a record of the solid waste commercial haulers (company name, address, and telephone number) using the facility and the type and weight or volume of solid waste delivered by each hauler to the transfer station each day</li> <li>- a record of the type and weight or volume of solid waste delivered from the transfer station to its final destination each day</li> <li>- a record of fires, spills, and uncontrolled releases that occur at the facility, and of hot loads received</li> <li>- fire and safety inspections</li> <li>- major equipment maintenance</li> <li>- destination of the solid waste.</li> </ul>

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<p><b>SO.15.13.DE.</b> Transfer stations must follow certain reporting regulations (DE 7 1000 1301, Section 10.5.4) [Citation Revised January 2008].</p>	<p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that transfer stations submit to the Department on an annual basis a report summarizing facility operations for the preceding calendar year.</p> <p>Verify that the annual report is on a form acceptable to the Department and describes and summarizes all environmental monitoring and construction activities conducted within the year covered by the report.</p> <p>Verify that the annual report includes, but is not necessarily limited to the following:</p> <ul style="list-style-type: none"> <li>- type and weight or volume of waste received</li> <li>- a complete list of commercial haulers that hauled waste to or from the facility during the year covered by the report</li> <li>- destination of the solid waste and the type and weight or volume of waste delivered to the destination</li> <li>- descriptions of any intentional or accidental deviations from the approved Plan of Operation</li> <li>- descriptions of all construction or corrective work conducted on the site in accordance with approved plans or to achieve compliance with these regulations</li> <li>- any additional information specified by the Department.</li> </ul> <p>Verify that the transfer station notifies the Department immediately if either of the following occurs:</p> <ul style="list-style-type: none"> <li>- a fire that requires the services of a fire protection agency</li> <li>- a spill or uncontrolled release that may endanger human health or the environment.</li> </ul>
<p><b>SO.15.14.DE.</b> Transfer stations must follow general cessation and closure requirements (DE 7 1000 1301, Section 10.6.1) [Citation Revised January 2008].</p>	<p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that, when a transfer station ceases accepting solid waste, all of the waste onsite is removed and the facility is closed in a manner that eliminates the need for further maintenance at the site.</p>
<p><b>SO.15.15.DE.</b> Transfer stations must submit closure notification (DE 7 1000 1301, Section 10.6.2) [Revised December 2004; Citation</p>	<p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that, at least 90 days prior to the date when waste is no longer accepted at the facility, the transfer station submits to the Department all of the following:</p>



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<p>Revised January 2008].</p> <p><b>SO.15.16.DE.</b> Transfer station closure plans must contain specific information (DE 7 1000 1301, Section 10.6.3) [Citation Revised January 2008].</p> <p><b>SO.15.17.DE.</b> Transfer stations must meet minimum closure requirements (DE 7 1000 1301, Section 10.6.4) [Citation Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- written notification of intent to close</li> <li>- updated closure plan</li> <li>- closure schedule.</li> </ul> <p>Verify that closure activities do not commence until the Department approves the updated closure plan and the closure schedule and modifies the facility's permit to allow closure activities to be carried out.</p> <p>Verify that a copy of the approved closure plan is maintained at the facility or at another designated location until closure is completed.</p> <p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that the closure plan for a transfer station includes, as a minimum, the following:</p> <ul style="list-style-type: none"> <li>- a description of the methods, procedures, and processes that will be used to close the transfer station, including provisions that will be made for the proper disposal of all waste that is on the site when operations cease</li> <li>- a plan for postclosure care of the facility if such care is necessary to protect human health and the environment</li> <li>- a description of the planned postclosure use of the property.</li> </ul> <p>(NOTE: See SO.15.1.DE. for applicability of these requirements.)</p> <p>Verify that closure is carried out in accordance with the approved closure plan.</p> <p>Verify that closure is complete within 6 mo after the date on which the Department issues a modified permit to allow closure.</p> <p>Verify that the closed transfer station has received a letter from the Department indicating that closure has occurred in accordance with the closure plan.</p> <p>Verify that any required monitoring and/or maintenance activities are conducted at the transfer station site.</p>

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<p><b>SO.20.</b></p> <p><b>TRANSPORTATION</b></p> <p><b>SO.20.1.DE.</b> All solid waste transporters must be permitted and follow certain general provisions (DE 7 1000 1301, Section 7.1 and 7.2.1) [Revised December 1999; Citation Revised December 2001; Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.20.2.DE.</b> Licensed solid waste transporters must have certain knowledge and training (DE 7 1000 1301, Section 7.2.2) [Revised December 2004; Citation Revised January 2008].</p>	<p>(NOTE: This checklist item does not apply to the following:</p> <ul style="list-style-type: none"> <li>- transportation of source separated materials for reuse or recycling, provided that the materials remain separate throughout the journey and are not recombined for transport</li> <li>- transportation of household waste generated in a Delaware residence and transported by the generator of the household waste</li> <li>- onsite transportation of solid waste</li> <li>- transportation of solid waste in a vehicle having a gross vehicle weight of less than or equal to 26,000 lb (this exclusion does not apply to the transportation of infectious waste or waste containing asbestos)</li> <li>- transportation of dry waste only</li> <li>- transportation of solid waste generated on a farm and transported by the generator of the waste (this exclusion does not apply to the transportation of infectious waste, petroleum-hydrocarbon contaminated soils, or of waste containing asbestos).)</li> </ul> <p>Verify that no person transports solid waste without first having obtained a permit from the Department.</p> <p>Verify that any vehicle used to transport solid waste is constructed or loaded to prevent its contents from dropping, sifting, leaking, or otherwise escaping.</p> <p>(NOTE: The transporter is responsible for all costs of cleaning up a discharge of solid waste from the vehicle.)</p> <p>Verify that each vehicle used to transport solid waste carries a copy of the permit in the vehicle.</p> <p>Verify that permitted solid waste transporters do not use agents or subcontractors who do not hold permits for transporting solid waste</p> <p>(NOTE: See SO.20.1.DE. for applicability of these regulations.)</p> <p>Verify that all drivers of solid waste transportation vehicles and all of the transporter's employees who handle solid waste receive instruction in how to perform transportation duties in a way that ensures compliance with all applicable regulations and requirements.</p> <p>Verify that the instructions include, but is not limited to, the following:</p> <ul style="list-style-type: none"> <li>- knowledge of current Department of Transportation (DOT) Motor Carrier Safety Regulations</li> </ul>

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<p><b>SO.20.3.DE.</b> Solid waste transportation vehicles operated by a licensed solid waste transporter must meet specific requirements (DE 7 1000 1301, Section 7.2.3) [Citation Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- safe vehicle operations to avoid creating hazards to human health, safety, welfare, or the environment</li> <li>- knowledge of proper handling procedures for the type of solid waste being transported</li> <li>- familiarity with the approved accidental discharge containment plan</li> <li>- familiarity with the conditions of the solid waste transporter’s permit.</li> </ul> <p>Verify that all drivers and other employees that may handle solid waste receive instruction as frequently as necessary to maintain a level of knowledge that will ensure safe operation of the vehicle during transportation of the solid waste and proper management of an accidental discharge.</p> <p>(NOTE: See SO.20.1.DE. for applicability of these regulations.)</p> <p>Verify that all vehicles used in the transportation of solid waste are operated and maintained in compliance with all state and Federal regulations and do not present a hazard to human health or the environment through unsafe vehicle conditions.</p> <p>Verify that all vehicles carry safety and emergency equipment in accordance with applicable DOT regulations to ensure protection of the public and the environment.</p> <p>Verify that all vehicles carry spill containment materials appropriate to the type of solid waste being transported.</p> <p>Verify that each vehicle engaged in the transportation of solid waste is fully enclosed or covered to prevent the discharge or release of solid waste to the environment.</p> <p>Verify that the transporter’s name is prominently displayed on both sides of the vehicle in figures at least 3 in. high and of a color that contrasts with the color of the vehicle.</p> <p>Verify that the transporter’s permit number is prominently displayed on both sides and the rear of the vehicle in figures at least 3 in. high and of a color that contrasts with the color of the vehicle.</p>
<p><b>SO.20.4.DE.</b> Accidental discharges during transportation by a licensed solid waste transporter must be handled in a specific manner (DE 7 1000 1301, Section 7.2.5) [Citation Revised January 2008].</p>	<p>(NOTE: See SO.20.1.DE. for applicability of these regulations.)</p> <p>Verify that all transporters of solid waste have a Department-approved plan for the prevention, control, and cleanup of accidental discharges of the solid waste.</p> <p>Verify that a copy of the plan is maintained in each vehicle engaged in the transportation of solid waste.</p> <p>Verify that all accidental discharges of solid waste from a vehicle are immediately</p>

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<p><b>SO.20.5.DE.</b> Licensed solid waste transporters must follow certain recordkeeping procedures (DE 7 1000 1301, Section 7.2.6) [Revised December 2001; Citation Revised January 2008].</p> <p><b>SO.20.6.DE.</b> Licensed solid waste transporters must follow reporting and documentation regulations (DE 7 1000 1301, Section 7.2.7) [Revised December 2001; Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.20.7.DE.</b> Transporters permitted to carry only dry waste may not transport any solid waste other than dry waste (DE 7 1000 1301, Section 7.3.1) [Revised December 2004; Citation</p>	<p>and completely remediated.</p> <p>Verify that, if the solid waste cannot be immediately and completely remediated, or if it has the potential to cause damage to the environment or to public health, the discharge is immediately reported to the Department.</p> <p>(NOTE: See SO.20.1.DE. for applicability of these regulations.)</p> <p>Verify that the following records are retained by the transporter for at least 3 yr:</p> <ul style="list-style-type: none"> <li>- the solid waste transporter's permit</li> <li>- documentation of the training provided to drivers</li> <li>- insurance documents sufficient to demonstrate that the transporter is covered for the type of solid waste being transported</li> <li>- records of spills or releases of solid waste that exceed 5 lb or 1 ft<sup>3</sup> that occur during the transportation of solid waste in Delaware, and descriptions of remedial actions taken</li> <li>- the transporter's annual report (see SO.20.6.DE.).</li> </ul> <p>(NOTE: See SO.20.1.DE. for applicability of these regulations.)</p> <p>Verify that each transporter who picks up and/or deposits solid waste in Delaware submits to the Department an annual report, summarizing information from the preceding calendar year by April 1.</p> <p>Verify that the report indicates the following:</p> <ul style="list-style-type: none"> <li>- types and weights of solid waste transported in, into, or out of the state</li> <li>- actual amounts of solid waste by weight and type delivered to each destination when transported to or from facilities equipped with truck scales (amounts may be estimated only when truck scales are not available during the waste transportation process).</li> </ul> <p>Verify that any vehicle transporting solid waste through Delaware carries documentation indicating the state in which the solid waste was picked up, the date on which it was picked up, and the state in which it will be deposited.</p> <p>Verify that transporters permitted to transport only dry waste do not transport any solid waste other than dry waste without meeting the additional requirements for transporting other solid waste.</p>

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<p>Revised January 2008].</p> <p><b>SO.20.8.DE.</b> Vehicles transporting dry waste by permitted transporters must meet specific requirements (DE 7 1000 1301, Section 7.3.2 and 7.3.3) [Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.20.9.DE.</b> Permitted dry waste transporters must follow certain recordkeeping procedures (DE 7 1000 1301, Section 7.3.5) [Citation Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.20.10.DE.</b> Permitted dry waste transporters must follow specific reporting and documentation procedures (DE 7 1000 1301, Section 7.3.6) [Revised December 2004; Citation Revised January 2008].</p>	<p>(NOTE: This checklist item does not apply to the following:</p> <ul style="list-style-type: none"> <li>- transportation of dry waste by a solid waste transporter permittee having meeting the requirements of SO.20.2.DE. through SO.20.6.DE.</li> <li>- transportation of source separated materials for reuse or recycling, provided that the materials remain separate throughout the journey and are not recombined for transport</li> <li>- transportation of dry waste generated in a Delaware residence and transported by the generator of the dry waste</li> <li>- onsite transportation of dry waste</li> <li>- transportation of dry waste in a vehicle having a gross vehicle weight less than or equal to 26,000 lb, however, this exclusion does not apply to the transportation of infectious waste or of waste containing asbestos.)</li> </ul> <p>Verify that the transporter's name is prominently displayed on both sides of the vehicle in figures at least 3 in. high and of a color that contrasts with the color of the vehicle.</p> <p>Verify that the transporter's permit number is prominently displayed on both sides and the rear of the vehicle in figures at least 3 in. high and of a color that contrasts with the color of the vehicle.</p> <p>(NOTE: See SO.20.8.DE. for exemptions.)</p> <p>Verify that the following records are retained by the transporter for at least 3 yr:</p> <ul style="list-style-type: none"> <li>- the dry waste transporter's license</li> <li>- the transporter's Annual Report.</li> </ul> <p>(NOTE: See SO.20.8.DE. for exemptions.)</p> <p>Verify that each transporter who picks up and/or deposits dry waste in Delaware submits to the Department, on a form prescribed by the Department, an Annual Report indicating the following:</p> <ul style="list-style-type: none"> <li>- the weights of dry waste transported in, into, or out of the state during the year</li> <li>- actual amounts of solid waste by weight and type delivered to each destination when transported to or from facilities equipped with truck scales and estimated amounts when truck scales are not available.</li> </ul>

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<p><b>SO.20.11.DE.</b> [Deleted December 2001].</p>	<p>Verify that any vehicle transporting dry waste through Delaware carries documentation indicating the state in which the dry waste was picked up, the date on which it was picked up, and the state in which it will be deposited.</p> <p>(NOTE: Consolidated with SO.20.1.DE.)</p>

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<p><b>SO.25.</b></p> <p><b>RECYCLING</b></p> <p><b>SO.25.1.DE.</b> Recycling facilities and programs must meet management requirements (DSWA) (DE 1500 501 Section 8) [Added January 2010].</p>	<p>Verify that any person who owns or operates a program or facility for the purpose of recycling or recovery of recyclable materials files an annual registration statement with DSWA no later than February 1 of each year.</p> <p>Verify that the following requirements are met at a Recycle Delaware Center:</p> <ul style="list-style-type: none"> <li>- solid waste or litter are not disposed</li> <li>- materials are not left outside of containers</li> <li>- no material is deposited into a container other than the specific recyclable material for which the recycling container is marked to receive</li> <li>- containers are not damaged, defaced, or abused</li> <li>- vehicles are not blocked or obstructed</li> <li>- recyclable materials are not scavenged.</li> </ul> <p>Verify that recyclable materials and dry waste delivered to a DSWA facility are free of contamination.</p> <p>(NOTE: The Delaware Solid Waste Authority is a separate governmental entity from the Department of Natural Resources and Environmental Control that also promulgates regulations governing solid waste.)</p>

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<p><b>SO.95.</b></p> <p><b>RESOURCE RECOVERY FACILITIES</b></p> <p><b>SO.95.1.DE.</b> Resource recovery facilities must meet specific siting requirements (DE 7 1000 1301, Section 9.2) [Citation Revised January 2008].</p> <p><b>SO.95.2.DE.</b> Resource recovery facilities are encouraged to be designed for recycling (DE 7 1000 1301, Section 9.3.1) [Citation Revised January 2008].</p> <p><b>SO.95.3.DE.</b> Plans and specifications for a resource recovery facility must be prepared and certified by a Professional Engineer (DE 7 1000 1301, Section 9.3.2) [Revised December 1999; Citation Revised January</p>	<p>(NOTE: This Section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that resource recovery facilities are located only in areas where the potential for degradation of the quality of air, land, and water is minimal.</p> <p>Verify that no new resource recovery facility is located in an area so that solid waste is at any time handled:</p> <ul style="list-style-type: none"> <li>- within the 100-yr flood plain</li> <li>- within any state or Federal wetland</li> <li>- within 1000 ft of any state or Federal wildlife refuge, wildlife area, or park</li> <li>- so as to be in conflict with any locally adopted land use plan or zoning requirement.</li> </ul> <p>Verify that any facility which processes municipal solid waste is not located within 10,000 ft of any airport currently used by turbojet aircraft or 5000 ft of any airport runway currently used by piston-type aircraft, unless a waiver is granted by the Federal Aviation Administration.</p> <p>(NOTE: This Section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that resource recovery facilities are designed so that it is possible to remove and recycle those materials for which recycling are currently technically and economically feasible.</p> <p>Verify that the design allows for future alteration or upgrading to accomplish removal of additional materials as recycling of such materials becomes feasible.</p> <p>(NOTE: This Section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that plans and specifications for a proposed resource recovery facility are prepared by a professional engineer registered in Delaware, and are submitted as part of the solid waste management facility permit application.</p>



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<p>2008].</p> <p><b>SO.95.4.DE.</b> Construction and installation for new resource recovery facilities must be carried out in accordance with a third-party quality assurance plan (DE 7 1000 1301, Section 9.3.3) [Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.95.5.DE.</b> New resource recovery facilities must meet minimum design requirements (DE 7 1000 1301, Section 9.3.4) [Citation Revised January 2008].</p>	<p>(NOTE: This Section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that construction and installation activities for new facilities are carried out in accordance with a third-party quality assurance plan approved by the Department.</p> <p>(NOTE: This Section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that all new resource recovery facilities meet the following minimum design features:</p> <ul style="list-style-type: none"> <li>- a setback area with appropriate screening</li> <li>- a means to detect explosion potential and equipment designed to minimize the impact of explosion (if the solid waste to be handled and the equipment used has the potential of causing explosion)</li> <li>- a means for maintaining quality control of recovered materials</li> <li>- storage capacity for a minimum of 3 days of storage (at maximum anticipated loading rates) of incoming solid wastes, facility process solid waste residues and effluents, and recovered materials (the storage areas are within enclosed structures if deemed necessary by the Department)</li> <li>- tipping floors, sorting pads, and solid waste storage areas constructed of material capable of withstanding heavy vehicle usage and of reducing and controlling runoff</li> <li>- a completely enclosed unloading area, if deemed necessary by the Department</li> <li>- adequate floor drains graded to facilitate washdown and to prevent standing water; drains discharge to a sanitary sewer system, holding tank, or appropriate treatment facility</li> <li>- surface water and erosion controls</li> <li>- an auxiliary power system sized to enable emergency shut down of the facility to occur without causing irreparable damage to the equipment</li> <li>- control mechanisms to minimize and contain accidental spillage of reagents, lubricants, or other liquids used as well as residues generated</li> <li>- a fire detection and protection system capable of detecting, controlling, and extinguishing any fires that occur as a result of facility operation</li> <li>- a fence or other security system that prevents access to the site by unauthorized persons</li> <li>- a means for weighing or measuring all incoming solid waste, all recyclable</li> </ul>

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<p><b>SO.95.6.DE.</b> Resource recovery facilities must meet general operation and maintenance requirements (DE 7 1000 1301, Section 9.4.1) [Citation Revised January 2008].</p> <p><b>SO.95.7.DE.</b> Solid waste unloading at resource recovery facilities may only take place at clearly marked unloading areas (DE 7 1000 1301, Section 9.4.2.1) [Citation Revised January 2008].</p> <p><b>SO.95.8.DE.</b> Specific requirements must be met regarding the storage and handling of solid waste at resource recovery facilities (DE 7 1000 1301, Section 9.4.2.2) [Citation Revised January 2008].</p>	<p>materials recovered from the waste, and all residues generated at the facility.</p> <p>(NOTE: This Section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that facilities are operated in a manner that precludes degradation of land, air, surface water, or groundwater.</p> <p>Verify that facilities are operated and maintained to conform with the approved Plan of Operation submitted at the time of permit application and approved by the Department.</p> <p>(NOTE: This section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that the unloading of solid waste at resource recovery facilities only takes place at clearly marked unloading areas.</p> <p>(NOTE: This section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that external storage of solid waste containing garbage is prohibited, and that no solid waste is stored in such a manner that the storage area or the solid waste becomes a nuisance or endangers human health or the environment.</p> <p>Verify that all solid waste passing through the facility is ultimately recycled or disposed of at a solid waste facility authorized to accept that type of solid waste.</p> <p>Verify that solid waste delivered to the facility is processed within the time limit specified by the Department.</p> <p>Verify that nonputrescible recyclable materials are stored for up to 30 days, and that the storage period may be increased with written approval from the Department, if all of the following conditions are met:</p> <ul style="list-style-type: none"> <li>- there is a demonstrated need to do so (e.g., a market agreement with terms of receipt based on greater than 30-day intervals or volumes that may take longer than 30 days to acquire)</li> <li>- there is sufficient Department-approved storage area</li> <li>- an inventory methodology is used to ensure that the recyclables do not remain on the site for longer than the specified time period</li> </ul>

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<p><b>SO.95.9.DE.</b> Resource recovery facilities must meet specific requirements regarding the control of nuisances and hazards (DE 7 1000 1301, Section 9.4.2.3) [Citation Revised January 2008].</p>	<p>- an inventory methodology is provided to and approved by the Department before storage begins.</p> <p>(NOTE: This section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that routine maintenance and general cleanliness of the entire resource recovery facility is provided for, as well as litter removal along roads approaching the site.</p> <p>Verify that the operation of the resource recovery facility complies with 7 Delaware code, Chapter 60, and with the Regulations Governing the Control of Air Pollution.</p> <p>Verify that the resource recovery facility implements a vector control plan to prevent the establishment of habitats for nuisance organisms (e.g., flies, maggots, roaches, rodents, and similar vermin) and mitigates nuisances and hazards to human health and the environment.</p> <p>Verify that equipment is available onsite to control fires, and that arrangements are made with the local fire protection agency to provide immediate services when needed.</p> <p>Verify that, if deemed necessary by the Department, a separate area is provided for temporary placement of hot loads received at the facility. The hot load area must be located away from trees, bushes, and structures, and loads are to be extinguished immediately upon unloading.</p>
<p><b>SO.95.10.DE.</b> Access to resource recovery facilities must meet specific conditions (DE 7 1000 1301, Section 9.4.2.4) [Citation Revised January 2008].</p>	<p>(NOTE: This section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that access roads to the point of solid waste discharge at the resource recovery facility are designed, constructed, and maintained so that traffic flows smoothly and is not interrupted by inclement weather.</p> <p>Verify that access to the site is limited to those times when an attendant is on duty and to those persons authorized to deliver solid waste to the site.</p>
<p><b>SO.95.11.DE.</b> Resource recovery facility personnel must meet specific regulations (DE 7 1000 1301, Section 9.4.2.5) [Citation Revised</p>	<p>(NOTE: This section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that sufficient types and numbers of trained personnel are available at the site to ensure capability for operation in accordance with these regulations.</p>

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January 2008].	<p>Verify that the facility is operated under the close supervision of an individual who is thoroughly familiar with the requirements and operational procedures of the facility and is experienced in matters of solid waste management.</p> <p>Verify that all thermal recovery facilities are operated under the direct supervision of an individual who successfully completed a training course on use of the specific equipment installed at the facility.</p>
<p><b>SO.95.12.DE.</b> Resource recovery facilities must meet certain health and safety standards (DE 7 1000 1301, Section 9.4.2.6) [Citation Revised January 2008].</p>	<p>(NOTE: This Section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that employees at the resource recovery facility work under all appropriate health and safety guidelines established by OSHA.</p> <p>Verify that first aid equipment is available on the site.</p>
<p><b>SO.95.13.DE.</b> Resource recovery facilities must meet specific requirements regarding equipment (DE 7 1000 1301, Section 9.4.2.7) [Revised December 2004; Citation Revised January 2008].</p>	<p>(NOTE: This Section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that adequate numbers and types of equipment commensurate with the size of the operation are available at the site to ensure operation of the facility in accordance with the provisions of these regulations and the plan of operation.</p> <p>Verify that all solid waste handling equipment is cleaned routinely and maintained according to the manufacturer's recommendations.</p> <p>Verify that all processing equipment is operated by persons thoroughly trained in the proper operation of the equipment, and is maintained in good working order.</p>
<p><b>SO.95.14.DE.</b> Resource recovery facilities must dispose of process residues and solid waste that cannot be processed at the facility except under specific conditions (DE 7 1000 1301, Section 9.4.2.8) [Citation Revised January 2008].</p>	<p>(NOTE: This Section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that unless specified otherwise in writing by the Department, all residues are disposed of within 3 days of generation or used or treated in a manner that is consistent with the state and Federal requirements.</p> <p>Verify that unless specified otherwise in writing by the Department, all solid waste that is delivered to the facility but that cannot be processed at the facility is removed from the facility for disposal, use, or treatment in a manner that is consistent with state and Federal regulations within 3 days of receipt.</p>
<p><b>SO.95.15.DE.</b> Resource</p>	<p>(NOTE: This Section applies to materials recovery facilities and thermal recovery</p>

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<p>recovery facilities must follow specific recordkeeping requirements (DE 7 1000 1301, Section 9.D.3) [Citation Revised January 2008].</p> <p><b>SO.95.16.DE.</b> Resource recovery facilities must meet specific reporting requirements (DE 7 1000 1301, Section 9.4.4) [Revised December 2004; Citation Revised January 2008].</p>	<p>facilities.)</p> <p>Verify that the following information is recorded in a timely manner and that the records are retained by the resource recovery facility for at least 3 yr:</p> <ul style="list-style-type: none"> <li>- types and weight or volume of solid waste received</li> <li>- weight or volume of each material recycled or marketed</li> <li>- a record of the commercial solid waste haulers (company name, address, and telephone number) using the facility, and the type and weight or volume of solid waste delivered by each hauler to the facility each day</li> <li>- process monitoring data</li> <li>- characterization testing of recyclable materials</li> <li>- weight or volume of unprocessable solid wastes and of process residues, and location of ultimate disposal of these materials</li> <li>- characterization testing of process residues to determine the quality for possible marketing or British thermal unit value</li> <li>- a record of fires, spills, and uncontrolled releases that occur at the facility, and of hot loads received</li> <li>- documentation of training provided to employees</li> <li>- fire and safety inspections</li> <li>- major equipment maintenance</li> <li>- any additional records specified by the Department.</li> </ul> <p>(NOTE: This Section applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that the resource recovery facility submits to the Department on an annual basis a report summarizing facility operations for the preceding calendar year.</p> <p>Verify that the report is on a form prescribed by the Department and that the report includes, but is not necessarily limited to, the following:</p> <ul style="list-style-type: none"> <li>- types and weight or volume of solid waste received</li> <li>- weight or volume of each material recycled or marketed, and identification of the markets</li> <li>- weight or volume of unprocessable solid wastes and of process residues, and location of ultimate disposal of these materials</li> <li>- a complete list of commercial haulers that delivered solid waste to the facility during the year</li> <li>- a discussion of the feasibility of recycling materials that are currently being received at the facility but are not being recycled</li> <li>- descriptions of any intentional or accidental deviations from the approved Plan of Operation</li> <li>- descriptions of all construction or corrective work conducted on the site in accordance with approved plans or to achieve compliance with these regulations</li> <li>- results of characterization testing of recyclable materials and process residuals</li> <li>- any additional information specified by the Department.</li> </ul>

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<p><b>SO.95.17.DE.</b> Resource recovery facilities must meet specific closure requirements (DE 7 1000 1301, Section 9.5.1) [Citation Revised January 2008].</p> <p><b>SO.95.18.DE.</b> Resource recovery facilities must submit closure notification (DE 7 1000 1301, Section 9.5.2) [Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.95.19.DE.</b> Resource recovery facility closure plans must contain specific information (DE 7 1000 1301, Section 9.5.3) [Citation</p>	<p>Verify that the resource recovery facility immediately notifies the Department if any of the following occur:</p> <ul style="list-style-type: none"> <li>- a shut down that results in solid waste being diverted from the facility</li> <li>- a fire</li> <li>- a spill or nonpermitted release.</li> </ul> <p>(NOTE: This checklist item applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that when a resource recovery facility ceases accepting solid wastes, all of the solid waste onsite is removed and the facility is closed in a manner that eliminates the need for further maintenance at the site.</p> <p>(NOTE: This checklist item applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that resource recovery facilities submit a conceptual closure plan at the time of initial application for a Solid Waste Management Facility Permit.</p> <p>Verify that at least 180 days prior to the projected date when solid waste is no longer accepted at the resource recovery facility, the following is submitted to the Department:</p> <ul style="list-style-type: none"> <li>- written notification of intent to close</li> <li>- updated closure plan</li> <li>- closure schedule</li> <li>- an evaluation of the impact that closing the facility will have on the flow of solid waste in the region served by the facility, and a plan for minimizing any disruption in the flow.</li> </ul> <p>Verify that closure activities do not commence until the Department approves the updated closure plan and the closure schedule and modifies the permit to allow closure activities to be carried out.</p> <p>Verify that a copy of the closure plan is maintained at the facility or at some other designated location until closure is completed.</p> <p>(NOTE: This checklist item applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that the closure plan for a resource recovery facility contains, as a</p>

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<p>Revised January 2008].</p> <p><b>SO.95.20.DE.</b> Resource recovery facilities must meet minimum closure requirements (DE 7 1000 1301, Section 9.5.4) [Citation Revised January 2008].</p>	<p>minimum, the following:</p> <ul style="list-style-type: none"> <li>- a description of the methods, procedures, and processes that will be used to close the facility, including provisions that will be made for the proper disposal of all solid waste that is on the site when operations cease</li> <li>- a description of the planned postclosure use of the property.</li> </ul> <p>(NOTE: This checklist item applies to materials recovery facilities and thermal recovery facilities.)</p> <p>Verify that closure of the resource recovery facility is carried out in accordance with the approved closure plan.</p> <p>Verify that closure is complete within 1 yr after the date on which the Department issued a modified permit to allow closure.</p> <p>Verify that, when closure is completed, certification by a Professional Engineer registered in Delaware that the facility is closed in accordance with the specifications in the approved closure plan is submitted to the Department.</p> <p>Verify that, when closure of the resource recovery facility is completed to the satisfaction of the Department, the Department issues a letter indicating that closure has occurred in accordance with the closure plan.</p> <p>Verify that, after closure is completed, the Department may require that monitoring and/or maintenance activities are conducted at the site to prevent or detect and mitigate any adverse environmental or health impacts.</p>

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<p><b>MEDICAL WASTE</b></p> <p><b>SO.105. Generators</b></p> <p><b>SO.105.1.DE.</b> Infectious waste generators must meet registration and permitting requirements (DE 7 1000 1301, Section 11, Part 1, 11.1.1, 11.1.2, and 11.4) [Revised December 1999; Revised December 2004; Citation Revised January 2008].</p>	<p>(NOTE: The following solid wastes are not to be managed as infectious wastes):</p> <ul style="list-style-type: none"> <li>- soiled diapers and feminine hygiene items produced by a person not known to have an infectious disease</li> <li>- wastes contaminated only with organisms that are not pathogenic to humans, and which are managed in accordance with all applicable regulations of the U.S. Department of Agriculture and the Delaware Department of Agriculture and Consumer Services and all other regulations governing this type of waste stream</li> <li>- food wastes that are pathogenic to humans only through direct ingestion</li> <li>- any infectious waste contaminated by, co-incinerated with, or mixed with hazardous, radioactive, or toxic waste becomes a hazardous, radioactive, or toxic waste and is then managed under the appropriate regulations governing those waste types</li> <li>- waste consisting of human anatomical remains, including human fetal remains, managed by a licensed funeral director</li> <li>- bed linen, instruments, equipment and other reusable items are not wastes until they are discarded (this part and these regulations apply only to wastes; the regulations do not include the sterilization for disinfection of items that are reused for their original purpose. Therefore, the method of sterilization or disinfection of items prior to reuse is not limited. When reusable items are no longer serviceable and are discarded, they become wastes and subject to these regulations at that time and must be sterilized by steam, incinerated, or otherwise rendered non-infectious.)</li> <li>- waste generated by Delaware households</li> <li>- ash from incineration of infectious waste once the incineration process has been completed</li> <li>- residues from treatment and destruction processes of infectious waste once the waste has been both treated and destroyed</li> <li>- samples of infectious waste transported off-site by EPA or State-designated enforcement personnel for enforcement purposes are excepted from the requirements of this part during the enforcement proceeding</li> <li>- biological liquid wastes which are directly discharged into a permitted wastewater treatment system.)</li> </ul> <p>Verify that all generators of infectious waste obtain an Infectious Waste Identification Number for each site or location that generated infectious waste by registering with the Department on a form provided by the Department.</p> <p>Verify that no person constructs, operates, materially alters, or closes a facility to be used in the treatment, storage, or disposal of infectious wastes, unless specifically exempted from the regulations, without first having obtained the proper permits from the Department.</p>



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<p><b>SO.105.2.DE.</b> Small Quantity Generators must meet specific requirements (DE 7 1000 1301, Section 11, Part 1, 11.5) [Added December 1999; Revised December 2001; Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.105.3.DE.</b> Environmental releases or discharges of infectious waste must meet specific reporting requirements (DE 7 1000 1203, Section 2) [Added December 2002; Revised January 2008; Citation Revised January 2010].</p>	<p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>(NOTE: "Small Quantity Generator" means a generator who can demonstrate that their facility generates less than 50 lb/mo of infectious waste.)</p> <p>Verify that Small Quantity Generators contract the services of a permitted transporter of infectious waste, or render the waste non-infectious and non-recognizable, using a process or equipment approved by the Department, prior to disposal.</p> <p>Verify that Small Quantity Generators store no more than 50 lbs of infectious waste, and that storage is protective of human health and the environment.</p> <p>(NOTE: Small Quantity Generators who store more than 50 lbs are subject to the storage time limits; see SO.110.6.DE.)</p> <p>Verify that Small Quantity Generators maintain records of infectious waste disposal for a period of at least 3 yr, including:</p> <ul style="list-style-type: none"> <li>- a description of how the waste was rendered non-infectious and non-recognizable, and</li> <li>- copies of receipts or manifests for wastes managed by a permitted transporter of infectious waste.</li> </ul> <p>(NOTE: Small Quantity Generators are exempt from the requirement to file an annual report to the Department.)</p> <p>(NOTE: Moved from SO.125.4.DE.; December 2003.)</p> <p>Verify that those responsible for an environmental release or discharge of air contaminant into the air, a pollutant into surface water, groundwater, or land, or disposal of solid waste in excess of any Delaware Reportable Quantity (DRQ) report the discharge immediately upon discovery to the Department and activates the appropriate emergency site plan.</p> <p>(NOTE: Discharge in compliance with a validly issued state or federal permit or in compliance with other state and federal regulations are exempt from the reporting requirements.)</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>(NOTE: Delaware Reportable Quantities are listed in Appendix 3-1 in the <i>Hazardous Materials Management</i> chapter. The list states that any amount of</p>

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	<p>infectious waste is a reportable quantity.)</p> <p>(NOTE: Discharges that are wholly contained in a building are exempt from reporting the incident unless there is injury or death.)</p> <p>Verify that all injuries and deaths resulting from a discharge are reported to the Department.</p> <p>Verify that reports to the Department include:</p> <ul style="list-style-type: none"> <li>- facility name and/or location</li> <li>- type of incident</li> <li>- chemical or substance involved</li> <li>- indication of whether the substance is an extremely hazardous substance (EHS)</li> <li>- estimate of the quantity discharged</li> <li>- beginning time and duration of discharge</li> <li>- medium or media into which discharge occurred</li> <li>- known or anticipated acute or chronic health risks and medical advice necessary for exposed individuals</li> <li>- proper precautions to take as a result of the discharge</li> <li>- name of reporting person and call-back number.</li> </ul>

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<p><b>MEDICAL WASTE</b></p> <p><b>SO.110. Containers/ Labeling/ Storage Areas</b></p> <p><b>SO.110.1.DE.</b> Generators are responsible for packaging and labeling infectious waste (DE 7 1000 1301, Section 11, Part 1, 11.8.1) [Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.110.2.DE.</b> Infectious waste must meet specific labeling requirements (DE 7 1000 1301, Section 11, Part 1, 11.8.3) [Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.110.3.DE.</b> Infectious agents must be packaged and</p>	<p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that the generator of infectious waste does not submit for transport, storage, treatment, or disposal any waste which is not packaged according to regulations.</p> <p>Verify that as a bag or other infectious waste container becomes full, it is immediately sealed, packaged, labeled, and managed according to regulations.</p> <p>(NOTE: Contractors or other agents may provide services to the generator, including packaging and labeling of infectious waste; however, no contract or other relationship may relieve the generator of the responsibility for packaging and labeling the infectious waste as required.)</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that all infectious waste is labeled immediately after packaging, and that the labels are securely attached to the outer layer of packaging and are clearly legible (the labels may be a tag securely affixed to the package).</p> <p>Verify that indelible ink is used to complete the information on the labels.</p> <p>Verify that the labels are at least 3 in. by 5 in. in size.</p> <p>Verify that the following information is included on label one:</p> <ul style="list-style-type: none"> <li>- the name, address, and business telephone number of the generator</li> <li>- INFECTIOUS WASTE or REGULATED MEDICAL WASTE in large print</li> <li>- PATHOLOGICAL WASTE, if pathological waste is included in the contents</li> <li>- the name, address, and business telephone number of all haulers or other persons to whose control the infectious waste is transferred.</li> </ul> <p>Verify that the Biological Hazard Symbol is included on label 2, and that this label is not less than 3 by 5 in.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as</p>

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<p>labeled according to the Code of Federal Regulations (DE 7 1000 1301, Section 11, Part 1, 11.8.4) [Revised December 1999; Revised December 2001; Revised January 2008].</p> <p><b>SO.110.4.DE.</b> Infectious waste must be stored in a specific manner (DE 7 1000 1301, Section 11, Part 1, 11.8.5.1) [Citation Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.110.5.DE.</b> Infectious waste must be placed in separate containers from other waste (DE 7 1000 1301, Section 11, Part 1, 11.8.5.2) [Citation Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.110.6.DE.</b> Infectious waste may not be stored at the waste producing facility for more than certain periods of time (DE 7 1000 1301, Section 11, Part 1, 11.8.5.3 and 11.5.3) [Revised December 1999; Citation Revised January 2008].</p>	<p>infectious wastes.)</p> <p>Verify that all infectious agents that are transported are packaged as described in 49 CFR 173.387 (most current edition), even when that transport is wholly within the boundaries of the state.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that infectious waste is contained in a manner that:</p> <ul style="list-style-type: none"> <li>- affords protection from vectors, rain, and wind</li> <li>- prevents the spread of infectious agents</li> <li>- does not provide a breeding place or food source for insects or rodents</li> <li>- prevents the leakage of waste from the storage bag or container.</li> </ul> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that infectious waste is placed in separate containers from other waste at the point of origin in the producing facility.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that infectious waste is not stored at the waste producing facility for more than the following periods of time:</p> <ul style="list-style-type: none"> <li>- up to 14 days at room temperature (18 to 28 °C, 65 to 82 °F) or up to 45 days in a refrigerator (2 to 7 °C, 36 to 44 °F) for all types of infectious waste, so long as it does not produce conditions that are offensive or harmful to facility personnel or the public welfare</li> <li>- 90 days in a freezer (-20 to -18 °C, -4 to -1 °F) not used for food or patient related items.</li> </ul> <p>(NOTE: Sharps disposed of in a container specifically designed for sharps and which is sealed so as to prevent leaks when it is full, are exempt from the time limit on storage.)</p> <p>(NOTE: Small Quantity Generators who store more than 50 lbs are subject to</p>

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<p><b>SO.110.7.DE.</b> Infectious waste other than sharps must be contained in a specific manner (DE 7 1000 1301, Section 11, Part 1, 11.8.2.1) [Revised December 1999; Citation Revised January 2008].</p>	<p>these storage time limits.)</p> <p>(NOTE: This checklist is repeated in SO.120.2.DE.)</p> <p>Verify that infectious waste other than sharps is packaged accordingly, and contained as follows:</p> <ul style="list-style-type: none"> <li>- waste is contained in 2 (one bag inside the other) RED BAGS</li> <li>- the RED BAGS that are individually tied or sealed</li> <li>- bags are sealed by lapping the gathered open end and binding with tape or closing device so that no liquid can leak</li> <li>- in addition to the plastic bag containers, all infectious wastes is also enclosed in a double-walled corrugated fiberboard box or equivalent rigid container before it is transported beyond the site of generation.</li> </ul> <p>Verify that as a bag or other container becomes full, it is immediately sealed, packaged, labeled and managed as described in this part.</p> <p>(NOTE: Waste contained in red bags is considered infectious waste and will be managed as infectious waste.)</p>
<p><b>SO.110.8.DE.</b> Sharps must be stored in special containers (DE 7 1000 1301, Section 11, Part 1, 11.8.2.2) [Revised December 1999; Citation Revised January 2008].</p>	<p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that sharps are contained in leakproof, rigid, puncture-resistant containers that are tightly lidded.</p> <p>Verify that as soon as the first sharp is placed in an empty container, the container is labeled with the word "SHARPS", and the Biological Hazard Symbol</p>
<p><b>SO.110.9.DE.</b> [Deleted December 2001].</p>	<p>(NOTE: Regulation revised. See SO.110.2.DE. for similar requirements.)</p>
<p><b>SO.110.10.DE.</b> Infectious waste containers may not be reused unless under specific circumstances (DE 7 1000 1301, Section 11, Part 1, 11.8.5.4) [Citation Revised December 1999; Citation Revised December 2001; Citation Revised January</p>	<p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that a container used to store infectious waste is not reused unless one of the following applies:</p> <ul style="list-style-type: none"> <li>- it has been decontaminated utilizing a Department-approved decontamination procedure</li> <li>- the surface of the container is protected from direct contact with infectious</li> </ul>

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<p>2008].</p> <p><b>SO.110.11.DE.</b> Reusable infectious waste containers must be thoroughly washed and decontaminated by an approved method (DE 7 1000 1301, Section 11, Part 1, 11.8.5.5) [Citation Revised December 1999; Citation Revised December 2001; Citation Revised January 2008].</p> <p><b>SO.110.12.DE.</b> Infectious waste must be contained in an area separate from other wastes (DE 7 1000 1301, Section 11, Part 1, 11.8.5.6) [Citation Revised December 1999; Citation Revised December 2001; Citation Revised January 2008].</p> <p><b>SO.110.13.DE.</b> Infectious waste management facilities must keep a small containment and cleanup kit</p>	<p>waste.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that reusable containers for infectious waste are thoroughly washed and decontaminated by an approved method each time they are emptied, unless the surfaces of the containers are completely protected from the contamination by disposable liners, bags, or other devices removed with the waste.</p> <p>(NOTE: Approved methods of decontamination include, but are not limited to, agitation to remove visible soil combined with one of the following procedures:</p> <ul style="list-style-type: none"> <li>- all parts of the container come in contact with hot water of at least 82 °C (180 °F) for a minimum of 15 s</li> <li>- all parts of the container are in contact with chemical sterilizer by rinsing with or immersion in one of the following for a minimum of 3 min:</li> <li>- hypochlorite solution (500 ppm available chlorine)</li> <li>- phenolic solution (500 ppm active agent)</li> <li>- iodophor solution (100 ppm available iodine)</li> <li>- quaternary ammonium solution (400 ppm active agent).)</li> </ul> <p>Verify that the reusable pails, drums, dumpsters, or bins used for containment of infectious waste are not used for containment of waste to be disposed of noninfectious waste or for other purposes except after being decontaminated.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that infectious waste is contained in an area separate from other wastes.</p> <p>Verify that areas for the containment of infectious waste are secured so as to deny access to unauthorized persons and are marked with prominent warning signs and the biohazard symbol on, or adjacent to, the exterior of entry doors, gates, or lids.</p> <p>Verify that wording of warning signs is in English, CAUTION--INFECTIOUS WASTE STORAGE AREA--UNAUTHORIZED PERSONS KEEP OUT.</p> <p>Verify that warning signs are readily legible during daylight from a distance of at least 25 ft.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that all infectious waste management facilities keep a small containment</p>

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<p>(DE 7 1000 1301, Section 11, Part 1, 11.9) [Citation Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.110.14.DE.</b> Infectious wastes management facilities must follow certain closure requirements (DE 7 1000 1301, Section 11, Part 1, 11.10) [Citation Revised December 1999; Citation Revised January 2008].</p>	<p>and cleanup kit within 100 ft of any area where infectious wastes are managed.</p> <p>Verify that the facility maintains and implements a plan which provides the means of decontamination of any person having had bodily contact with infectious waste while transporting the waste to the treatment or disposal site or while handling or disposing of the waste at the site.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that, when an infectious waste management facility ceases operations involving infectious wastes, it is thoroughly cleaned and disinfected, and that all waste is disposed of in accord with these regulations, and items of equipment are disinfected.</p> <p>(NOTE: Due to the variability in the type of infectious waste facilities, the Department will specify individual closure requirements in the permit issued to the facility.)</p>

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<p><b>MEDICAL WASTE</b></p> <p><b>SO.115. Transportation</b></p> <p><b>SO.115.1.DE.</b> Infectious waste transporters must follow specific temperature control and storage measures (DE 7 1000 1301, Section 11, Part 1, 11.14.1) [Citation Revised December 1999; Citation Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.115.2.DE.</b> Infectious waste transporters must follow regulations concerning packaging, labeling, and placards (DE 7 1000 1301, Section 11, Part 1, 11.14.2) [Citation Revised December 1999; Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.115.3.DE.</b> Transporters must meet specific regulations for management of spills of</p>	<p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that transporters deliver infectious waste to a disposal facility within 15 days from collection from the generation facility.</p> <p>Verify that infectious waste is transported in a manner that:</p> <ul style="list-style-type: none"> <li>- affords protection from vectors, rain, and wind</li> <li>- prevents the spread of infectious agents</li> <li>- does not provide a breeding place or food source for vectors</li> <li>- prevents leakage of waste from the storage bags or other containers.</li> </ul> <p>Verify that infectious waste is transported to offsite processing or disposal facilities in a manner consistent with SO.110.2.14.DE.</p> <p>Verify that motor vehicles for transporting infectious waste are noncompaction-type vehicles.</p> <p>Verify that surfaces of vehicles which are in direct physical contact with infectious waste, because of a leak in a container or because of some other reason, are decontaminated as soon as possible after unloading, and that surfaces of vehicles which are not in direct physical contact with infectious waste are decontaminated weekly.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that there is no transportation of any infectious waste that is not packaged and labeled in accord with these regulations.</p> <p>Verify that any vehicle holding infectious waste in transport has a warning sign in bold letters, a minimum of 4 in. in height and a color that contrasts with the color of the vehicle that indicates the cargo is infectious waste.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p>



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<p>infectious waste (DE 7 1000 1301, Section 11, Part 1, 11.14.3) [Citation Revised December 1999; Citation Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.115.4.DE.</b> Infectious waste transporters must wear protective clothing when loading and unloading infectious waste (DE 7 1000 1301, Section 11, Part 1, 11.14.4) [Citation Revised December 1999; Citation Revised December 2004; Citation Revised January 2008].</p>	<p>Verify that transporters meet the following requirements:</p> <ul style="list-style-type: none"> <li>- all infectious waste transportation vehicles have within the vehicle the containment and cleanup kit specified in the permit</li> <li>- the vehicle is equipped with a written plan, approved by the Department, that provides the means of decontamination of a release of infectious waste while transporting the waste to the treatment or disposal site or while handling the waste at the site</li> <li>- the driver is trained to implement this plan.</li> </ul> <p>Verify that, in all cases, discharges of infectious waste of any quantity or of any type occurring outside of a medical or health care facility are reported to the Department.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that transporters manually loading or unloading containers of infectious waste on or from transport vehicles wear protective gloves or clothing, as appropriate.</p>

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<p><b>MEDICAL WASTE</b></p> <p><b>SO.120. Treatment/ Disposal</b></p> <p><b>SO.120.1.DE.</b> Disposal of infectious waste must follow specific prohibitions (DE 7 1000 1301, Section 11, Part 1,11.7) [Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.120.2.DE.</b> Infectious wastes other than sharps must be properly packaged and labeled prior to storage, treatment, transport, or disposal (DE 7 1000 1301, Section 11, Part 1, 11.8.2.1) [Revised December 1999; Revised December 2001; Citation Revised January 2008].</p>	<p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>(NOTE: Biological liquid wastes that are directly discharged into a permitted wastewater treatment system are not subjected to these regulations.)</p> <p>Verify that infectious waste is not disposed of at a sanitary landfill unless the waste is rendered noninfectious and unrecognizable.</p> <p>(NOTE: In the case of extracted teeth, sterilization followed by landfilling would be acceptable.)</p> <p>Verify that compactors, grinders, or similar devices are not used by a generator to reduce the volume of infectious waste until after the waste is rendered noninfectious, or unless the device is part of an approved treatment process which renders the waste noninfectious.</p> <p>Verify that infectious wastes are not sent to recycling facilities.</p> <p>Verify that waste consisting of human anatomical remains, including human fetal remains, is not disposed of at sanitary landfills, and that the remains are incinerated, cremated or interred.</p> <p>Verify that trans-chutes are not used to transfer infectious waste between locations where it is contained.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>(NOTE: Biological liquid wastes that are directly discharged into a permitted wastewater treatment system are not subjected to these regulations.)</p> <p>(NOTE: These requirements are repeated in SO.110.7.DE.)</p> <p>Verify that, prior to storage, treatment, transport, or disposal, infectious waste is packaged as follows:</p> <ul style="list-style-type: none"> <li>- waste is contained in 2 (one bag inside the other) RED BAGS</li> <li>- the RED BAGS that are individually tied or sealed</li> <li>- bags are sealed by lapping the gathered open end and binding with tape or closing device so that no liquid can leak</li> </ul>

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<p><b>SO.120.3.DE.</b> Treatment of infectious waste must utilize a method that will render the waste noninfectious (DE 7 1000 1301, Section 11, Part 1, 11.11) [Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.120.4.DE.</b> Treatment of infectious waste must achieve specific results (DE 7 1000 1301, Section 11, Part 1.M.1.a and b) [Citation Revised December 1999; Revised December 2001; Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.120.5.DE.</b> Treatment of infectious waste must be conducted in a manner which assures quality (DE 7 1000 1301, Section 11, Part 1, 11.13.1.3) [Citation Revised December 1999; Citation Revised January 2008].</p>	<p>- in addition to the plastic bag containers, all infectious wastes is also enclosed in a double-walled corrugated fiberboard box or equivalent rigid container before it is transported beyond the site of generation.</p> <p>Verify that as a bag or other container becomes full, it is immediately sealed, packaged, labeled and managed.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>(NOTE: Biological liquid wastes that are directly discharged into a permitted wastewater treatment system are not subjected to these regulations.)</p> <p>Verify that all treatment of infectious waste utilizes a method which renders the waste noninfectious.</p> <p>Verify that all pathological waste is incinerated, or interred (other disposal methods are not acceptable for this type of waste).</p> <p>(NOTE: Biological liquid wastes that are directly discharged into a permitted wastewater treatment system are not subjected to these regulations.)</p> <p>Verify that treatment of infectious waste is conducted in a manner which:</p> <ul style="list-style-type: none"> <li>- eliminates the infectious potential of the waste</li> <li>- disposes treatment residues appropriately.</li> </ul> <p>(NOTE: A treatment process eliminates the infectious potential of infectious waste if the owner or operator of a treatment unit demonstrates that an Initial Efficacy Test and Periodic Verification Test(s) have been completed successfully (see SO.120.6.DE and SO.120.7.DE.)</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>(NOTE: Biological liquid wastes that are directly discharged into a permitted wastewater treatment system are not subjected to these regulations.)</p> <p>Verify that treatment of infectious waste is conducted in a manner which provides for quality assurance programs that includes, at a minimum, a written plan which:</p> <ul style="list-style-type: none"> <li>- designates responsibility to personnel</li> <li>- describes parameters that must be monitored to ensure effectiveness of the treatment process</li> <li>- identifies monitoring devices</li> </ul>

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<p><b>SO.120.6.DE.</b> Initial efficacy tests must be completed prior to operation of a treatment unit (DE 7 1000 1301, Section 11, Part 1, 11.13.2) [Citation Revised December 1999; Citation Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- ensures that monitoring devices are operating properly</li> <li>- establishes appropriate ranges for operating parameters</li> <li>- identifies person(s) who will collect and organize data for inclusion in operating records</li> <li>- identifies person(s) who will evaluate any discrepancies or problems</li> <li>- identifies person(s) who will propose actions to correct problems identified</li> <li>- identifies person(s) who assess actions taken and document improvement.</li> </ul> <p>Verify that the treatment of infectious waste is conducted in a manner which provides for periodic biological testing, when appropriate, that demonstrates proper treatment of waste.</p> <p>Verify that the treatment of infectious waste provides for assurances which clearly demonstrate that infectious waste has been properly treated.</p> <p>Verify that the treatment of infectious waste is in compliance with all Federal, state, and local laws and regulations pertaining to environmental protection.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>(NOTE: Biological liquid wastes that are directly discharged into a permitted wastewater treatment system are not subjected to these regulations.)</p> <p>Verify that either the manufacturer, owner, or operator of a treatment unit conducts an initial efficacy test for each model prior to operation.</p> <p>Verify that, if significant mechanical changes are made to a treatment unit, the initial efficacy test is repeated.</p> <p>(NOTE: The initial efficacy test must be conducted using the methods described in Appendix A (Part 11, Appendix A), using the challenge loads listed in Table C of Appendix A.)</p> <p>Verify that the initial efficacy test is conducted under the same operating conditions under which the treatment unit operates on a day-to-day basis.</p> <p>Verify that the feed rate is constant throughout the initial efficacy test.</p> <p>Verify that the feed rate used throughout the initial efficacy test is not exceeded during operation of the treatment unit.</p> <p>Verify that the initial efficacy test is performed so each container of the test microorganisms and/or indicator microorganisms is placed in the load to simulate the worst case scenario (i.e., that part of the load that is most difficult to treat).</p> <p>Verify that the test microorganisms and/or indicator microorganisms are cultured and enumerated in accordance with instruction provided by the supplier of</p>

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<p><b>SO.120.7.DE.</b> Periodic verification tests must be performed to ensure the effectiveness of the treatment unit (DE 7 1000 1301, Section 11, Part 1, 11.13.3) [Citation Revised December 1999; Citation Revised January 2008].</p>	<p>microorganisms and standard methods for the examination of water and wastewater.</p> <p>Verify that the documentation of the initial efficacy test is retained at the treatment facility and available for inspection by the Department.</p> <p>Verify that the documentation of the initial efficacy test includes at least:</p> <ul style="list-style-type: none"> <li>- a detailed description of the test procedures used, including all test data generated, with descriptions of data handling, and interpretation of final test results</li> <li>- a detailed description and verification of the operating parameters (e.g. temperature, pressure, retention times, chemical concentrations, irradiation dose, and feed rates)</li> <li>- a description of quality assurance/quality control procedures and practices for the culture, storage and preparation of test and/or indicator microorganisms (including, but not limited to, organism history, source, stock culture maintenance, and enumeration procedures).</li> </ul> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>(NOTE: Biological liquid wastes that are directly discharged into a permitted wastewater treatment system are not subjected to these regulations.)</p> <p>Verify that periodic verification tests are conducted quarterly or more frequently if required by permit or recommended by the manufacturer.</p> <p>Verify that the manufacturer, owner, or operator of a treatment unit performs periodic verification tests that satisfy one of the following:</p> <ul style="list-style-type: none"> <li>- passing the initial efficacy test</li> <li>- correlating the log kill (L) of the test microorganisms in the initial efficacy test to an equivalent log kill (T) of the indicator microorganisms in accordance with Appendix B of Part 11</li> <li>- submitting to obtaining written approval by the Department for a procedure that is equivalent to the above.</li> </ul> <p>Verify that results of the periodic verification test are received, verified, and made available for inspection to the Department within 2 weeks of when the test was conducted.</p> <p>Verify that a document of correlating periodic verification demonstration is prepared by and retained for at least 3 yr at the treatment facility for inspection by the Department.</p> <p>Verify that periodic verification tests are conducted under the same operating</p>

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<p><b>SO.120.8.DE.</b> Records of periodic verification test must be prepared and retained (DE 7 1000 1301, Section 11, Part 1, 11.13.3.8) [Citation Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.120.9.DE.</b> Persons who steam sterilize infectious waste must meet specific performance standards (DE 7 1000 1301, Section 11, Part 1, 11.15.1) [Revised December 1999; Citation Revised December 2004; Citation Revised January 2008].</p>	<p>conditions under which the treatment unit operates on a day-to-day basis.</p> <p>Verify that the feed rate remains throughout the periodic verification test.</p> <p>Verify that the feed rate used during the periodic verification test is never exceeded during the operation of the treatment unit.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>(NOTE: Biological liquid wastes that are directly discharged into a permitted wastewater treatment system are not subjected to these regulations.)</p> <p>Verify that records of periodic verification tests are prepared and retained for at least 3 yr at the treatment facility and made available for inspection by the Department.</p> <p>Verify that the records contain at a minimum:</p> <ul style="list-style-type: none"> <li>- date on which the periodic verification tests were performed</li> <li>- operating parameters (e.g., temperature, pressure, retention time, chemical concentrations, irradiation dose, and feed rates)</li> <li>- test protocols</li> <li>- evaluation of test results</li> <li>- name, date, signature, and title of person conducting the periodic verification test.</li> </ul> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>(NOTE: Biological liquid wastes that are directly discharged into a permitted wastewater treatment system are not subjected to these regulations.)</p> <p>Verify that persons who steam sterilize infectious waste meet the following operational requirements:</p> <ul style="list-style-type: none"> <li>- when infectious wastes are treated in a steam sterilizer, all the waste is subjected to a temperature of not less than 250 °F for 90 min at 15 psig or not less than 272 °F for 45 min at 27 psig (other combinations of operational temperatures, pressure, and time may be used if the installed equipment is proven to achieve a reliable and complete kill of all microorganisms in waste at capacity)</li> <li>- complete and thorough testing is fully documented, including tests of the capacity of kill <i>B. stearothermophilus</i></li> <li>- each package of waste to be steam sterilized has autoclave tape attached that indicates if the sterilization temperature has been reached and waste is not</li> </ul>

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<p><b>SO.120.10.DE.</b> Persons operating offsite infectious waste sterilization facilities must comply with a plan approved by the Department (DE 7 1000 1301, Section 11, Part 1, 11.15.4) [Citation Revised December 1999; Citation Revised January 2008].</p>	<p>considered satisfactorily sterilized if the indicator fails to indicate that the temperature was reached during the process</p> <ul style="list-style-type: none"> <li>- steam sterilization units are evaluated for effectiveness with spores of <i>B. stearothermophilus</i> no less than once every 40 h of operation or once per month, whichever is more often.</li> </ul> <p>Verify that a log is kept at each sterilization unit that is complete for the preceding 3-yr period which includes:</p> <ul style="list-style-type: none"> <li>- the date</li> <li>- time</li> <li>- temperature</li> <li>- pressure</li> <li>- type of waste</li> <li>- type of container(s)</li> <li>- closure on container(s)</li> <li>- pattern of loading</li> <li>- water content</li> <li>- operator of each usage</li> <li>- the type and approximate amount of waste treated</li> <li>- the post sterilization reading of the temperature sensitive tape</li> <li>- the dates and results of calibration</li> <li>- and the results of effectiveness testing with <i>B. stearothermophilus</i>.</li> </ul> <p>Verify that infectious waste is not compacted or subjected to violent mechanical stress before sterilization, however, after it is fully sterilized it may be compacted in a closed container.</p> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>(NOTE: Biological liquid wastes that are directly discharged into a permitted wastewater treatment system are not subjected to these regulations.)</p> <p>Verify that any person who operates offsite facilities for the sterilization of infectious waste operates the facilities in compliance with a plan approved by the Department.</p> <p>Verify that the plan addresses in detail practices, procedures and precautions in the unloading, preparation, and sterilized loading of the waste.</p>

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<p><b>MEDICAL WASTE</b></p> <p><b>SO.125. Documentation</b></p> <p><b>SO.125.1.DE.</b> Infectious waste generators and management facilities must keep specific records (DE 7 1000 1301, Section 11, Part 1, 11.12.1 through 7) [Revised December 1999; Citation Revised December 2001; Citation Revised January 2008].</p> <p><b>SO.125.2.DE.</b> Infectious waste generators must submit annual reports (DE 7 1000 1301, Section 11, Part 1, 11.12.8) [Added December 2001; Citation Revised January 2008].</p>	<p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that all waste management or treatment facilities that manage infectious waste maintain the following records for a period of 3 yr, and assure that they are accurate and current:</p> <ul style="list-style-type: none"> <li>- a list containing the names of all individuals responsible for the management of infection control for the facility, their addresses, phone numbers, and the periods covering their assignment of this duty</li> <li>- the date, persons involved, and short description of events in each spill of infectious waste</li> <li>- a notebook or file containing the policies and procedures of the facilities for dealing with infectious wastes</li> <li>- a log of all special training received by persons involved in the management of infectious waste</li> <li>- a log of infectious waste generated at the site or received from offsite, including the amount, the date of generation, receipt dates, and the date of shipment</li> <li>- anyone that sterilizes or incinerates infectious waste maintains a log indicating the method of monitoring the waste as well as a verification that it is rendered noninfectious</li> <li>- the operator of a facility that incinerates infectious waste submits to the Department, at least annually during the life of the facility, a chemical analysis of composite samples of ash residue on forms provided by the Department (parameters to be monitored will be specified in the permit).</li> </ul> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that each generator of infectious waste submit an annual report on a form provided by the Department, summarizing the information from all manifests completed during the preceding calendar year, within ninety days after the end of the calendar year.</p> <p>Verify that the report includes:</p> <ul style="list-style-type: none"> <li>- a description of infectious waste generated and transported off site for treatment and disposal</li> <li>- the total weight of infectious waste generated and transported off site for treatment and disposal</li> </ul>



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<p><b>SO.125.3.DE.</b> Infectious waste transporters must submit annual reports (DE 7 1000 1301, Section 11, Part 1, 11.12.9) [Added December 2001; Citation Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- the names and addresses of persons engaged by the generator to transport infectious waste off site</li> <li>- the names and locations of the infectious waste management facilities with which the generator contracted for the treatment and/or disposal of infectious waste.</li> </ul> <p>(NOTE: See SO.105.1.DE. for a list of solid wastes that are not managed as infectious wastes.)</p> <p>Verify that each transporter of infectious waste submits an annual report on a form provided by the Department, summarizing the information from all manifests completed during the preceding calendar year, by April 1 of the year following the year covered by the report.</p> <p>Verify that the report includes:</p> <ul style="list-style-type: none"> <li>- a description of infectious waste transported off site for treatment and disposal</li> <li>- the total weight of infectious waste transported off site for treatment and disposal</li> <li>- the names and addresses of generators contracting with the transporter to transport infectious waste off site</li> <li>- the names and locations of the infectious waste management facilities where the transporter deposited the infectious waste for treatment and/or disposal.</li> </ul>
<p><b>SO.125.4.DE.</b> [Moved December 2003].</p>	<p>(NOTE: Moved to SO.105.3.DE.; December 2003.)</p>

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<p><b>SO.135.</b></p> <p><b>LANDFILLS</b></p> <p><b>SO.135.1.DE.</b> Sanitary landfills must meet specific siting requirements (DE 7 1000 1301, Section 5.1) [Revised December 1999; Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that sanitary landfill facilities are located only in areas where the potential for degradation of the quality of air, land, and water is minimal.</p> <p>Verify that all sanitary landfill facilities are constructed to at least minimum design requirements (see SO.135.2.DE.), and that more stringent designs are required when deemed necessary by the Department for the protection of groundwater resources.</p> <p>Verify that no cell of a sanitary landfill is located:</p> <ul style="list-style-type: none"> <li>- within the 100-yr flood plain</li> <li>- in an area that may cause or contribute to the degradation of any state or federally regulation wetlands</li> <li>- within 200 ft of the facility property boundary</li> <li>- within 1 mi of any state or Federal wildlife refuge, wildlife area, or park, unless specifically exempted from this requirement by the Department</li> <li>- within 10,000 ft of any airport runway currently used by turbojet aircraft or 5000 ft or any airport runway currently used by piston-type aircraft, unless a waiver is granted by the Federal Aviation Administration</li> <li>- so as to be in conflict with any locally adopted land use plan or zoning requirement</li> <li>- within the wellhead protection area of a public water supply well or well field</li> <li>- within 200 feet of a fault that has had displacement during Holocene time (unless it can be demonstrated that a lesser setback distance would prevent damage to the structural integrity of the landfill unit and be protective of human health and the environment)</li> <li>- within a seismic impact zone unless it can be demonstrated that all containment structures, including liners, leachate collection systems and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site</li> <li>- in unstable areas, unless engineering measures have been incorporated in the design to insure the integrity of the structural components of the waste facility (including liners, leachate collection systems, run-on/run-off control, capping and anything affecting the containment and/or possible release of contaminants)</li> <li>- in areas where valuable aquifers would be threatened by contaminant releases, unless viable alternatives have been dismissed and stringent design measures have been incorporated to minimize the possibility and magnitude of releases.</li> </ul>

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<p><b>SO.135.2.DE.</b> Sanitary landfills must meet general design requirements (DE 7 1000 1301, Section 5.2.1) [Revised December 2001; Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that sanitary landfills are planned and designed by professional engineers registered in Delaware and their construction and operation are consistent with the engineering plans.</p> <p>Verify that planning and design of these facilities are consistent with this regulation and based on empirically derived data and state of the art technology.</p> <p>(NOTE: Minimum design requirements may be found in DE 7 1000 1301, Section.5.5.2.)</p>
<p><b>SO.135.3.DE.</b> Sanitary landfill liners must meet general provisions (DE 7 1000 1301, Section 5.3.1) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that an impermeable liner is provided at all sanitary landfills to restrict the migration of leachate from the landfill and to prevent contamination of the underlying groundwater.</p> <p>(NOTE: The Department reserves the right to set a more stringent liner requirement when it determines that a single liner is not sufficient to protect human health and the environment.)</p> <p>Verify that the bottom of the liner (of the secondary liner in a double liner system) is at least 5 ft above the seasonal high water table.</p> <p>Verify that all liners are prepared, constructed, and installed in accordance with a quality assurance plan included in the engineering report and approved by the Department.</p> <p>(NOTE: For synthetic liners, the plan will incorporate the manufacturer's recommendations.)</p>
<p><b>SO.135.4.DE.</b> Sanitary landfill composite liners must have specific characteristics (DE 7 1000 1301, Section 5.3.2.1) [Revised December 1999; Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that a primary composite liner meets the following requirements:</p> <ul style="list-style-type: none"> <li>- is at least 45 mil thick</li> <li>- constructed of materials which have appropriate chemical properties and sufficient strength and thickness to prevent failure due to physical contact with the leachate to which it is exposed, climatic conditions, the stresses of installation, and the stresses of daily operation</li> <li>- is made of synthetic material which meets minimum requirements of the most recent edition of the National Sanitation Foundation's publication, <i>Standard Number 54-1993, Flexible Membrane Liner</i></li> </ul>

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<p><b>SO.135.5.DE.</b> Natural liners in sanitary landfills must have specific characteristics (DE 7 1000 1301, Section 5.3.2.2) [Citation Revised December 1999; Citation Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- is chemically resistant to the waste and leachate managed at the facility</li> <li>- is composed from first quality virgin materials, and that no reground or reprocessed materials containing encapsulated scrim are used in the manufacturing of the liner</li> <li>- is free of pinholes, blisters, holes, and contaminants, which include, but are not limited to, wood, paper, metal, and nondispersed ingredients.</li> </ul> <p>Verify that there is a secondary (lower) liner composed of either:</p> <ul style="list-style-type: none"> <li>- compacted clay at least 2 feet thick with a hydraulic conductivity no greater than <math>1 \times 10^{-7}</math> cm/secr</li> <li>- an equivalent material or combination of materials acceptable to the Department.</li> </ul> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that natural liners consist of compacted clay or equivalent material having a hydraulic conductivity no greater than <math>1 \times 10^{-7}</math> cm/s.</p> <p>Verify that the material is at least 5 ft thick, and thicker if necessary, to prevent any leachate from migrating through the liner at any time during the active life and through the postclosure care period of the facility.</p> <p>Verify that the material proposed for use is tested by the ASTM or equivalent methods for the following:</p> <ul style="list-style-type: none"> <li>- grain size</li> <li>- classification</li> <li>- compaction</li> <li>- specific gravity</li> <li>- hydraulic conductivity</li> <li>- porosity</li> <li>- pH</li> <li>- cation exchange capacity</li> <li>- pinhole test (if required)</li> <li>- mineralogy (if required).</li> </ul> <p>(NOTE: All data must be submitted to the Department prior to construction.)</p> <p>Verify that testing of the saturated hydraulic conductivity and the effect of the leachate on soil hydraulic conductivity is performed in accordance with test methods given in the most recent edition of USEPA publication SW-846, ASTM test procedures, or other tests approved by the Department.</p> <p>Verify that, if onsite soils are used as a natural liner, the uppermost 5 ft of soil is excavated and recompacted to ensure homogeneity of the liner, provided, however, that with respect to dredge spoil soils, the excavation and recompaction requirement does not apply if the applicant can demonstrate that the dredge spoil</p>

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<p><b>SO.135.6.DE.</b> Double liners in sanitary landfills must have specific characteristics (DE 7 1000 1301, Section 5.3.2.3) [Revised December 1999; Revised January 2008].</p> <p><b>SO.135.7.DE.</b> Sanitary landfills must meet specific construction/installation requirements for single synthetic liners (DE 7 1000 1301, Section 5.3.3.1) [Revised December 2004; Revised January 2008].</p>	<p>soils have acceptable characteristics.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that double liner systems consist of 2 single liners separated by a drainage layer containing a leak-detection system.</p> <p>Verify that the primary (top) liner is a synthetic liner that is at least 30 mil thick and meets the requirements of SO.135.5.DE. (with the exception of the first requirement).</p> <p>Verify that the secondary (bottom) liner is either synthetic or natural:</p> <ul style="list-style-type: none"> <li>- if synthetic, it is at least 30 mil thick and meets the requirements of SO.135.5.DE. (with the exception of the first requirement)</li> <li>- if natural, it meets the requirements of SO.135.6.DE.</li> </ul> <p>Verify that the drainage layer separating the 2 liners consists of at least 12 in. or soil having a hydraulic conductivity greater than <math>1 \times 10^{-2}</math> cm/s based on laboratory and field testing.</p> <p>(NOTE: Alternate material may be used for the drainage layer with prior written approval of the Department.)</p> <p>Verify that the leak detection system is capable of detecting and intercepting liquid within the drainage layer and conveying the liquid to a collection sump or monitoring point where the quantity of flow can be measured and the liquid can be sampled.</p> <p>Verify that the upper synthetic liner membrane is underlain by either a geosynthetic clay or 2 ft of natural material with a permeability no greater than <math>10^7</math> cm/sec.</p> <p>Verify that a double liner system is required where landfills are underlain by aquifers which are reasonably expected sources of water supply and/or capable of significant contaminant transport to adjacent surface waters.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that at least 15 working days prior to installation of the liner, the Department is notified of the installation date.</p> <p>Verify that the liner is installed upon a subbase that meets the following requirements:</p> <ul style="list-style-type: none"> <li>- is capable of supporting the loads and withstanding the stresses that will be</li> </ul>

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	<p>imposed on it though the active life and postclosure care period of the facility and of resisting the pressure gradient above and below the liner cause by settlement, compression, or uplift</p> <ul style="list-style-type: none"> <li>- it has a smooth surface that is free of all rocks, stones, roots, sharp objects, or debris of any kind</li> <li>- it is certified in writing by the liner installer as an acceptable subbase for the liner (written certification of acceptability is to be submitted to the Department prior to installation of the liner; however, submittal of written acceptance may proceed incrementally according to installation schedule).</li> </ul> <p>Verify that the minimum post loading slopes of the liner are either</p> <ul style="list-style-type: none"> <li>- 2 percent on controlling slopes and 1/2 percent on remaining slopes</li> <li>- the controlling and remaining slopes are designed to prevent the head on the liner, excluding sump areas, from exceeding a depth of 12 inches including post settlement conditions.</li> </ul> <p>Verify that the landfill is designed to minimize penetrations through the liner, and that, if a penetration is essential, a liquid-tight seal is accomplished between the penetrating structure and the synthetic membrane.</p> <p>Verify that compaction of areas adjacent to the penetrating structure are the same density as the surrounding soil to minimize differential settlement, and that sharp edges on the penetrating structure do not come in contact with the synthetic material.</p> <p>Verify that bridging or stressed conditions in the liner are avoided with proper slack allowances for shrinkage of the liner during installation and before the placement of a protective soil layer.</p> <p>Verify that synthetic liners have factory and field seams that equal or exceed the strength requirements defined by the most recent edition of the National Sanitation Foundation's "Standard Number 54-1933" for that liner material, and that all seams are visually inspected and tested along their entire length for seam continuity using suitable nondestructive techniques.</p> <p>Verify that seams are also tested for strength at a frequency specified in the quality assurance plan, and that field seams meet the following requirements:</p> <ul style="list-style-type: none"> <li>- field seaming provides a dry sealing surface</li> <li>- seaming is not done when wind conditions prevail</li> <li>- seams are made and bonded in accordance with the supplier's recommended procedures.</li> </ul> <p>Verify that proper equipment is used in placing drainage material over synthetic liner to avoid stress.</p> <p>Verify that the synthetic membrane is protected from the waste by at least 2 ft of drainage material incorporating the leachate collection system.</p>

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<p><b>SO.135.8.DE.</b> Sanitary landfills must meet specific construction requirements for natural liners (DE 7 1000 1301, Section 5.3.3.2) [Citation Revised January 2008].</p>	<p>Verify that the synthetic membrane is underlain by a secondary liner.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that all lenses, cracks, channels, root holes, or other structural non-uniformities which can increase the saturated hydraulic conductivity above <math>1 \times 10^{-7}</math> cm/s are removed.</p> <p>Verify that natural liners are constructed in lifts not exceeding 6 in. after compaction to maximize the effectiveness of the compaction throughout the lift thickness, and that each lift is properly interfaced by scarification between lifts to ensure the bonding.</p> <p>Verify that clods are broken up and that the material is homogenized before compaction of each lift using mixing devices such as pug mills or rotary tillers.</p> <p>Verify that the maximum slope of the sidewalls is not so great as to preclude effective compaction.</p>
<p><b>SO.135.9.DE.</b> Sanitary landfills must meet specific construction/installation requirements for double liners (DE 7 1000 1301, Section 5.3.3.3) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the secondary liner is constructed in accordance with SO.135.8.DE, if it is a natural liner, or with SO.135.7.DE., if it is synthetic.</p> <p>Verify that the primary liner is constructed in accordance with SO.135.7.DE. (with the exception of the second statement).</p>
<p><b>SO.135.10.DE.</b> General provisions apply to leachate collection, treatment, disposal, and monitoring in sanitary landfills (DE 7 1000 1301, Section 5.4.1) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that all sanitary landfills are designed and constructed to include a leachate collection system, a leachate treatment and disposal system, and a leachate monitoring system.</p> <p>Verify that the leachate systems are constructed, installed, and maintained in accordance with a Department-approved quality assurance plan.</p> <p>Verify that documentation for the quality assurance procedures through the postclosure care period of the facility is kept and maintained.</p>
<p><b>SO.135.11.DE.</b> Minimum design specifications apply to leachate collection in sanitary</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the leachate collection system is designed to operate without clogging</p>

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<p>landfills (DE 7 1000 1301, Section 5.4.2.1) [Citation Revised January 2008].</p> <p><b>SO.135.12.DE.</b> Construction standards apply to leachate collection in sanitary landfills (DE 7 1000 1301, Section 5.4.2.2) [Citation Revised January 2008].</p>	<p>through the postclosure period of the facility.</p> <p>Verify that all elements of the system (pipes, sumps, pumps, etc.) are sized according to water balance calculations and are capable of handling peak flows.</p> <p>Verify that collection pipes are sized and spaced to efficiently remove leachate from the bottom of the waste and the sidewalls of the cell, and that the capacity of the mains is at least equal to the sum of the capacities of the laterals.</p> <p>Verify that the pipes are designed to withstand the weight, stresses, and disturbances from the overlying wastes, waste cover materials, equipment operation, and vehicular traffic.</p> <p>Verify that the collection pipes are designed to drain by gravity to a sump system, and that sumps function automatically and contain a conveyance system for the removal of leachate.</p> <p>Verify that manholes or cleanout risers are located along the perimeter of the leachate collection system, and that the number and spacing of the manholes is sufficient to ensure proper maintenance of the system by waterjet flushing or an equivalent method.</p> <p>Verify that innovative leachate collection systems incorporating alternative designs are used only after approval by the Department, if they are shown to be equivalent to or more effective than the specified design.</p> <p>Verify that leachate collections systems are designed to prevent the leachate head on the liner from exceeding a depth of 12 in.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the leachate collection system is installed immediately above an impermeable liner and at the bottom of a drainage layer, and that the drainage layer is at least 12 in. thick with a hydraulic conductivity not less than <math>1 \times 10^{-2}</math> cm/s and a minimum slope of 2 percent.</p> <p>(NOTE: Alternate materials may be used for the drainage layer with prior written approval of the Department.)</p> <p>Verify that the following tests are performed on the soil proposed for use in the drainage layer, and all data is submitted to the Department prior to construction of the drainage layer (these tests should be performed in accordance with current ASTM, American Association of State Highway and Transportation Officials, or equivalent methods):</p> <ul style="list-style-type: none"> <li>- classification</li> <li>- porosity</li> <li>- relative density or compaction</li> </ul>



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<p><b>SO.135.13.DE.</b> Specific operational procedures apply to leachate collection in sanitary landfills (DE 7 1000 1301, Section 5.4.2.3) [Citation Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- specific gravity</li> <li>- hydraulic conductivity.</li> </ul> <p>Verify that the leachate collection system and manholes or cleanout risers are constructed of materials which can withstand the chemical attack that results from leachate.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the leachate collection system operates automatically, whenever leachate is present in the sump, to remove accumulated leachate.</p> <p>Verify that inspections are conducted weekly to verify proper functioning of the leachate collection system and to detect the presence of leachate in the removal sump.</p> <p>Verify that records on the system are kept to provide sufficient information that the leachate collection system is functional and operating properly, and that the amount of leachate collected from each cell is recorded on a weekly basis.</p> <p>Verify that collection lines are cleaned according to a Department-approved scheduled maintenance program and more frequently if required.</p>
<p><b>SO.135.14.DE.</b> Sanitary landfill leachate treatment and disposal systems must be designed in accordance with certain options (DE 7 1000 1301, Section 5.4.3.1) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that leachate treatment and disposal systems in sanitary landfills are designed in accordance with one of the following options:</p> <ul style="list-style-type: none"> <li>- complete treatment onsite with or without direct discharge to surface water</li> <li>- pretreatment onsite with discharge to an offsite treatment works for final treatment</li> <li>- storage onsite with discharge to an offsite treatment works for complete treatment</li> <li>- direct discharge to an offsite treatment works</li> <li>- pretreatment onsite with discharge offsite.</li> </ul> <p>(NOTE: All necessary permits and approvals for leachate storage and discharge activities must be maintained.)</p>
<p><b>SO.135.15.DE.</b> Leachate storage tanks in sanitary landfills must be constructed and installed in accordance with specific standards (DE 7</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the leachate storage tank is placed above ground.</p> <p>Verify that the storage tank is designed in accordance with American Petroleum</p>

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<p>1000 1301, Section 5.4.3.2) [Citation Revised January 2008].</p> <p><b>SO.135.16.DE.</b> Onsite complete treatment or pretreatment facilities in sanitary landfills must be designed and constructed according to specific criteria (DE 7 1000 1301, Section 5.4.3.3) [Citation Revised January 2008].</p> <p><b>SO.135.17.DE.</b> Leachate treatment and disposal systems in sanitary landfills must control odors (DE 7 1000 1301, Section 5.4.3.5) [Citation Revised January 2008].</p> <p><b>SO.135.18.DE.</b> Residuals from onsite leachate treatment and disposal systems must be sampled and analyzed for hazardous waste characteristics (DE 7 1000 1301, Section 5.4.3.6) [Citation Revised January</p>	<p>Institute, Underwriters Laboratories, or an equivalent standard appropriate to the material being used, and is constructed of or lined with a material which has a demonstrated chemical resistance to the leachate</p> <p>Verify that the storage tank area has a liner capable of preventing any leachate which may escape from the tank from coming into contact with the underlying soil.</p> <p>Verify that the storage tank area is surrounded by a berm, and that the bermed area has a capacity at least 10 percent greater than the capacity of the tank.</p> <p>Verify that all storage tanks are equipped with venting systems.</p> <p>Verify that all storage tanks are equipped with a high liquid level alarm or warning device, and that the alarm system is wired to the location where assistance will be available to respond to the emergency.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the onsite treatment unit is designed based on the results of a treatability study, the results of the operations of a pilot plant, or written information documenting the performance of an equivalent leachate treatment system.</p> <p>Verify that onsite treatment units are designed and constructed by staging of the units to allow for on-line modification of the treatment system to account for variability of the leachate quality and quantity.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that all leachate treatment and disposal systems are designed and constructed to control odors.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that residuals from onsite treatment and disposal systems are sampled and analyzed for hazardous waste characteristics in accordance with the Delaware Regulations Governing Hazardous Waste.</p>

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<p>2008].</p> <p><b>SO.135.19.DE.</b> Recirculation of leachate in sanitary landfills must be approved by the Department (DE 7 1000 1301, Section 5.4.3.7) [Revised December 1999; Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.135.20.DE.</b> Leachate monitoring in sanitary landfills must meet certain criteria (DE 7 1000 1301, Section 5.4.4) [Revised December 1999; Revised December 2004; Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the method of leachate recirculation is approved in advance by the Department, and annually thereafter</p> <p>Verify that record of leachate collected and recirculated are kept and reports.</p> <p>Verify that any resultant problems are reported and to the Department and remedied as soon as practical and included in the annual report.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the leachate monitoring system is capable of measuring the flow and sampling the leachate from each landfill cell</p> <p>Verify that the volume of leachate collected from each cell is determined monthly and reported quarterly.</p> <p>Verify that samples of leachate are collected and analyzed from each waste cell on a monthly basis as follows:</p> <ul style="list-style-type: none"> <li>- pH</li> <li>- alkalinity</li> <li>- chemical oxygen demand</li> <li>- biochemical oxygen demand</li> <li>- total organic carbon</li> <li>- specific conductance</li> <li>- total dissolved solids</li> <li>- total iron</li> <li>- total manganese</li> <li>- chloride</li> <li>- nitrate (NO<sub>3</sub>-N), nitrate (NO<sub>2</sub>-N) and Ammonia (NH<sub>3</sub>-N)</li> <li>- sulfate (SO<sub>4</sub>).</li> </ul> <p>Verify that the leachate monitoring results are submitted to the Department as part of the annual monitoring report or more frequently as directed by the Department.</p> <p>Verify that, for a double liner system, if the Action Leakage Rate of the detection system is exceeded, the Department is notified within 5 working days of the discovery.</p>

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<p><b>SO.135.21.DE.</b> Gas control systems in sanitary landfills must follow general provisions (DE 7 1000 1301, Section 5.5.1) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that gas control systems are installed at all sanitary landfills.</p> <p>Verify that the gas control system is designed and constructed to:</p> <ul style="list-style-type: none"> <li>- evacuate gas from within the waste to prevent the accumulation of gas onsite or offsite</li> <li>- prevent and control damage to vegetation</li> <li>- prevent odors from the facility from being detectable at the facility property line insufficient quantities to cause or create a condition of air pollution.</li> </ul> <p>Verify that the concentration of landfill gas in facility structures (except gas recovery system components) and at the facility boundary does not exceed 25 percent of the lower explosive limit.</p>
<p><b>SO.135.22.DE.</b> Gas control systems in sanitary landfills must meet specific design and construction standards (DE 7 1000 1301, Section 5.5.2) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that both active and passive gas control systems are considered, and that an evaluation of the proposed system is provided for Department approval.</p> <p>Verify that an analysis is performed to establish the required spacing of gas control vents to provide an effective system.</p> <p>Verify that the gas control system is designed to evacuate gas from all levels within the waste.</p> <p>Verify that the system does not interfere with or cause failure of the liner or leachate systems.</p>
<p><b>SO.135.23.DE.</b> Gas control systems in sanitary landfills must meet specific monitoring requirements (DE 7 1000 1301, Section 5.5.3) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that a sufficient number of gas monitoring wells are installed to evaluate gas production rates in the landfill.</p> <p>Verify that gas monitoring wells are sampled, and that analytical results are provided as required by the conditions specified in the facility permit.</p> <p>Verify that, at sanitary landfills using natural liners, gas monitoring probes are installed in the soil outside the lined area to evaluate any lateral migration of landfill gas.</p> <p>Verify that emissions from active and passive gas control systems are permitted by the Air Resources Section of the Division of Air and Waste Management, if necessary.</p>

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<p><b>SO.135.24.DE.</b> Surface water management systems in sanitary landfills must follow general provisions (DE 7 1000 1301, Section 5.6.1) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that a surface water management system is designed, constructed, and maintained to:</p> <ul style="list-style-type: none"> <li>- prevent erosion or the waste and cover</li> <li>- prevent the collection of standing water</li> <li>- minimize surface water runoff onto and into the waste.</li> </ul>
<p><b>SO.135.25.DE.</b> Surface water management systems in sanitary landfills must meet specific design requirements (DE 7 1000 1301, Section 5.6.2) [Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the run-on control system is designed to control, at a minimum, the flow onto the active portion of the landfill during the peak discharge from a 24h, 25-yr storm.</p> <p>Verify that the runoff control system from the active portion of the landfill is able to collect and control at least the water volume resulting from a 24hour, 25year storm and includes:</p> <ul style="list-style-type: none"> <li>- detention basins to provide temporary storage of the expected runoff from the design storm with sufficient reserve capacity to contain accumulated precipitation and sediment prior to discharge</li> <li>- diversion structures designed to prevent runoff generated within the active areas from moving offsite of the lined areas.</li> </ul>
<p><b>SO.135.26.DE.</b> Surface water management systems in sanitary landfills must channel runoff (DE 7 1000 1301, Section 5.6.3) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that runoff from the active areas within the active cell(s) is channeled to the leachate treatment and disposal system.</p> <p>Verify that runoff from the unused portion of the active cell(s) that has not been in contact with waste is channeled to the detention basins or other approved sedimentation control devices.</p> <p>Verify that until vegetative cover is established, runoff from closed cells is directed to the detention basins or other approved sedimentation control devices.</p>
<p><b>SO.135.27.DE.</b> Surface water discharge in sanitary landfills must be in compliance with all applicable Federal and state</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that discharge from the detention basins is in compliance with all applicable Federal and state regulations.</p>

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<p>regulations (DE 7 1000 1301, Section 5.6.4) [Citation Revised January 2008].</p> <p><b>SO.135.28.DE.</b> Sanitary landfills must maintain and operate a groundwater monitoring program (DE 7 1000 1301, Section 5.7.1) [Citation Revised January 2008].</p> <p><b>SO.135.29.DE.</b> Sanitary landfill groundwater monitoring systems must meet specific design and construction requirements (DE 7 1000 1301, Section 5.7.2) [Citation Revised January 2008].</p> <p><b>SO.135.30.DE.</b> Sanitary landfills must meet groundwater sampling requirements (DE 7 1000 1301, Section 5.7.3) [Revised December 2004; Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that all sanitary landfills maintain and operate a groundwater monitoring program to evaluate facility impact upon groundwater quality.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the groundwater monitoring system is designed by a professional geologist registered in Delaware.</p> <p>Verify that the system consists of a sufficient number of wells, installed at appropriate locations and depths, to define the groundwater flow system, and is developed in accordance with Departmental requirements to yield groundwater samples that are representative of the aquifer water quality.</p> <p>Verify that the number, spacing, location, depth, and screened interval of the monitoring wells are approved by the Department prior to installation.</p> <p>Verify that all monitoring wells are constructed in accordance with the Regulations Governing the Construction of Water Wells and any subsequently approved guidelines, and that verification from the existing guidelines are approved by the Department in writing prior to construction.</p> <p>(NOTE: Monitoring of surface water, into which ground water flowing from beneath the landfill discharges, may also be required as part of the ground water monitoring program.)</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that a groundwater sampling plan is submitted to the Department at the time of permit application, and that the sampling plan includes procedures and techniques for:</p> <ul style="list-style-type: none"> <li>- sample collection, preservation, and transport</li> <li>- analytical procedures and quality assurance</li> <li>- chain or custody control.</li> </ul>

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<p><b>SO.135.31.DE.</b> Sanitary landfills must meet groundwater monitoring reporting requirements (DE 7 1000 1301, Section 5.7.5) [Revised December 1999; Revised December 2004; Revised January 2008].</p>	<p>Verify that samples are collected at low flow rates (&lt;1 L/min).</p> <p>Verify that samples are field filtered only when turbidity exceeds 10 NTU.</p> <p>Verify that there are no repeat samples of any well when turbidity exceeds 10 NTU unless the Department approves.</p> <p>Verify that water levels are measured prior to sample collection.</p> <p>Verify that ground water samples are analyzed for the following:</p> <ul style="list-style-type: none"> <li>- pH</li> <li>- alkalinity</li> <li>- chemical oxygen demand</li> <li>- total organic carbon</li> <li>- specific conductance</li> <li>- total dissolved solids</li> <li>- total iron</li> <li>- total manganese</li> <li>- chloride</li> <li>- nitrate (NO<sub>2</sub>-N) and Ammonia (NH<sub>3</sub>-N)</li> <li>- sulfate (SO<sub>4</sub>)</li> <li>- dissolved oxygen</li> <li>- oxidation-reduction potential (ORP) or Eh</li> <li>- any additional parameters specified by the Department.</li> </ul> <p>Verify that the test methods used to determine the above parameters are those described in the most current legal edition of USEPA Publication Number SW-846, <i>Test Methods for Evaluating Solid Waste - Physical/Chemical Methods</i>.</p> <p>Verify that monitoring frequency is at least semi-annual unless an alternate frequency is specified by the Department.</p> <p>Verify that, if the Department determines that the groundwater monitoring data indicates that groundwater contamination has occurred, a remedial action program is put into place, if required.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that a tabulation of water elevations and quality is submitted to the Department within 60 days of each sampling event.</p> <p>Verify that reports of any statistically significant increased in downgradient wells or violation of performance standards in well or streams are reported to the Department within 14 days.</p> <p>Verify that an annual monitoring report is prepared that includes:</p>

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<p><b>SO.135.32.DE.</b> Capping systems in sanitary landfills must meet specific requirements (DE 7 1000 1301, Section 5.8.1) [Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- maps showing the locations of sampling points, water elevations, and ground water flow directions and approximate rates for each sampling period</li> <li>- tabulation of all ground water levels and elevations, leachate volumes collected and treated and leachate and water quality data</li> <li>- presentation of statistical results and graphs depicting water quality parameter concentrations with time</li> <li>- identification of any statistically significant increases in compliance wells and/or exceedances of performance standards</li> <li>- confirmation results and conclusions related to the accuracy of these results and/or reasonable explanation for the results</li> <li>- recommendations for any changes in the monitoring program including changes in the number, location of sampling points, sampling frequency, parameters or procedures</li> <li>- an evaluation of the significance of the results including whether they indicate a contaminant release has occurred and any recommendations for corrective measures, if appropriate.</li> </ul> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that, upon closure of a landfill or landfill cell, a capping system is installed that controls the emission of gas, promotes the establishment of vegetative cover, and minimizes infiltration and percolation of water into, and prevents erosion of, the waste throughout the postclosure care period.</p> <p>Verify that the capping system is in place 180 days following the final waste disposal activity.</p> <p>Verify that the capping system extends beyond the edge of the lined area.</p> <p>Verify that the proposed design of the capping system is approved by the Department prior to installation.</p>
<p><b>SO.135.33.DE.</b> Capping systems in sanitary landfills must meet specific composition requirements (DE 7 1000 1301, Section 5.8.2) [Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the capping system consists of at least the following components:</p> <ul style="list-style-type: none"> <li>- a final grading layer on the waste, consisting of at least 6 in. of soil, to attain the final slope, and provide a stable base for subsequent system components (daily and intermediate cover may be used for this purpose)</li> <li>- a low permeability layer, consisting of at least: <ul style="list-style-type: none"> <li>- a 30 mil geomembrane underlain by a geotextile</li> <li>- 24 in. of clay at a hydraulic conductivity of <math>1 \times 10^{-7}</math> cm/s or depth of equivalent material having a hydraulic conductivity less than <math>1 \times 10^{-7}</math> cm/s, such depth to be determined based on the hydraulic conductivity of 24 in. or clay at a hydraulic conductivity of <math>1 \times 10^{-7}</math> cm/s (alternative materials may be used for the impermeable layer with prior</li> </ul> </li> </ul>



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<p><b>SO.135.34.DE.</b> Final slopes in sanitary landfills must meet certain criteria (DE 7 1000 1301, Section 5.8.3) [Citation Revised January 2008].</p> <p><b>SO.135.35.DE.</b> Sanitary landfills must meet certain general operation and maintenance standards (DE 7 1000 1301, Section 5.9.1) [Citation Revised January 2008].</p> <p><b>SO.135.36.DE.</b> Sanitary landfills must meet spreading and compacting standards (DE 7 1000 1301, Section 5.9.2.1) [Citation Revised January 2008].</p>	<p>written approval of the Department)</p> <ul style="list-style-type: none"> <li>- a final cover consisting of:               <ul style="list-style-type: none"> <li>- 18 in. of soil to provide rooting depth and moisture for plant growth</li> <li>- 6 in. of topsoil or other material approved by the Department to support the proposed vegetation</li> <li>- a suitable layer of alternative material or combination thereof to assure adequate rooting and moisture retention to support the proposed vegetation.</li> </ul> </li> </ul> <p>(NOTE: A suitable vegetation dependent upon the quality and characteristics of the topsoil and compatible with the intended final use of the facility must be proposed, and maintenance schedules and application rates for fertilizer and mulch are also submitted for approval.)</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the grades of the final slope are constructed in accordance with the following minimum standards:</p> <ul style="list-style-type: none"> <li>- the final grade of the top slope, after allowing for settlement and subsidence, is designed to promote runoff</li> <li>- the final grades of the side slopes are, at a maximum, 3 horizontal to one vertical (3:1).</li> </ul> <p>Verify that the top and side slopes are maintained to prevent erosion of the capping system and to ensure complete vegetation cover.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that sanitary landfills are operated so as to create an aesthetically desirable environment and to preclude degradation of land, air, surface water, or groundwater.</p> <p>Verify that sanitary landfills are maintained and operated to conform with the approved Plan of Operation.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the working face is confined to the smallest practical area, as is consistent with the proper operation of trucks and equipment.</p> <p>Verify that the waste is spread in layers and compacted by repeated passes of the compacting equipment to obtain the degree of compaction specified in the Solid</p>

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<p><b>SO.135.37.DE.</b> Lift depth in sanitary landfills may not exceed the specified limit (DE 7 1000 1301, Section 5.9.2.2) [Citation Revised January 2008].</p> <p><b>SO.135.38.DE.</b> The cover in sanitary landfills must meet certain requirements (DE 7 1000 1301, Section 5.9.2.3) [Revised December 2004; Revised January 2008].</p> <p><b>SO.135.39.DE.</b> The operation of sanitary landfills must control specific nuisances and hazards (DE 7 1000 1301, Section 5.9.2.4) [Citation Revised January 2008].</p>	<p>Waste permit.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the lift depth does not exceed the limit specified in the Solid Waste permit.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that a layer of suitable cover material is placed over all solid waste by the end of each working day, and consists of 6 inches of earthen material.</p> <p>Verify that exposed daily cover which remains in place for more than 2 days is inspected at least weekly and maintained as necessary to control odors, disease vector breeding, animal attraction, blowing litter, scavenging, and fires.</p> <p>Verify that an intermediate cover consisting of 12 inches of earth material is placed over any area that received daily cover and did not receive additional solid waste within 180 days.</p> <p>Verify that intermediate cover is inspected at least weekly and maintained.</p> <p>Verify that the soil used as daily and intermediate cover material does not preclude leachate flow downwards towards the leachate collection system and is free of putrescible materials and large objects.</p> <p>(NOTE: The Department may approve alternate cover materials.)</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the operation of the landfill does not result in odors associated with solid waste being detected offsite.</p> <p>Verify that the scattering of refuse and wind-blown litter is controlled by the use of portable fences, natural barriers, or other suitable methods, and that no refuse or litter is allowed to migrate offsite.</p> <p>Verify that the operation of the landfill is conducted in a manner that eliminates, to the extent possible insect and rodent breeding, dust problems, and fires.</p>

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<p><b>SO.135.40.DE.</b> Adequate provision must be made for the handling of bulky waste in sanitary landfills (DE 7 1000 1301, Section 5.9.2.5) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that adequate provision is made for the handling and compaction of bulky wastes when such wastes are not excluded from the site.</p> <p>(NOTE: Tires in quantities greater than 10 per truckload must be sliced or shredded before being landfilled.)</p>
<p><b>SO.135.41.DE.</b> Provisions must be made for the handling of special solid wastes in sanitary landfills (DE 7 1000 1301, Section 5.9.2.6) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that provisions for the limited disposal of specified special solid wastes are made, and that disposal of these wastes is conducted pursuant to a plan submitted to and approved to the Department.</p>
<p><b>SO.135.42.DE.</b> Access to sanitary landfills must meet specific requirements (DE 7 1000 1301, Section 5.9.2.7) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that access roads to the point of waste discharge are designed, constructed, and maintained so that traffic flows smoothly and is not interrupted by inclement weather.</p> <p>Verify that access to the site is limited to those times when an attendant is on duty and to those persons authorized to use the site for the disposal of solid waste.</p> <p>Verify that access to the sites by unauthorized persons is prevented by the use of barriers, fences and gates, or other suitable means.</p>
<p><b>SO.135.43.DE.</b> Salvage operations in sanitary landfills must meet specific requirements (DE 7 1000 1301, Section 5.9.2.8) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that salvage operations are so organized that they do not interfere with the proper disposal of any solid waste.</p> <p>Verify that no salvage operation is allowed which creates unsightliness, nuisances, health hazards, or potential safety hazards.</p>
<p><b>SO.135.44.DE.</b> Sanitary landfills must follow specific personnel regulations (DE 7 1000 1301, Section 5.9.2.9) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that sufficient numbers and types of personnel are available at the site to ensure capability for operation in accordance with these regulations.</p>

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<p>2008].</p> <p><b>SO.135.45.DE.</b> Sanitary landfills must follow specific equipment regulations (DE 7 1000 1301, Section 5.9.2.10) [Citation Revised January 2008].</p> <p><b>SO.135.46.DE.</b> Sanitary landfills must take employee health and safety measures (DE 7 1000 1301, Section 5.9.2.11) [Citation Revised January 2008].</p> <p><b>SO.135.47.DE.</b> Sanitary landfills must follow specific recordkeeping requirements (DE 7 1000 1301, Section 5.9.3) [Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that adequate numbers and types of equipment commensurate with the size of the operation are available at the site to ensure operation of the landfill in accordance with the provisions of these regulations and the plan of operation.</p> <p>Verify that substitute equipment is obtained when maintenance or breakdown renders normal operating equipment inoperative for more than 24 h.</p> <p>Verify that all refuse-moving equipment is cleaned routinely and maintained according to the manufacturer's recommendations.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that employees at the site work under all appropriate health and safety guidelines established by OSHA.</p> <p>Verify that suitable shelter, sanitary facilities, and safe drinking water are provided for personnel at the site.</p> <p>Verify that a reliable telephone or radio communication system is provided for site personnel.</p> <p>Verify that first aid equipment is available at the site.</p> <p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the following information is recorded, as it becomes available, and is retained by the owner or operator of any new or existing sanitary landfill until the end of the postclosure care period of the landfill:</p> <ul style="list-style-type: none"> <li>- records demonstrating that liners, leachate control systems, gas control systems, capping systems, and all monitoring systems are constructed or installed in accordance with regulations</li> <li>- monitoring, testing, or analytical data are recorded when required</li> <li>- volume and/or weight of the wastes received quarterly</li> <li>- the types of waste received quarterly (industrial waste, asbestos-containing waste, and other wastes which require Department approval prior to being landfilled)</li> <li>- the location of any monofilled waste</li> <li>- any additional records specified by the Department.</li> </ul>

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<p><b>SO.135.48.DE.</b> Sanitary landfills must follow specific reporting requirements (DE 7 1000 1301, Section 5.9.4) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that a report summarizing facility operations for the preceding calendar year is submitted to the Department on an annual basis, and that the report describes and summarized all solid waste disposal, environmental monitoring, and construction activities conducted within the year covered by the report. The report should include, but is not necessarily limited to, the following:</p> <ul style="list-style-type: none"> <li>- the volume or tonnage of solid waste landfilled at the facility</li> <li>- the estimated remaining capacity of the facility, in both tonnage and years</li> <li>- the volumes (or tonnages) and types of specified special solid wastes landfilled at the facility</li> <li>- leachate quantity and quality data</li> <li>- gas monitoring data</li> <li>- any intentional or accidental deviations from the approved Plan of Operation, and any unusual situations encountered during the year</li> <li>- all construction or corrective work conducted on the site in accordance with approved plans or to achieve compliance with these regulations.</li> </ul> <p>(NOTE: The permittee must also submit any additional reports specified in the Solid Waste permit.)</p>
<p><b>SO.135.49.DE.</b> Certain prohibitions apply to sanitary landfills (DE 7 1000 1301, Section 5.9.5) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that a sanitary landfill does not knowingly accept for disposal any hazardous wastes.</p> <p>Verify that open burning of any solid waste is prohibited within the active portion of the sanitary landfill.</p> <p>Verify that sanitary landfills are prohibited from accepting bulk or noncontainerized liquid waste unless the waste is a household waste other than septic waste.</p> <p>Verify that scavenging is prohibited on any landfill site.</p>
<p><b>SO.135.50.DE.</b> Sanitary landfills must follow general closure requirements (DE 7 1000 1301, Section 5.10.1) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that a completed sanitary landfill or sanitary landfill cell is closed in a manner that:</p> <ul style="list-style-type: none"> <li>- minimizes the need for further maintenance</li> <li>- minimizes the postclosure escape of solid waste constituents, leachate, and landfill gases to the surface water, groundwater, or atmosphere.</li> </ul>

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<p><b>SO.135.51.DE.</b> Sanitary landfills must submit the required closure notification (DE 7 1000 1301, Section 5.10.2) [Revised December 1999; Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that a new sanitary landfill submits a conceptual closure plan for the facility at the time of the initial permit application.</p> <p>Verify that at least 180 days prior to the projected date when wastes will no longer be accepted at the landfill or cell, a written notification of intent to close the landfill or cell is submitted to the Department, along with a closure plan and closure schedule.</p> <p>Verify that modifications to the solid waste permit allowing closure are received before commencing closure of a completed landfill or cell.</p> <p>Verify that a copy of the closure plan is maintained at the facility or at some other location through the postclosure care period of the facility.</p>
<p><b>SO.135.52.DE.</b> Closure plans for sanitary landfills must contain specific information (DE 7 1000 1301, Section 5.10.3) [Revised December 1999; Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that a description of the methods, procedures, and processes used to close a landfill and each individual cell thereof in accordance with the closure performance standard in SO.135.50.DE. is included in the closure plan.</p> <p>Verify that a description of the capping is given, which includes a description of the system design, the type of material used, and a discussion of how the capping system will achieve the objectives in SO.135.50.DE.</p> <p>Verify that a description of other activities necessary to satisfy the closure performance standard including, but not limited to, the removal or disposal of all nonlandfilled wastes located onsite (e.g., wastes from landfill runoff collection ponds) is included.</p> <p>Verify that a plan for postclosure care of the facility is included, and is sufficient to ensure that the standards described in SO.135.51.DE. are met, including:</p> <ul style="list-style-type: none"> <li>- a description of the monitoring and maintenance activities required and the frequency at which these activities are performed</li> <li>- the name, address, and telephone number of the person or office to contact about the facility during the postclosure period</li> <li>- a description of the planned uses of the property during the postclosure period</li> <li>- a closure construction quality assurance plan.</li> </ul> <p>Verify that a plan for control and/or recovery of landfill gases is included.</p>

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<p><b>SO.135.53.DE.</b> Sanitary landfills must meet specific minimum closure requirements (DE 7 1000 1301, Section 5.10.4) [Revised December 1999; Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the Department is given at least 30 working days notification prior to commencing closure activities, that the Department inspects the site, and that any corrective work the Department deems necessary is performed before closure.</p> <p>Verify that finished portions of the landfill receive a capping system that meets the requirements of SW.135.32.DE. through SW.135.34.DE.</p> <p>Verify that finished portions of the landfill are planted with appropriate vegetation to promote stabilization of the cover.</p> <p>Verify that the closure is carried out in accordance with the approved closure plan and according to the approved closure schedule, and that any significant deviations from the plan or the schedule are approved by the Department prior to being initiated.</p> <p>Verify that upon closure of an entire landfill, all nonlandfilled wastes located onsite are removed or disposed of in a manner approved by the Department.</p> <p>Verify that after closure of the facility, the site is returned to an acceptable appearance consistent with the surrounding area and the intended use of the land.</p> <p>Verify that when closure is completed, certification by a professional engineer registered in Delaware that the landfill or cell is closed in accordance with the specification in the approved closure plan is submitted to the Department.</p> <p>(NOTE: Closure is not considered completed until certified by the Department.)</p>
<p><b>SO.135.54.DE.</b> Sanitary landfills must meet general postclosure care requirements (DE 7 1000 1301, Section 5.11.1) [Revised December 2004; Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that postclosure care continues for 30 yr after the completion of closure.</p> <p>(NOTE: The Department may remove one or more of the postclosure care requirements, reduce the length of the postclosure care period or, extend the postclosure care period based upon its determination to protect human health and environment.)</p> <p>Verify that if at any time during the postclosure care period there is evidence of a contaminant release from the landfill that presents a significant threat to human health or the environment, the owner or operator of the facility acts to mitigate the threat will be required of the owner or operator of the facility.</p>

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<p><b>SO.135.55.DE.</b> Sanitary landfills must meet minimum postclosure care requirements (DE 7 1000 1301, Section 5.11.2) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that the integrity and effectiveness of the capping system is maintained, including making repairs as necessary to correct the effects of settling, subsidence, erosion, or other events, and preventing run-on and runoff from eroding or otherwise damaging the cap</p> <p>Verify that the cover is reseeded if insufficient vegetation exists to stabilize the surface.</p> <p>Verify that the leachate collection and treatment systems are maintained and operated until the Department determines that the leachate no longer poses a threat to human health or the environment, and that leachate quality and quantity data are submitted to the Department for those parameters and at such frequencies as specified by the Department.</p> <p>Verify that the groundwater monitoring system is maintained and operated, and that groundwater data is submitted as specified by the Department.</p> <p>Verify that the gas control and/or recovery system is maintained and operated, and that gas data is submitted as specified by the Department.</p> <p>Verify that the surface water management system is maintained and operated.</p>
<p><b>SO.135.56.DE.</b> Certain prohibitions apply to postclosure care of sanitary landfills (DE 7 1000 1301, Section 5.11.3) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that standing water is not allowed on the closed landfill.</p> <p>Verify that open burning is not allowed on the closed landfill.</p> <p>Verify that, unless approved in advance by the Department, no activity is conducted on a closed landfill that will disturb the integrity of the capping system, liner, containment system, or monitoring systems.</p> <p>Verify that access to the closed landfill is limited to those persons who are engaging in activities which are compatible with the intended postclosure use of the site.</p>
<p><b>SO.135.57.DE.</b> Sanitary landfills must have postclosure land use plans (DE 7 1000 1301, Section 5.11.4) [Citation Revised January 2008].</p>	<p>(NOTE: This checklist applies only to landfills that accept household waste.)</p> <p>Verify that a postclosure land use plan approved by the Department is implemented on closed sanitary landfills.</p>



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<p><b>SO.140.</b></p> <p><b>INERT WASTE LANDFILLS</b></p> <p><b>SO.140.1.DE.</b> Landfills that dispose dry waste must be located in areas where the potential for degradation of the quality of air, land, and water is minimal (DE 7 1000 1301, Section 6.1.1) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.2.DE.</b> New landfills that dispose dry waste may not be located in specific areas (DE 7 1000 1301, Section 6.1.3) [Revised December 1999] [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.3.DE.</b> Landfills that dispose dry waste must meet specific general provisions regarding leachate collection,</p>	<p>(NOTE: Checklist item repeated in SO.150.1.DE., industrial landfills.)</p> <p>Verify that landfills that dispose dry waste are located in areas where the potential for degradation of the quality of air, land, and water is minimal.</p> <p>(NOTE: Checklist item repeated in SO.150.2.DE., industrial landfills.)</p> <p>Verify that no new landfills that dispose dry waste are located in areas such that solid waste is at any time deposited:</p> <ul style="list-style-type: none"> <li>- within the 100-yr flood plain</li> <li>- in an area that may cause or contribute to the degradation of any state or federally regulated wetlands unless the owner or operator can demonstrate to the satisfaction of the appropriate wetlands regulatory agency that there is no impact to any regulated wetlands on the site, or any impact will be mitigated as required</li> <li>- within 1 mi of any state of Federal wildlife refuge, wildlife area, or park, unless specifically exempted from this requirement by the Department</li> <li>- so as to be in conflict with any locally adopted land use plan or zoning requirement</li> <li>- within the wellhead protection area of a public water supply well or well field</li> <li>- in areas where valuable aquifers would be threatened by contaminant releases, unless viable alternatives have been dismissed and stringent design measures have been incorporated to minimize the possibility and magnitude of releases</li> <li>- within 200 feet of the facility boundary unless otherwise approved by the Department</li> <li>- in an area that is environmentally unique or valuable.</li> </ul> <p>(NOTE: Checklist item repeated in SO.150.11.DE., industrial landfills.)</p> <p>Verify that all landfills that dispose dry waste are designed and constructed, including a leachate collection system, a leachate treatment and disposal system,</p>

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<p>treatment, disposal, and monitoring (DE 7 1000 1301, Section 6.4.1) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.4.DE.</b> Leachate collection systems in landfills that dispose dry waste must meet specific design specifications (DE 7 1000 1301, Section 6.4.2.1) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.5.DE.</b> Leachate collection systems in landfills that dispose dry waste must follow specific operational procedures (DE 7 1000 1301, Section 6.4.2.3.) [Added</p>	<p>and a leachate monitoring system.</p> <p>Verify that the leachate systems are constructed, installed, and maintained in accordance with the Department-approved quality assurance plan.</p> <p>Verify that documentation is kept for the quality assurance procedures through the postclosure care period of the facility.</p> <p>(NOTE: Checklist item repeated in SO.150.12.DE., industrial landfills.)</p> <p>Verify that the leachate collection system is designed to operate without clogging through the postclosure period of the facility.</p> <p>Verify that all elements of the system (pipes, sumps, pumps, etc.) are sized according to water balance calculations and are capable of handling peak flows.</p> <p>Verify that collection pipes are sized and spaced to efficiently remove leachate from the bottom of the waste and the sidewalls of the cell, and that the capacity of the mains is at least equal to the sum of the capacities of the laterals.</p> <p>Verify that the pipes are designed to withstand the weight, stresses, and disturbances from the overlying wastes, waste cover materials, equipment operation, and vehicular traffic.</p> <p>Verify that the collection pipes are designed to drain by gravity to a sump system, and that sumps function automatically and contain a conveyance system for the removal of leachate.</p> <p>Verify that manholes or cleanout risers are located along the perimeter of the leachate collection system, and that the number and spacing of the manholes is sufficient to ensure proper maintenance of the system by water jet flushing or an equivalent method.</p> <p>Verify that innovative leachate collection systems incorporating alternative designs are used, with the Department's approval, if they are shown to be equivalent to or more effective than the specified design.</p> <p>Verify that the leachate collection system is designed to prevent the leachate head on the liner from exceeding a depth of 12 in.</p> <p>(NOTE: Checklist item repeated in SO.150.14.DE., industrial landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste and/or dry waste.)</p> <p>Verify that the leachate collection system operates automatically whenever</p>

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<p>December 2004; Citation Revised January 2008].</p> <p><b>SO.140.6.DE.</b> Leachate treatment and disposal systems in landfills that dispose dry waste must be designed in accordance with certain options (DE 7 1000 1301, Section 6.4.3.1) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.7.DE.</b> Leachate from landfills that dispose dry waste must be stored in tanks constructed to meet specific standards (DE 7 1000 1301, Section 6.4.3.2) [Added December 2004; Citation Revised January 2008].</p>	<p>leachate is present in the sump to remove accumulated leachate.</p> <p>Verify that inspections are conducted weekly to verify proper functioning of the leachate collection system and to detect the presence of leachate in the removal sump, and that records on the system are kept to provide sufficient information that the leachate collection system is functional and operating properly, and that the amount of leachate collected from each cell is recorded on a weekly basis.</p> <p>Verify that collection lines are cleaned according to a Department-approved scheduled maintenance program, and more frequently if required.</p> <p>(NOTE: Checklist item repeated in SO.150.15.DE., industrial landfills.)</p> <p>Verify that the leachate treatment and disposal system is designed in accordance with one of the following options:</p> <ul style="list-style-type: none"> <li>- complete treatment onsite with or without direct discharge to surface water</li> <li>- pretreatment onsite with discharge to an offsite treatment works for final treatment</li> <li>- storage onsite with discharge to an offsite treatment works for complete treatment</li> <li>- direct discharge to an offsite treatment works</li> <li>- pretreatment on site with discharge on site.</li> </ul> <p>(NOTE: The permittee must maintain all necessary permits and approvals for leachate storage and discharge activities.)</p> <p>(NOTE: Checklist item repeated in SO.150.16.DE., industrial landfills.)</p> <p>Verify that leachate storage prior to treatment is within tanks constructed and installed in accordance with the following standards:</p> <ul style="list-style-type: none"> <li>- that tank is placed above ground</li> <li>- the storage tank is designed in accordance with American Petroleum Institute, Underwriters Laboratories, or an equivalent standard appropriate to the material being used, and is constructed of lined with material which has demonstrated chemical resistance to the leachate</li> <li>- the storage tank area has a liner capable of preventing any leachate which may escape from the tank from coming into contact with the underlying soil</li> <li>- the storage tank area is surrounded by a berm, and the bermed area has a capacity at least ten percent greater than the capacity of the tank</li> <li>- all storage tanks are equipped with a venting system</li> <li>- all storage tanks are equipped with a high liquid level alarm or warning device, and the alarm is wired to the location where assistance will be available to respond to the emergency.</li> </ul>

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<p><b>SO.140.8.DE.</b> Leachate discharges from landfills that dispose dry waste for publicly owned treatment works (POTW) must notify the POTW (DE 7 1000 1301, Section 6.4.3.4) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.18.DE., industrial landfills.)</p> <p>Verify that for all leachate discharges planned for POTW, the Landfills that dispose dry waste notifies the receiving POTW of the intent to discharge leachate into the collection system and provides the POTW with analysis of the leachate as required by the POTW.</p>
<p><b>SO.140.9.DE.</b> Leachate treatment and disposal systems must be designed and constructed to control odors (DE 7 1000 1301, Section 6.4.3.5) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.19.DE., industrial landfills.)</p> <p>Verify that leachate treatment and disposal systems in Landfills that dispose dry waste are designed and constructed to control odors.</p>
<p><b>SO.140.10.DE.</b> Residuals from onsite leachate treatment and disposal systems in landfills that dispose dry waste must be sampled and analyzed for hazardous waste characteristics (DE 7 1000 1301, Section 6.4.3.6) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.20.DE., industrial landfills.)</p> <p>Verify that residuals from the onsite leachate treatment and disposal systems are sampled and analyzed for hazardous waste characteristics in accordance with Delaware’s Regulations Governing Hazardous Waste.</p>
<p><b>SO.140.11.DE.</b> Recirculation of leachate at landfills that dispose dry waste must be approved by the Department (DE 7 1000 1301, Section 6.4.3.7) [Added December 2004; Citation Revised January 2008; Revised January 2010].</p>	<p>(NOTE: Checklist item repeated in SO.150.21.DE., industrial landfills.)</p> <p>Verify that recirculation of leachate takes place only with approval by the Department.</p> <p>(NOTE: Recirculation will be allowed only in areas constructed with a composite liner system or a double liner system.)</p> <p>Verify that the method of recirculation is approved by the Department in advance and annually so long as the recirculation continues.</p>

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<p><b>SO.140.12.DE.</b> Leachate monitoring systems in landfills that dispose dry waste must have specific characteristics (DE 7 1000 1301, Section 6.4.4) [Added December 2004; Citation Revised January 2008].</p>	<p>Verify that records of leachate collected and recirculated are kept and reported.</p> <p>Verify that any resultant problems are reported to the Department and remedied as soon as practicable and included in the annual report.)</p> <p>(NOTE: Checklist item repeated in SO.150.22.DE., industrial landfills.)</p> <p>Verify that the leachate monitoring system is capable of measuring the quantity of the flow and sampling the leachate from each landfill cell.</p> <p>Verify that the volume of leachate collected from each cell is determined at least monthly and reported quarterly.</p> <p>Verify that leachate monitoring of the influent and effluent of the treatment and disposal system is performed according to a Department-approved plan which includes quality control and quality assurance procedures.</p> <p>Verify that samples of leachate effluent and influent are analyzed as specified by the Department, and that parameters to be analyzed depends on the characteristics of the waste.</p> <p>Verify that leachate monitoring results are submitted to the Department as required.</p> <p>Verify that, for a double liner system, if the Action Leakage Rate of the leak detection system is exceeded, the Department is notified within 5 working days of the discovery, and the operator samples and analyzes the liquid in the leak detection system for parameters required by the Department.</p>
<p><b>SO.140.13.DE.</b> Gas control systems at landfills that dispose dry waste must follow specific general provisions (DE 7 1000 1301, Section 6.5.1) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.23.DE.)</p> <p>Verify that gas control systems are installed at landfills that dispose dry waste where the materials landfilled would be expected to produce gas through biological activity or reaction.</p> <p>Verify that the gas control system is designed and constructed to:</p> <ul style="list-style-type: none"> <li>- evacuate gas from within the waste to prevent the accumulation of gas onsite or offsite</li> <li>- prevent and control damage to vegetation</li> <li>- prevent odors from the facility from being detectable at the facility property line in sufficient quantities to cause or create a condition of air pollution.</li> </ul> <p>Verify that the concentration of landfill gas in facility structures (except gas recovery system components) and at the facility boundary does not exceed 25</p>

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<p><b>SO.140.14.DE.</b> Gas control systems at landfills that dispose dry waste must meet specific monitoring requirements (DE 7 1000 1301, Section 6.5.3) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.15.DE.</b> Surface water management systems in landfills that dispose dry waste must meet specific general provisions (DE 7 1000 1301, Section 6.6.1 and 6.6.2) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.16.DE.</b> Runoff in landfills that dispose dry waste must be channeled (DE 7 1000 1301, Section 6.6.3) [Added December 2004; Citation Revised January 2008].</p>	<p>percent of the lower explosive limit.</p> <p>(NOTE: Checklist item repeated in SO.150.25.DE., industrial landfills.)</p> <p>Verify that a sufficient number of gas monitoring wells are installed to evaluate gas production rates in the landfill.</p> <p>Verify that the gas monitoring wells are sampled, and that analytical results are provided as required by conditions specified in the facility permit.</p> <p>Verify that at landfills using natural liners, gas monitoring probes are installed in the soil outside the lined area to evaluate any lateral migration of landfill gas.</p> <p>Verify that emissions from active and passive gas control systems are permitted by the Air Resources Section of the Division of Air and Waste Management, if necessary.</p> <p>(NOTE: Checklist item repeated in SO.150.26.DE., industrial landfills.)</p> <p>Verify that landfills that dispose dry waste design, construct, and maintain a surface water management system to meet the following general provisions:</p> <ul style="list-style-type: none"> <li>- prevents erosion of the waste and cover</li> <li>- prevents the collection of standing water</li> <li>- minimizes surface water runoff onto and into the waste.</li> </ul> <p>Verify that the surface water management system is designed to control, at a minimum, the runoff from the discharge of a 2-h, 10-yr storm.</p> <p>Verify that the system is designed to include:</p> <ul style="list-style-type: none"> <li>- detention basins to provide temporary storage of the expected runoff from the design storm with sufficient reserve capacity to contain accumulated precipitation and sediment prior to discharge</li> <li>- diversion structures designed to prevent runoff generated within the active cells from moving offsite of the lined areas.</li> </ul> <p>(NOTE: Checklist item repeated in SO.150.28.DE., industrial landfills.)</p> <p>Verify that runoff from the active cell(s) is channeled to the leachate treatment and disposal system.</p> <p>Verify that runoff from the closed cells is directed to the detention basins or other approved sedimentation control systems.</p>

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<p><b>SO.140.17.DE.</b> Discharge from detention basins in landfills that dispose dry waste must meet specific regulations (DE 7 1000 1301, Section 6.6.4) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.29.DE., industrial landfills.)</p> <p>Verify that discharge from the detention basins is in compliance with all applicable Federal and state regulations.</p>
<p><b>SO.140.18.DE.</b> Groundwater monitoring systems in landfills that dispose dry waste must follow certain general provisions (DE 7 1000 1301, Section 6.7.1) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.30.DE., industrial landfills.)</p> <p>Verify that all landfills that dispose dry waste maintain and operate a groundwater monitoring program to evaluate facility impact upon groundwater quality.</p>
<p><b>SO.140.19.DE.</b> Groundwater monitoring systems in landfills that dispose dry waste must meet specific design and construction requirements (DE 7 1000 1301, Section 6.7.2) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.31.DE., industrial landfills.)</p> <p>Verify that the groundwater monitoring system is designed by a professional geologist registered in Delaware.</p> <p>Verify that the system consists of a sufficient number of wells, installed at appropriate locations and depths, to define the groundwater flow systems and is developed in accordance with Departmental requirements to yield groundwater samples that are representative of the aquifer water quality.</p> <p>Verify that the number, spacing, location, depth, and screened interval of the monitoring wells are approved by the Department prior to installation.</p> <p>Verify that all monitoring wells are constructed in accordance with the Regulations Governing the Construction of Water Wells and any subsequently approved guidelines, and that any variation from the existing guidelines is approved by the Department in writing prior to construction.</p>
<p><b>SO.140.20.DE.</b> Groundwater monitoring systems in landfills that dispose dry waste must follow certain sampling requirements</p>	<p>(NOTE: Checklist item repeated in SO.150.32.DE., industrial landfills.)</p> <p>Verify that a groundwater sampling plan is submitted to the Department at the time of permit application, and that it includes procedures and techniques for:</p>



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<p>(DE 7 1000 1301, Section 6.7.3) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.21.DE.</b> Groundwater monitoring systems in landfills that dispose dry waste must meet specific reporting requirements (DE 7 1000 1301, Section 6.7.4) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.22.DE.</b> Capping systems in landfills that dispose dry waste must meet specific requirements (DE 7 1000 1301, Section 6.8.1) [Added December 2004; Citation Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- sample collection, preservation, and transport</li> <li>- analytical procedures and quality assurance</li> <li>- chain of custody control.</li> </ul> <p>Verify that the groundwater sample constituents meet the following criteria:</p> <ul style="list-style-type: none"> <li>- the parameters to be analyzed depend on the characteristics of the waste and are specified by the Department</li> <li>- test methods used to determine the parameters are those described in the most current legal edition of USEPA Publication Number SW-846, <i>Test Methods for Evaluating Solid Waste--Physical/Chemical Methods</i></li> </ul> <p>Verify that samples are collected at low flow rates (&lt;1 L/min).</p> <p>Verify that samples are field filtered only when turbidity exceeds 10 NTU.</p> <p>Verify that there is no repeat sampling of any well where turbidity exceeds 10 NTU without Department approval.</p> <p>(NOTE: Checklist item repeated in SO.150.33.DE., industrial landfills.)</p> <p>Verify that all groundwater, leachate and gas monitoring is conducted on a schedule that is determined by the Department and the results are submitted within 60 days of sampling.</p> <p>Verify that an annual hydrogeologic report is prepared, which includes:</p> <ul style="list-style-type: none"> <li>- tabulation of all leachate flow and quality and groundwater quality data from current and preceding years</li> <li>- graphical presentation of leachate flow and quality and ground water quality data from current and preceding years as required in the operating permit</li> <li>- maps showing groundwater flow patterns at each time of groundwater sampling</li> <li>- a discussion of the groundwater monitoring results</li> <li>- recommendations for future monitoring.</li> </ul> <p>(NOTE: Checklist item repeated in SO.150.34.DE., industrial landfills.)</p> <p>Verify that, upon closure of the landfill or landfill cell a capping system that will control the emission of gas (if applicable), promote the establishment of vegetative cover, and minimize infiltration and percolation of water into, and prevent erosion of, the waste throughout the postclosure care period is installed.</p>

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<p>2008].</p> <p><b>SO.140.23.DE.</b> Capping systems in landfills that dispose dry waste must be composed of certain elements (DE 7 1000 1301, Section 6.8.2) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.24.DE.</b> Final slopes in landfills that dispose dry waste must meet specific requirements (DE 7 1000 1301, Section 6.8.3) [Added December 2004; Citation Revised January 2008].</p>	<p>Verify that the capping system is in place 180 days following final waste disposal activity.</p> <p>Verify that the capping system extends beyond the edge of the lined areas.</p> <p>(NOTE: Checklist item repeated in SO.150.35.DE., industrial landfills.)</p> <p>Verify that a final grading layer on the waste, consisting of at least 6 in. of soil, to attain the final slope and provide a stable base for subsequent system components is installed, and that daily and intermediate cover may be used for this purpose.</p> <p>Verify that in impermeable layer exists, consisting of at least:</p> <ul style="list-style-type: none"> <li>- a 30 mil geomembrane underlain by geotextile</li> <li>- 24 in. of clay at a hydraulic conductivity of <math>1 \times 10^{-7}</math> cm/s or depth of equivalent material having a hydraulic conductivity less than <math>1 \times 10^{-7}</math> cm/s, such depth to be determined based on the hydraulic conductivity of 24 in. of clay at a hydraulic conductivity of <math>1 \times 10^{-7}</math> cm/s.</li> </ul> <p>(NOTE: Alternative materials may be used for the impermeable layer with prior written approval of the Department.)</p> <p>Verify that the final cover exists of:</p> <ul style="list-style-type: none"> <li>- 18 in. of soil to provide rooting depth and moisture for plant growth</li> <li>- 6 in. of topsoil or other material approved by the Department to support the proposed vegetation</li> <li>- a suitable layer of alternative material or combination thereof to assure adequate rooting and moisture retention to support the proposed vegetation.</li> </ul> <p>(NOTE: A suitable vegetation dependent upon the quality and characteristics of the topsoil and compatible with the intended final use of the facility should be proposed, and maintenance schedules and application rates for fertilizer and mulch are also submitted for approval.)</p> <p>(NOTE: Checklist item repeated in SO.150.36.DE., industrial landfills.)</p> <p>Verify that the grades of the final slope are constructed in accordance with the following minimum standards:</p> <ul style="list-style-type: none"> <li>- the final grade of the top slope, after allowing for settlement and subsidence, is designed to promote runoff</li> <li>- the final grades of the side slopes are, at a maximum, 3 horizontal to one vertical (3:1).</li> </ul>

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<p><b>SO.140.25.DE.</b> Landfills that dispose dry waste must follow general operation and maintenance standards (DE 7 1000 1301, Section 6.9.1) [Added December 2004; Citation Revised January 2008].</p>	<p>Verify that the top and side slopes are maintained to prevent erosion of the capping system and to ensure complete vegetation cover.</p> <p>(NOTE: Checklist item repeated in SO.150.37.DE., industrial landfills.)</p> <p>Verify that landfills that dispose dry waste meet the following general operation and maintenance standards:</p> <ul style="list-style-type: none"> <li>- operated so as to create an aesthetically desirable environment and to preclude degradation of land, air, surface water, or groundwater</li> <li>- maintained and operated to conform with the approved Plan of Operation.</li> </ul>
<p><b>SO.140.26.DE.</b> Landfills that dispose dry waste must follow certain details of operation and maintenance regarding spreading and compacting (DE 7 1000 1301, Section 6.9.2.1) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.38.DE., industrial landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste and/or dry waste.)</p> <p>Verify that the working face is confined to the smallest practical area, as is consistent with the proper operation of trucks and equipment.</p> <p>Verify that the waste is spread in layers and compacted by repeated passes of the compacting equipment to obtain the degree of compaction specified in the Solid Waste permit.</p>
<p><b>SO.140.27.DE.</b> Landfills that dispose dry waste must meet specific cover details of operation and maintenance (DE 7 1000 1301, Section 6.9.2.2) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.39.DE., industrial landfills.)</p> <p>Verify that approved cover material is applied at a frequency and thickness specified by the Department.</p>
<p><b>SO.140.28.DE.</b> Landfills that dispose dry waste must control certain nuisances and hazards (DE 7 1000 1301, Section 6.9.2.3) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.40.DE., industrial landfills.)</p> <p>Verify that the operation of the landfill does not result in odors associated with solid waste being detected offsite.</p> <p>Verify that the scattering of refuse and wind-blown litter is controlled by the use of portable fences, natural barriers, or other suitable methods, and that no refuse or litter is allowed to migrate offsite.</p>

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<p><b>SO.140.29.DE.</b> Landfills that dispose dry waste must meet specific access requirements (DE 7 1000 1301, Section 6.9.2.4) [Added December 2004; Citation Revised January 2008].</p>	<p>Verify that the landfill is operated in a manner which eliminates, to the extent possible, dust problems, and fires.</p> <p>(NOTE: Checklist item repeated in SO.150.41.DE., industrial landfills.)</p> <p>Verify that access to the site is limited to those persons authorized to use the site for the disposal of solid waste and to those hours when an attendant is on duty, but that this does not limit the right of entry by the Secretary or his duly authorized designee pursuant to 7 Delaware Code, Section 6024.</p> <p>Verify that access to the site by unauthorized persons is prevented by the use or barriers, fences, and gates, or other suitable means.</p>
<p><b>SO.140.30.DE.</b> Landfills that dispose dry waste must follow certain salvaging regulations (DE 7 1000 1301, Section 6.9.2.5) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.42.DE., industrial landfills.)</p> <p>Verify that salvage operations are organized so that they do not interfere with the proper disposal of any solid waste.</p> <p>Verify that no salvage operation is allowed which creates unsightliness, nuisances, health hazards, or potential safety hazards.</p>
<p><b>SO.140.31.DE.</b> Landfills that dispose dry waste must be sufficiently staffed (DE 7 1000 1301, Section 6.9.2.6) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.43.DE., industrial landfills.)</p> <p>Verify that sufficient numbers and types of personnel are available at the site to ensure capability for operation in accordance with these regulations.</p>
<p><b>SO.140.32.DE.</b> Certain requirements apply to equipment in landfills that dispose dry waste (DE 7 1000 1301, Section 6.9.2.7) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.44.DE., industrial landfills.)</p> <p>Verify that adequate numbers and types of equipment commensurate with the size of the operation are available at the site to ensure operation of the landfill in accordance with the provisions of these regulations and the plan of operation.</p> <p>Verify that waste handling equipment is cleaned routinely and maintained in accordance with the manufacturer's recommendations.</p>
<p><b>SO.140.33.DE.</b> Landfills that dispose dry waste must</p>	<p>(NOTE: Checklist item repeated in SO.150.45.DE., industrial landfills.)</p>

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<p>follow specific employee health and safety procedures (DE 7 1000 1301, Section 6.9.2.8) [Added December 2004; Citation Revised January 2008].</p>	<p>Verify that employees at the site work under all appropriate health and safety guidelines established by OSHA.</p>
	<p>Verify that suitable shelter, sanitary facilities, and safe drinking water are provided for personnel at the site.</p>
	<p>Verify that a reliable telephone or radio communication system is provided for site personnel.</p>
	<p>Verify that first aid equipment is available at the site.</p>
<p><b>SO.140.34.DE.</b> Landfills that dispose dry waste must meet specific recordkeeping requirements (DE 7 1000 1301, Section 6.9.3) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.46.DE., industrial landfills.)</p>
	<p>Verify that the following material is recorded, as it becomes available, and retained by the owner or operator of any new or existing landfill until the end of the postclosure care period of the landfill:</p>
	<ul style="list-style-type: none"> <li>- records demonstrating that liners, leachate control systems, cover, capping system, and all monitoring systems are constructed or installed in accordance with design criteria</li> <li>- monitoring, testing, or analytical data where required</li> <li>- volume and/or weight of wastes received</li> <li>- any additional records specified by the Department.</li> </ul>
<p><b>SO.140.35.DE.</b> Landfills that dispose dry waste must meet specific reporting requirements (DE 7 1000 1301, Section 6.9.4) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.47.DE., industrial landfills.)</p>
	<p>Verify that a report summarizing facility operations for the preceding calendar year is submitted to the Department on an annual basis.</p>
	<p>Verify that the report describes and summarizes all solid waste disposal, environmental monitoring, and construction activities conducted within the year covered by the report, and that the reports includes, but is not necessarily limited to, the following:</p>
	<ul style="list-style-type: none"> <li>- the volume or tonnage of solid waste landfilled at the facility</li> <li>- the estimated remaining capacity of the facility, in both tonnage and years</li> <li>- leachate quantity and quality data</li> <li>- gas monitoring data</li> <li>- an updated estimate of the cost of closure and postclosure care for the facility</li> <li>- any intentional or accidental deviations from the approved Plan of Operation, and any unusual situations encountered during the year</li> <li>- all construction or corrective work conducted on the site in accordance with approved plans or to achieve compliance with these regulations.</li> </ul>
	<p>(NOTE: Any additional reports specified in the Solid Waste permit must also be</p>

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<p><b>SO.140.36.DE.</b> Specific prohibitions exist for landfills that dispose dry waste (DE 7 1000 1301, Section 6.9.5) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.37.DE.</b> Landfills that dispose dry waste must follow certain general closure requirements (DE 7 1000 1301, Section 6.10.1) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.38.DE.</b> Landfills that dispose dry waste must submit required closure notification (DE 7 1000 1301, Section 6.10.2) [Added December 2004; Citation Revised January 2008].</p>	<p>submitted.)</p> <p>(NOTE: Checklist item repeated in SO.150.48.DE., industrial landfills.)</p> <p>Verify that open burning of any solid waste is prohibited within the active portion of the landfill.</p> <p>Verify that scavenging is prohibited on any landfill site.</p> <p>Verify that no wastes other than those specified in the permit are disposed of at the facility.</p> <p>(NOTE: Checklist item repeated in SO.150.49.DE., industrial landfills.)</p> <p>Verify that completed industrial landfills or landfill cell(s) are closed in a manner that:</p> <ul style="list-style-type: none"> <li>- minimizes the need for further maintenance</li> <li>- minimizes the postclosure escape of solid waste constituents, leachate, and landfill gases to the surface water, groundwater, or atmosphere.</li> </ul> <p>(NOTE: Checklist item repeated in SO.150.50.DE., industrial landfills.)</p> <p>Verify that a conceptual closure plan for a new industrial landfill is submitted at the time of initial (i.e., construction) permit application.</p> <p>Verify that at least 180 days prior to the projected date when wastes will no longer be accepted at the landfill or cell, written notification of intent to close the facility or cell is submitted to the Department, and that a closure schedule and a closure plan or revised closure plan are also submitted.</p> <p>Verify that a closure permit is obtained before commencing closure of a completed landfill or landfill cell.</p> <p>Verify that, if the Department determines that the closure plan and closure schedule are sufficient to ensure closure in accordance with performance standards, it issues a closure permit.</p> <p>Verify that a copy of the closure plan is maintained at the facility or at some other location designated by the owner or operator through the postclosure care period of the facility.</p>

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<p><b>SO.140.39.DE.</b> Landfills that dispose dry waste closure plans must contain specific information (DE 7 1000 1301, Section 6.10.3) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.51.DE., industrial landfills.)</p> <p>Verify that a description of the methods, procedures, and processes to be used to close a landfill and each individual cell thereof in accordance with the closure performance standard is included.</p> <p>Verify that the closure plan includes a description of the capping system, including a description of the system design, the type of cover to be used, and a discussion of how the capping system will achieve the objectives of SO.150.49.DE.</p> <p>Verify that the closure plan contains a description of other activities necessary to satisfy the closure performance standard, including, but not limited to, the removal or disposal of all nonlandfilled wastes located onsite (e.g., wastes from landfill runoff collection ponds).</p> <p>Verify that the plan includes a plan for postclosure care of the facility sufficient to ensure that the standards described in SO.150.49.DE. will be met, this includes:</p> <ul style="list-style-type: none"> <li>- a description of the monitoring and maintenance activities required and the frequency at which these activities are performed</li> <li>- the name, address, and telephone number of the person or office to contact about the facility during the postclosure period</li> <li>- a description of the planned uses of the property during the postclosure period</li> <li>- a topographical map of the site showing the proposed post-closure elevation with reference to mean sea level</li> <li>- a closure construction quality assurance plan.</li> </ul> <p>Verify that a plan for control and/or recovery of landfill gases is included, if appropriate.</p>
<p><b>SO.140.40.DE.</b> Landfills that dispose dry waste must meet minimum closure requirements (DE 7 1000 1301, Section 6.10.4) [Added December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.150.52.DE., industrial landfills.)</p> <p>Verify that the Department is notified at least 30 working days prior to commencing closure activities at the landfill, and that the Department inspects the site, and any corrective work which the Department deems necessary is performed.</p> <p>Verify that finished portions of the landfill receive a capping system.</p> <p>Verify that finished portions of the landfill are planted with appropriate vegetation to promote stabilization of the cover.</p> <p>Verify that the closure is carried out in accordance with the approved closure plan and according to the approved closure schedule, and that any significant deviations from the plan or the schedule are approved by the Department prior to</p>

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<p><b>SO.140.41.DE.</b> Landfills that dispose dry waste must follow general postclosure care requirements (DE 7 1000 1301, Section 6.11.1) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.42.DE.</b> Landfills that dispose dry waste must meet minimum postclosure care requirements (DE 7 1000 1301, Section 6.11.2) [Added December 2004; Citation Revised January 2008].</p>	<p>being initiated.</p> <p>Verify that, upon closure of an entire landfill, all nonlandfilled wastes located onsite are removed or disposed of in a manner approved by the Department.</p> <p>Verify that, after closure of the facility, the site is returned to an acceptable appearance consistent with the surrounding area and the intended use of the land.</p> <p>Verify that when closure is completed, certification by a professional engineer registered in Delaware that the landfill or cell has been closed in accordance with the specifications in the approved closure plan is submitted to the Department.</p> <p>Verify that the Department inspects the cell or facility and certifies complete closure.</p> <p>(NOTE: Checklist item repeated in SO.150.53.DE., industrial landfills.)</p> <p>Verify that postclosure care is continued for 30 yr after the completion of closure.</p> <p>(NOTE: The Department may remove one or more of the postclosure care requirements, reduce the length of the postclosure care period or, extend the postclosure care period based upon its determination to protect human health and environment.)</p> <p>Verify that if at any time during the postclosure care period there is evidence of a contaminant release from the landfill that presents a significant threat to human health or the environment, action is taken to mitigate the threat.</p> <p>(NOTE: Checklist item repeated in SO.150.54.DE., industrial landfills.)</p> <p>Verify that postclosure care maintains the integrity and effectiveness of the capping system, including making repairs as necessary to correct the effects of settling, subsidence, erosion, or other events, and preventing run-on and runoff from eroding or otherwise damaging the cap.</p> <p>Verify that the cover is reseeded if insufficient vegetation exists to stabilize the surface.</p> <p>Verify that the leachate collection and treatment systems are maintained and operated until the Department determines that the leachate no longer poses a threat to human health or the environment, and the leachate quantity and quality data are submitted to the Department for those parameters and at such frequencies as specified by the Department.</p> <p>Verify that the groundwater monitoring system is maintained and operated as regulated, and that groundwater quality data is submitted as specified by the</p>



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<p><b>SO.140.43.DE.</b> Specific prohibitions exist for postclosure care in landfills that dispose dry waste (DE 7 1000 1301, Section 6.11.3) [Added December 2004; Citation Revised January 2008].</p> <p><b>SO.140.44.DE.</b> Landfills that dispose dry waste must follow postclosure land use requirements (DE 7 1000 1301, Section 6.11.4) [Added December 2004; Citation Revised January 2008].</p>	<p>Department.</p> <p>Verify that the gas control system is maintained and operated as regulated, and that gas data are submitted as specified by the Department.</p> <p>Verify that the surface water management system is maintained and monitored according to regulations.</p> <p>(NOTE: Checklist item repeated in SO.150.55.DE., industrial landfills.)</p> <p>Verify that standing water is not allowed on the closed landfill.</p> <p>Verify that open burning is not allowed on the closed landfill.</p> <p>Verify that, unless approved by the Department, no activities are conducted on a closed landfill that will disturb the integrity of the capping system, liner, containment system, or monitoring systems.</p> <p>Verify that access to the closed landfill is limited to those persons who are engaging in activities which are compatible with the intended postclosure use of the site.</p> <p>(NOTE: Checklist item repeated in SO.150.56.DE., industrial landfills.)</p> <p>Verify that the postclosure land use plan approved by the Department is implemented.</p>

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<p><b>SO.150.</b></p> <p><b>INDUSTRIAL WASTE UNITS</b></p> <p><b>SO.150.1.DE.</b> Industrial landfills must be located in areas where the potential for degradation of the quality of air, land, and water is minimal (DE 7 1000 1301, Section 6.1.1) [Citation Revised January 2008].</p> <p><b>SO.150.2.DE.</b> New industrial landfills may not be located in specific areas (DE 7 1000 1301, Section 6.1.3) [Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.150.3.DE.</b> Industrial landfills must meet specific</p>	<p>(NOTE: Checklist item repeated in SO.140.1.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that industrial landfills are located in areas where the potential for degradation of the quality of air, land, and water is minimal.</p> <p>(NOTE: Checklist item repeated in SO.140.2.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that no new industrial landfills are located in areas such that solid waste is at any time deposited:</p> <ul style="list-style-type: none"> <li>- within the 100-yr flood plain</li> <li>- in an area that may cause or contribute to the degradation of any state or federally regulated wetlands unless the owner or operator can demonstrate to the satisfaction of the appropriate wetlands regulatory agency that there is no impact to any regulated wetlands on the site, or any impact will be mitigated as required</li> <li>- within 1 mi of any state of Federal wildlife refuge, wildlife area, or park, unless specifically exempted from this requirement by the Department</li> <li>- so as to be in conflict with any locally adopted land use plan or zoning requirement</li> <li>- within the wellhead protection area of a public water supply well or well field</li> <li>- in areas where valuable aquifers would be threatened by contaminant releases, unless viable alternatives have been dismissed and stringent design measures have been incorporated to minimize the possibility and magnitude of releases</li> <li>- within 200 feet of the facility boundary unless otherwise approved by the Department</li> <li>- in an area that is environmentally unique or valuable.</li> </ul> <p>(NOTE: This checklist item applies to those landfills that dispose of only</p>

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<p>minimum design requirements (DE 7 1000 1301, Section 6.2) [Revised January 2008].</p> <p><b>SO.150.4.DE.</b> Industrial landfill liners must meet specific general provisions (DE 7 1000 1301, Section 6.3.1) [Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.150.5.DE.</b> Composite liners must have specific characteristics (DE 7 1000 1301, Section 6.3.2.1) [Revised December 1999; Citation Revised January 2008].</p>	<p>industrial waste.)</p> <p>Verify that all industrial landfills meet the following specific design requirements:</p> <ul style="list-style-type: none"> <li>- a setback area, including a buffer zone with appropriate screening, if deemed necessary by the Department</li> <li>- a liner and leachate collection, treatment and disposal, and monitoring systems</li> <li>- a gas control system, if deemed necessary by the Department, a surface water management system and a groundwater monitoring system</li> <li>- a surface water management system</li> <li>- a ground water management system</li> <li>- a capping system.</li> </ul> <p>Verify that industrial landfills are planned and designed by professional engineers registered in Delaware.</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that industrial landfill liners meet the following general provisions:</p> <ul style="list-style-type: none"> <li>- an impermeable liner is provided at all industrial landfills to restrict the migration of leachate from the landfill and to prevent contamination of the underlying groundwater</li> <li>- the bottom of the liner (of the secondary liner, in a double liner system) is at least 5 ft above the seasonal high water table</li> <li>- all liners are prepared, constructed, and installed in accordance with a quality assurance plan included in the engineering report and approved by the Department; for synthetic liners, the plan incorporates the manufacturer's recommendations</li> <li>- qualifications of the construction quality assurance staff (CQA) and the geosynthetics installer, including master seamers, on-site supervisor, and construction quality control (CQC) personnel, are submitted to the Department for review prior to their performing these duties on site.</li> </ul> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that composite liners have the following characteristics, at a minimum:</p> <ul style="list-style-type: none"> <li>- a primary (upper) liner which at least 45 mil thick</li> <li>- are constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to physical contact with the leachate to which it is exposed, climatic conditions, the stresses of installation, and the stresses of daily operation</li> </ul>

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<p><b>SO.150.6.DE.</b> Natural liners must have specific characteristics (DE 7 1000 1301, Section 6.3.2.2) [Revised December 1999; Citation Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- are made of synthetic material that meets minimum requirements of the most recent edition of the National Sanitation Foundation’s publication, “Standard Number 54, Flexible Membrane Liners”</li> <li>- are chemically resistant to the waste and leachate managed at the facility</li> <li>- the USEPA Test Method 9090 is performed using a solid waste leachate (a leachate mix approved by the Department may be substituted if existing leachate is not available)</li> <li>- the specified physical parameters are tested before and after liner exposure; any significant change in test properties is considered to be indicative of incompatibility</li> <li>- are compounded from first quality virgin materials; no reground or reprocessed materials containing encapsulated scrim may be used in the manufacturing of the liner</li> <li>- are free of pinholes, blisters, holes, and contaminants, which include, but are not limited to wood, paper, metal, and nondispersed ingredients.</li> </ul> <p>Verify that secondary (lower) composite liners are composed of:</p> <ul style="list-style-type: none"> <li>- compacted clay at least 2 feet thick with a hydraulic conductivity no greater than <math>1 \times 10^{-7}</math> cm/sec, or</li> <li>- an equivalent material acceptable to the Department.</li> </ul> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that use of natural material for liners is restricted to those areas where:</p> <ul style="list-style-type: none"> <li>- underlying ground water is not used and is not reasonably expected to be used for water supplies, and</li> <li>- the landfill subbase is subject to compaction and settlement such that a synthetic membrane would not be feasible.</li> </ul> <p>Verify that natural liners have the following characteristics, at a minimum:</p> <ul style="list-style-type: none"> <li>- consists of compacted clay or equivalent material having a hydraulic conductivity to greater than <math>1 \times 10^{-7}</math> cm/s</li> <li>- the material is at least 5 ft thick, and thicker if necessary to prevent any leachate from migrating through the liner at any time during the active life and through the postclosure care period of the facility</li> <li>- the material proposed of use is tested by the ASTM or equivalent methods for the following:               <ul style="list-style-type: none"> <li>- grain size</li> <li>- classification</li> <li>- compaction</li> <li>- specific gravity</li> <li>- hydraulic conductivity</li> <li>- porosity</li> <li>- pH</li> </ul> </li> </ul>

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<p><b>SO.150.7.DE.</b> Double liner systems must have specific characteristics (DE 7 1000 1301, Section 6.3.2.3) [Revised December 1999; Citation Revised January 2008].</p>	<ul style="list-style-type: none"> <li>- cation exchange capacity</li> <li>- pinhole test (if required)</li> <li>- mineralogy (if required)</li> </ul> <ul style="list-style-type: none"> <li>- all data is submitted to the Department prior to construction</li> <li>- testing of the saturated hydraulic conductivity and the effect of leachate on soil hydraulic conductivity is performed in accordance with test methods given in the most recent edition of USEPA publication SW-846, ASTM test procedures, or other tests approved by the Department</li> <li>- if onsite soils are used as a natural liner, the uppermost 5 ft of soil is excavated and recompacted to ensure homogeneity of the liner, provided, however, that with respect to dredge spoil soils, the excavation and recompaction requirement do not apply if the applicant demonstrates that the dredge spoil soils have acceptable characteristics.</li> </ul> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that double liner systems have the following characteristics:</p> <ul style="list-style-type: none"> <li>- consists of 2 single liners separated by a drainage layer containing a leak-detection system</li> <li>- the primary (top) liner is a synthetic liner that is at least 30 mil thick and meets the requirements of SO.150.5.DE. (with the exception of the first requirement)</li> <li>- the secondary (bottom) liner is either synthetic or natural</li> <li>- if synthetic, it is at least 30 mil thick and meets the requirements of SO.150.5.DE. (with the exception of the first requirement)</li> <li>- if natural, it meets the requirements of SO.150.6.DE.</li> <li>- the drainage layer separating the 2 liners consists of at least 12 in. of soil having a hydraulic conductivity greater than <math>1 \times 10^{-3}</math> cm/s based on laboratory and field testing</li> <li>- the leak detection system is capable of detecting and intercepting liquid within the drainage layer and conveying the liquid to a collection sump or monitoring point; the system should be designed to operate without clogging through the postclosure care period of the facility.</li> </ul> <p>(NOTE: Alternative material may be used for the drainage layer with prior written approval of the Department.)</p> <p>(NOTE: The operator or designer will calculate the Action Leakage Rate. The proposed Action Leakage Rate and a response plan if the Action Leakage Rate is exceeded will be submitted to the Department for approval before construction of the liner is permitted.)</p> <p>Verify that the upper synthetic liner membrane is underlain by either a geosynthetic clay or 2 ft of natural material with a permeability no greater than <math>10^{-7}</math> cm/sec.</p>

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<p><b>SO.150.8.DE.</b> Construction/installation of a single synthetic liner must meet specific requirements (DE 7 1000 1301, Section 6.3.3.) [Revised December 1999; Citation Revised January 2008].</p>	<p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the Department is notified of the liner installation date at least 15 working days prior to installation.</p> <p>Verify that the liner is installed upon a subbase which meets the following requirements:</p> <ul style="list-style-type: none"> <li>- it is capable of supporting the loads and withstanding the stresses that will be imposed on it through the active life and postclosure care period of the facility and of resisting the pressure gradient above and below the liner caused by settlement, compression, or uplift</li> <li>- it has a smooth surface that is free of all rocks, stones, roots, sharp objects, or debris of any kind</li> <li>- it is certified in writing by the liner installer as a suitable subbase for the liner (written certification of acceptability is submitted to the Department prior to installation of the liner; however, submittal of written acceptance may proceed incrementally according to installation schedule).</li> </ul> <p>Verify that the minimum post-loading slopes of the liner are 2 percent on controlling slopes and 1/ 2 percent on remaining slopes, or else the controlling and remaining slopes are designed to prevent the head on the liner, excluding sump areas, from exceeding a depth of 12 in. including post settlement conditions.</p> <p>Verify that the landfill is designed to minimize penetration through the liner, and if a penetration is essential, a liquid-tight seal exists between the penetrating structure and the synthetic membrane:</p> <ul style="list-style-type: none"> <li>- compaction of areas adjacent to the penetrating structure are the same density as the surrounding soil to minimize differential settlement</li> <li>- sharp edges on the penetrating structure do not come in contact with the synthetic material.</li> </ul> <p>Verify that bridging or stressed conditions in the liner are avoided with proper slack allowances for shrinkage of the liner during installation and before the placement of a protective soil layer.</p> <p>Verify that synthetic liners have factory and field seams that equal or exceed the strength requirements defined by the most recent edition of the National Sanitation Foundation’s “Standard Number 54-1993” for that liner material.</p> <p>Verify that all seams are visually inspected and tested along their entire length for seam continuity using suitable nondestructive techniques, and that they are tested for strength at a frequency specified in the quality assurance plan.</p> <p>Verify that field seams meet the following requirements:</p>

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	<ul style="list-style-type: none"> <li>- field seaming provides a dry sealing surface</li> <li>- seaming is not done when wind conditions prevail</li> <li>- seams are made and bonded in accordance with the supplier's recommended procedures.</li> </ul> <p>Verify that proper equipment is used in placing drainage material over the synthetic liner to avoid stress.</p> <p>Verify that the synthetic membrane is protected from the waste by at least 2 ft of drainage material incorporating the leachate collection system.</p> <p>Verify that the synthetic membrane is underlain by a secondary liner.</p> <p>Verify that all lenses, cracks, channels, root holes, or other structural nonuniformities that can increase the saturated hydraulic conductivity above <math>1 \times 10^{-7}</math> cm/s are removed.</p> <p>Verify that natural liners are constructed in lifts not exceeding 6 in. after compaction to maximize the effectiveness of the compaction throughout the lift thickness, and that each lift is properly interfaced by scarification between lifts to ensure the bonding.</p> <p>Verify that clods are broken up and the material is homogenized before compaction of each lift using mixing devices such as pug mills or rotary tillers.</p> <p>Verify that the maximum slope of the sidewalls is not so great as to preclude effective compaction.</p>
<p><b>SO.150.9.DE.</b> [Deleted December 2001].</p>	
<p><b>SO.150.10.DE.</b> [Deleted December 2004].</p>	
<p><b>SO.150.11.DE.</b> Industrial landfills must meet specific general provisions regarding leachate collection, treatment, disposal, and monitoring (DE 7 1000 1301, Section 6.4.1) [Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.3.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that all industrial landfills are designed and constructed, including a leachate collection system, a leachate treatment and disposal system, and a leachate monitoring system.</p> <p>Verify that the leachate systems are constructed, installed, and maintained in</p>

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<p><b>SO.150.12.DE.</b> Leachate collection systems in industrial landfills must meet specific design specifications (DE 7 1000 1301, Section 6.4.2.1) [Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.150.13.DE.</b> Leachate collection systems in industrial landfills must meet specific construction standards (DE 7 1000 1301, Section 6.4.2.2) [Revised</p>	<p>accordance with the Department-approved quality assurance plan.</p> <p>Verify that documentation is kept for the quality assurance procedures through the postclosure care period of the facility.</p> <p>(NOTE: Checklist item repeated in SO.140.4.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the leachate collection system is designed to operate without clogging through the postclosure period of the facility.</p> <p>Verify that all elements of the system (pipes, sumps, pumps, etc.) are sized according to water balance calculations and are capable of handling peak flows.</p> <p>Verify that collection pipes are sized and spaced to efficiently remove leachate from the bottom of the waste and the sidewalls of the cell, and that the capacity of the mains is at least equal to the sum of the capacities of the laterals.</p> <p>Verify that the pipes are designed to withstand the weight, stresses, and disturbances from the overlying wastes, waste cover materials, equipment operation, and vehicular traffic.</p> <p>Verify that the collection pipes are designed to drain by gravity to a sump system, and that sumps function automatically and contain a conveyance system for the removal of leachate.</p> <p>Verify that manholes or cleanout risers are located along the perimeter of the leachate collection system, and that the number and spacing of the manholes is sufficient to ensure proper maintenance of the system by water jet flushing or an equivalent method.</p> <p>Verify that innovative leachate collection systems incorporating alternative designs are used, with the Department's approval, if they are shown to be equivalent to or more effective than the specified design.</p> <p>Verify that the leachate collection system is designed to prevent the leachate head on the liner from exceeding a depth of 12 in.</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the leachate collection system is installed immediately above an impermeable liner and at the bottom of a drainage layer.</p>



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<p>December 1999; Citation Revised January 2008].</p> <p><b>SO.150.14.DE.</b> Leachate collection systems in industrial landfills must follow specific operational procedures (DE 7 1000 1301, Section 6.4.2.3.) [Citation Revised January 2008].</p> <p><b>SO.150.15.DE.</b> Leachate treatment and disposal systems in industrial landfills must be designed in accordance with certain options (DE 7 1000 1301,</p>	<p>Verify that the drainage layer is at least 12 in. thick with a hydraulic conductivity not less than <math>1 \times 10^{-2}</math> cm/s and a minimum post-loading controlling slope of 2 percent.</p> <p>(NOTE: Alternative materials may be used for the drainage layer, with prior written approval of the Department.)</p> <p>Verify that the following tests are performed on the soil proposed for use in the drainage layer, and all data is submitted to the Department prior to construction of the drainage layer (these tests should be performed in accordance with current ASTM, American Association of State Highway and Transportation Officials, or equivalent methods):</p> <ul style="list-style-type: none"> <li>- classification</li> <li>- porosity</li> <li>- relative density or compaction</li> <li>- specific gravity</li> <li>- hydraulic conductivity.</li> </ul> <p>Verify that the leachate collection system and manholes or cleanout risers are constructed of materials that can withstand the chemical attack that results from leachates.</p> <p>(NOTE: Checklist item repeated in SO.140.5.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the leachate collection system operates automatically whenever leachate is present in the sump to remove accumulated leachate.</p> <p>Verify that inspections are conducted weekly to verify proper functioning of the leachate collection system and to detect the presence of leachate in the removal sump, and that records on the system are kept to provide sufficient information that the leachate collection system is functional and operating properly, and that the amount of leachate collected from each cell is recorded on a weekly basis.</p> <p>Verify that collection lines are cleaned according to a Department-approved scheduled maintenance program, and more frequently if required.</p> <p>(NOTE: Checklist item repeated in SO.140.6.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the leachate treatment and disposal system is designed in accordance</p>

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<p>Section 6.4.3.1) [Revised December 2004; Citation Revised January 2008].</p> <p><b>SO.150.16.DE.</b> Leachate in industrial landfills must be stored in tanks constructed to meet specific standards (DE 7 1000 1301, Section 6.4.3.2) [Citation Revised January 2008].</p> <p><b>SO.150.17.DE.</b> Leachate onsite treatment or pretreatment facilities in industrial landfills must be designed according to specific criteria (DE 7 1000 1301, Section 6.4.3.3) [Citation Revised January 2008].</p>	<p>with one of the following options:</p> <ul style="list-style-type: none"> <li>- complete treatment onsite with or without direct discharge to surface water</li> <li>- pretreatment onsite with discharge to an offsite treatment works for final treatment</li> <li>- storage onsite with discharge to an offsite treatment works for complete treatment</li> <li>- direct discharge to an offsite treatment works</li> <li>- pretreatment on site with discharge on site.</li> </ul> <p>(NOTE: The permittee must maintain all necessary permits and approvals for leachate storage and discharge activities.)</p> <p>(NOTE: Checklist item repeated in SO.140.7.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that leachate storage prior to treatment is within tanks constructed and installed in accordance with the following standards:</p> <ul style="list-style-type: none"> <li>- that tank is placed above ground</li> <li>- the storage tank is designed in accordance with American Petroleum Institute, Underwriters Laboratories, or an equivalent standard appropriate to the material being used, and is constructed of lined with material which has demonstrated chemical resistance to the leachate</li> <li>- the storage tank area has a liner capable of preventing any leachate which may escape from the tank from coming into contact with the underlying soil</li> <li>- the storage tank area is surrounded by a berm, and the bermed area has a capacity at least ten percent greater than the capacity of the tank</li> <li>- all storage tanks are equipped with a venting system</li> <li>- all storage tanks are equipped with a high liquid level alarm or warning device, and the alarm is wired to the location where assistance will be available to respond to the emergency.</li> </ul> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that onsite treatment units are designed based on the results of a treatability study, the results of the operations of a pilot plant, or written information documenting the performance of an equivalent leachate treatment system.</p> <p>Verify that onsite treatment units are designed and constructed by staging of the units to allow for online modification of the treatment system to account for variability of the leachate quality and quantity.</p>

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<p><b>SO.150.18.DE.</b> Leachate discharges from industrial landfills for publicly owned treatment works (POTW) must notify the POTW (DE 7 1000 1301, Section 6.4.3.4) [Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.8.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that for all leachate discharges planned for POTW, the industrial landfill notifies the receiving POTW of the intent to discharge leachate into the collection system and provides the POTW with analysis of the leachate as required by the POTW.</p>
<p><b>SO.150.19.DE.</b> Leachate treatment and disposal systems must be designed and constructed to control odors (DE 7 1000 1301, Section 6.4.3.5) [Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.9.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that leachate treatment and disposal systems in industrial landfills are designed and constructed to control odors.</p>
<p><b>SO.150.20.DE.</b> Residuals from onsite leachate treatment and disposal systems in industrial landfills must be sampled and analyzed for hazardous waste characteristics (DE 7 1000 1301, Section 6.4.3.6) [Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.10.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that residuals from the onsite leachate treatment and disposal systems are sampled and analyzed for hazardous waste characteristics in accordance with Delaware's Regulations Governing Hazardous Waste.</p>
<p><b>SO.150.21.DE.</b> Recirculation of leachate at industrial landfills must be approved by the Department (DE 7 1000 1301, Section 6.4.3.7) [Revised December 1999; Revised December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.11.DE., inert waste landfills.)</p> <p>Verify that recirculation of leachate takes place only with approval by the Department.</p> <p>(NOTE: Recirculation will be allowed only in areas constructed with a composite liner system or a double liner system.)</p> <p>Verify that the method of recirculation is approved by the Department in advance and annually so long as the recirculation continues.</p> <p>Verify that records of leachate collected and recirculated are kept and reported.</p>

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<p><b>SO.150.22.DE.</b> Leachate monitoring systems in industrial landfills must have specific characteristics (DE 7 1000 1301, Section 6.4.4) [Revised December 1999; Citation Revised January 2008].</p>	<p>Verify that any resultant problems are reported to the Department and remedied as soon as practicable and included in the annual report.)</p> <p>(NOTE: Checklist item repeated in SO.140.12.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the leachate monitoring system is capable of measuring the quantity of the flow and sampling the leachate from each landfill cell.</p> <p>Verify that the volume of leachate collected from each cell is determined at least monthly and reported quarterly.</p> <p>Verify that leachate monitoring of the influent and effluent of the treatment and disposal system is performed according to a Department-approved plan which includes quality control and quality assurance procedures.</p> <p>Verify that samples of leachate effluent and influent are analyzed as specified by the Department, and that parameters to be analyzed depends on the characteristics of the waste.</p> <p>Verify that leachate monitoring results are submitted to the Department as required.</p> <p>Verify that, for a double liner system, if the Action Leakage Rate of the leak detection system is exceeded, the Department is notified within 5 working days of the discovery, and the operator samples and analyzes the liquid in the leak detection system for parameters required by the Department.</p>
<p><b>SO.150.23.DE.</b> Gas control systems at industrial landfills must follow specific general provisions (DE 7 1000 1301, Section 6.5.1) [Revised December 1999; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.13.DE., inert waste landfills.)</p> <p>Verify that gas control systems are installed at industrial landfills where the materials landfilled would be expected to produce gas through biological activity or reaction.</p> <p>Verify that the gas control system is designed and constructed to:</p> <ul style="list-style-type: none"> <li>- evacuate gas from within the waste to prevent the accumulation of gas onsite or offsite</li> <li>- prevent and control damage to vegetation</li> <li>- prevent odors from the facility from being detectable at the facility property line in sufficient quantities to cause or create a condition of air pollution.</li> </ul> <p>Verify that the concentration of landfill gas in facility structures (except gas recovery system components) and at the facility boundary does not exceed 25</p>

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<p><b>SO.150.24.DE.</b> Gas control systems at industrial landfills must meet specific design and construction standards (DE 7 1000 1301, Section 6.5.2) [Citation Revised January 2008].</p> <p><b>SO.150.25.DE.</b> Gas control systems at industrial landfills must meet specific monitoring requirements (DE 7 1000 1301, Section 6.5.3) [Citation Revised January 2008].</p> <p><b>SO.150.26.DE.</b> Surface water management systems in industrial landfills must meet specific general provisions (DE 7 1000 1301, Section 6.6.1 and 6.6.2) [Citation Revised December 2004; Citation Revised January</p>	<p>percent of the lower explosive limit.</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that both active and passive gas control systems are considered in industrial landfills, and that an evaluation of the proposed system is submitted to the Department for approval.</p> <p>Verify that an analysis is performed to establish the required spacing of gas control vents to provide an effective system.</p> <p>Verify that the gas control system is designed to evacuate gas from all levels within the waste.</p> <p>Verify that the system does not interfere with or cause failure of the liner or leachate systems.</p> <p>(NOTE: Checklist item repeated in SO.140.14.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that a sufficient number of gas monitoring wells are installed to evaluate gas production rates in the landfill.</p> <p>Verify that the gas monitoring wells are sampled, and that analytical results are provided as required by conditions specified in the facility permit.</p> <p>Verify that at landfills using natural liners, gas monitoring probes are installed in the soil outside the lined area to evaluate any lateral migration of landfill gas.</p> <p>Verify that emissions from active and passive gas control systems are permitted by the Air Resources Section of the Division of Air and Waste Management, if necessary.</p> <p>(NOTE: Checklist item repeated in SO.140.15.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that industrial landfills design, construct, and maintain a surface water management system to meet the following general provisions:</p>

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<p>2008].</p> <p><b>SO.150.27.DE.</b> [Deleted December 2001].</p> <p><b>SO.150.28.DE.</b> Runoff in industrial landfills must be channeled (DE 7 1000 1301, Section 6.6.3) [Citation Revised January 2008].</p> <p><b>SO.150.29.DE.</b> Discharge from detention basins in industrial landfills must meet specific regulations (DE 7 1000 1301, Section 6.6.4) [Citation Revised January 2008].</p> <p><b>SO.150.30.DE.</b> Groundwater monitoring systems in industrial landfills must follow certain general provisions (DE 7 1000 1301,</p>	<ul style="list-style-type: none"> <li>- prevents erosion of the waste and cover</li> <li>- prevents the collection of standing water</li> <li>- minimizes surface water runoff onto and into the waste.</li> </ul> <p>Verify that the surface water management system is designed to control, at a minimum, the runoff from the discharge of a 2-h, 10-yr storm.</p> <p>Verify that the system is designed to include:</p> <ul style="list-style-type: none"> <li>- detention basins to provide temporary storage of the expected runoff from the design storm with sufficient reserve capacity to contain accumulated precipitation and sediment prior to discharge</li> <li>- diversion structures designed to prevent runoff generated within the active cells from moving offsite of the lined areas.</li> </ul> <p>(NOTE: Checklist item repeated in SO.140.16.DE, inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that runoff from the active cell(s) is channeled to the leachate treatment and disposal system.</p> <p>Verify that runoff from the closed cells is directed to the detention basins or other approved sedimentation control systems.</p> <p>(NOTE: Checklist item repeated in SO.140.17.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that discharge from the detention basins is in compliance with all applicable Federal and state regulations.</p> <p>(NOTE: Checklist item repeated in SO.140.18.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p>

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<p>Section 6.7.1) [Citation Revised January 2008].</p> <p><b>SO.150.31.DE.</b> Groundwater monitoring systems in industrial landfills must meet specific design and construction requirements (DE 7 1000 1301, Section 6.7.2) [Citation Revised January 2008].</p> <p><b>SO.150.32.DE.</b> Groundwater monitoring systems in industrial landfills must follow certain sampling requirements (DE 7 1000 1301, Section 6.7.3) [Revised December 1999; Revised December 2004; Citation Revised January 2008].</p>	<p>Verify that all industrial landfills maintain and operate a groundwater monitoring program to evaluate facility impact upon groundwater quality.</p> <p>(NOTE: Checklist item repeated in SO.140.19.DE, inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the groundwater monitoring system is designed by a professional geologist registered in Delaware.</p> <p>Verify that the system consists of a sufficient number of wells, installed at appropriate locations and depths, to define the groundwater flow systems and is developed in accordance with Departmental requirements to yield groundwater samples that are representative of the aquifer water quality.</p> <p>Verify that the number, spacing, location, depth, and screened interval of the monitoring wells are approved by the Department prior to installation.</p> <p>Verify that all monitoring wells are constructed in accordance with the Regulations Governing the Construction of Water Wells and any subsequently approved guidelines, and that any variation from the existing guidelines is approved by the Department in writing prior to construction.</p> <p>(NOTE: Checklist item repeated in SO.140.20.DE., inert waste landfills.)</p> <p>Verify that a groundwater sampling plan is submitted to the Department at the time of permit application, and that it includes procedures and techniques for:</p> <ul style="list-style-type: none"> <li>- sample collection, preservation, and transport</li> <li>- analytical procedures and quality assurance</li> <li>- chain of custody control.</li> </ul> <p>Verify that the groundwater sample constituents meet the following criteria:</p> <ul style="list-style-type: none"> <li>- the parameters to be analyzed depend on the characteristics of the waste and are specified by the Department</li> <li>- test methods used to determine the parameters are those described in the most current legal edition of USEPA Publication Number SW-846, <i>Test Methods for Evaluating Solid Waste--Physical/Chemical Methods</i></li> </ul> <p>Verify that samples are collected at low flow rates (&lt;1 L/min).</p> <p>Verify that samples are field filtered only when turbidity exceeds 10 NTU.</p> <p>Verify that there is no repeat sampling of any well where turbidity exceeds 10</p>

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<p><b>SO.150.33.DE.</b> Groundwater monitoring systems in industrial landfills must meet specific reporting requirements (DE 7 1000 1301, Section 6.7.4) [Revised December 1999; Citation Revised January 2008].</p>	<p>NTU without Department approval.</p> <p>(NOTE: Checklist item repeated in SO.140.21.DE., inert waste landfills.)</p> <p>Verify that all groundwater, leachate and gas monitoring is conducted on a schedule that is determined by the Department and the results are submitted within 60 days of sampling.</p> <p>Verify that an annual hydrogeologic report is prepared, which includes:</p> <ul style="list-style-type: none"> <li>- tabulation of all leachate flow and quality and groundwater quality data from current and preceding years</li> <li>- graphical presentation of leachate flow and quality and ground water quality data from current and preceding years as required in the operating permit</li> <li>- maps showing groundwater flow patterns at each time of groundwater sampling</li> <li>- a discussion of the groundwater monitoring results</li> <li>- recommendations for future monitoring.</li> </ul>
<p><b>SO.150.34.DE.</b> Capping systems in industrial landfills must meet specific requirements (DE 7 1000 1301, Section 6.8.1) [Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.22.DE., inert waste landfills.)</p> <p>Verify that, upon closure of the landfill or landfill cell a capping system that will control the emission of gas (if applicable), promote the establishment of vegetative cover, and minimize infiltration and percolation of water into, and prevent erosion of, the waste throughout the postclosure care period is installed.</p> <p>Verify that the capping system is in place 180 days following final waste disposal activity.</p> <p>Verify that the capping system extends beyond the edge of the lined areas.</p>
<p><b>SO.150.35.DE.</b> Capping systems in industrial landfills must be composed of certain elements (DE 7 1000 1301, Section 6.8.2) [Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.23.DE., inert waste landfills.)</p> <p>Verify that a final grading layer on the waste, consisting of at least 6 in. of soil, to attain the final slope and provide a stable base for subsequent system components is installed, and that daily and intermediate cover may be used for this purpose.</p> <p>Verify that in impermeable layer exists, consisting of at least:</p> <ul style="list-style-type: none"> <li>- a 30 mil geomembrane underlain by geotextile</li> <li>- 24 in. of clay at a hydraulic conductivity of <math>1 \times 10^{-7}</math> cm/s or depth of equivalent material having a hydraulic conductivity less than <math>1 \times 10^{-7}</math> cm/s, such depth to be determined based on the hydraulic conductivity of 24 in. of clay at a hydraulic conductivity of <math>1 \times 10^{-7}</math> cm/s.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>SO.150.36.DE.</b> Final slopes in industrial landfills must meet specific requirements (DE 7 1000 1301, Section 6.8.3) [Citation Revised January 2008].</p> <p><b>SO.150.37.DE.</b> Industrial landfills must follow general operation and maintenance standards (DE 7 1000 1301, Section 6.9.1) [Citation Revised January 2008].</p>	<p>(NOTE: Alternative materials may be used for the impermeable layer with prior written approval of the Department.)</p> <p>Verify that the final cover exists of:</p> <ul style="list-style-type: none"> <li>- 18 in. of soil to provide rooting depth and moisture for plant growth</li> <li>- 6 in. of topsoil or other material approved by the Department to support the proposed vegetation</li> <li>- a suitable layer of alternative material or combination thereof to assure adequate rooting and moisture retention to support the proposed vegetation.</li> </ul> <p>(NOTE: A suitable vegetation dependent upon the quality and characteristics of the topsoil and compatible with the intended final use of the facility should be proposed, and maintenance schedules and application rates for fertilizer and mulch are also submitted for approval.)</p> <p>(NOTE: Checklist item repeated in SO.140.24.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the grades of the final slope are constructed in accordance with the following minimum standards:</p> <ul style="list-style-type: none"> <li>- the final grade of the top slope, after allowing for settlement and subsidence, is designed to promote runoff</li> <li>- the final grades of the side slopes are, at a maximum, 3 horizontal to one vertical (3:1).</li> </ul> <p>Verify that the top and side slopes are maintained to prevent erosion of the capping system and to ensure complete vegetation cover.</p> <p>(NOTE: Checklist item repeated in SO.140.25.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that industrial landfills meet the following general operation and maintenance standards:</p> <ul style="list-style-type: none"> <li>- operated so as to create an aesthetically desirable environment and to preclude degradation of land, air, surface water, or groundwater</li> <li>- maintained and operated to conform with the approved Plan of Operation.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>SO.150.38.DE.</b> Industrial landfills must follow certain details of operation and maintenance regarding spreading and compacting (DE 7 1000 1301, Section 6.9.2.1) [Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.26.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the working face is confined to the smallest practical area, as is consistent with the proper operation of trucks and equipment.</p> <p>Verify that the waste is spread in layers and compacted by repeated passes of the compacting equipment to obtain the degree of compaction specified in the Solid Waste permit.</p>
<p><b>SO.150.39.DE.</b> Industrial landfills must meet specific cover details of operation and maintenance (DE 7 1000 1301, Section 6.9.2.2) [Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.27.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that approved cover material is applied at a frequency and thickness specified by the Department.</p>
<p><b>SO.150.40.DE.</b> Industrial landfills must control certain nuisances and hazards (DE 7 1000 1301, Section 6.9.2.3) [Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.28.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the operation of the landfill does not result in odors associated with solid waste being detected offsite.</p> <p>Verify that the scattering of refuse and wind-blown litter is controlled by the use of portable fences, natural barriers, or other suitable methods, and that no refuse or litter is allowed to migrate offsite.</p> <p>Verify that the landfill is operated in a manner which eliminates, to the extent possible, dust problems, and fires.</p>
<p><b>SO.150.41.DE.</b> Industrial landfills must meet specific access requirements (DE 7 1000 1301, Section 6.9.2.4) [Revised December 1999; Citation Revised January</p>	<p>(NOTE: Checklist item repeated in SO.140.29.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that access to the site is limited to those persons authorized to use the site for the disposal of solid waste and to those hours when an attendant is on duty, but</p>

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<p>2008].</p> <p><b>SO.150.42.DE.</b> Industrial landfills must follow certain salvaging regulations (DE 7 1000 1301, Section 6.9.2.5) [Citation Revised January 2008].</p> <p><b>SO.150.43.DE.</b> Industrial landfills must be sufficiently staffed (DE 7 1000 1301, Section 6.9.2.6) [Citation Revised January 2008].</p> <p><b>SO.150.44.DE.</b> Certain requirements apply to equipment in industrial landfills (DE 7 1000 1301, Section 6.9.2.7) [Citation Revised January 2008].</p> <p><b>SO.150.45.DE.</b> Industrial landfills must follow specific employee health and safety procedures (DE 7 1000 1301, Section 6.9.2.8) [Citation</p>	<p>that this does not limit the right of entry by the Secretary or his duly authorized designee pursuant to 7 Delaware Code, Section 6024.</p> <p>Verify that access to the site by unauthorized persons is prevented by the use or barriers, fences, and gates, or other suitable means.</p> <p>(NOTE: Checklist item repeated in SO.140.30.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that salvage operations are organized so that they do not interfere with the proper disposal of any solid waste.</p> <p>Verify that no salvage operation is allowed which creates unsightliness, nuisances, health hazards, or potential safety hazards.</p> <p>(NOTE: Checklist item repeated in SO.140.31.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that sufficient numbers and types of personnel are available at the site to ensure capability for operation in accordance with these regulations.</p> <p>(NOTE: Checklist item repeated in SO.140.32.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that adequate numbers and types of equipment commensurate with the size of the operation are available at the site to ensure operation of the landfill in accordance with the provisions of these regulations and the plan of operation.</p> <p>Verify that waste handling equipment is cleaned routinely and maintained in accordance with the manufacturer's recommendations.</p> <p>(NOTE: Checklist item repeated in SO.140.33.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p>

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<p>Revised January 2008].</p> <p><b>SO.150.46.DE.</b> Industrial landfills must meet specific recordkeeping requirements (DE 7 1000 1301, Section 6.9.3) [Citation Revised January 2008].</p> <p><b>SO.150.47.DE.</b> Industrial landfills must meet specific reporting requirements (DE 7 1000 1301, Section 6.9.4) [Citation Revised January 2008].</p>	<p>Verify that employees at the site work under all appropriate health and safety guidelines established by OSHA.</p> <p>Verify that suitable shelter, sanitary facilities, and safe drinking water are provided for personnel at the site.</p> <p>Verify that a reliable telephone or radio communication system is provided for site personnel.</p> <p>Verify that first aid equipment is available at the site.</p> <p>(NOTE: Checklist item repeated in SO.140.34.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the following material is recorded, as it becomes available, and retained by the owner or operator of any new or existing landfill until the end of the postclosure care period of the landfill:</p> <ul style="list-style-type: none"> <li>- records demonstrating that liners, leachate control systems, cover, capping system, and all monitoring systems are constructed or installed in accordance with design criteria</li> <li>- monitoring, testing, or analytical data where required</li> <li>- volume and/or weight of wastes received</li> <li>- any additional records specified by the Department.</li> </ul> <p>(NOTE: Checklist item repeated in SO.140.35.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that a report summarizing facility operations for the preceding calendar year is submitted to the Department on an annual basis.</p> <p>Verify that the report describes and summarizes all solid waste disposal, environmental monitoring, and construction activities conducted within the year covered by the report, and that the reports includes, but is not necessarily limited to, the following:</p> <ul style="list-style-type: none"> <li>- the volume or tonnage of solid waste landfilled at the facility</li> <li>- the estimated remaining capacity of the facility, in both tonnage and years</li> <li>- leachate quantity and quality data</li> <li>- gas monitoring data</li> <li>- an updated estimate of the cost of closure and postclosure care for the facility</li> <li>- any intentional or accidental deviations from the approved Plan of Operation,</li> </ul>

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<p><b>SO.150.48.DE.</b> Specific prohibitions exist for industrial landfills (DE 7 1000 1301, Section 6.9.5) [Revised December 1999; Citation Revised January 2008].</p> <p><b>SO.150.49.DE.</b> Industrial landfills must follow certain general closure requirements (DE 7 1000 1301, Section 6.10.1) [Citation Revised January 2008].</p> <p><b>SO.150.50.DE.</b> Industrial landfills must submit required closure notification (DE 7 1000 1301, Section 6.10.2) [Revised December 1999; Citation Revised January 2008].</p>	<p>and any unusual situations encountered during the year - all construction or corrective work conducted on the site in accordance with approved plans or to achieve compliance with these regulations.</p> <p>(NOTE: Any additional reports specified in the Solid Waste permit must also be submitted.)</p> <p>(NOTE: Checklist item repeated in SO.140.36.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that open burning of any solid waste is prohibited within the active portion of the landfill.</p> <p>Verify that scavenging is prohibited on any landfill site.</p> <p>Verify that no wastes other than those specified in the permit are disposed of at the facility.</p> <p>(NOTE: Checklist item repeated in SO.140.37.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that completed industrial landfills or landfill cell(s) are closed in a manner that:</p> <ul style="list-style-type: none"> <li>- minimizes the need for further maintenance</li> <li>- minimizes the postclosure escape of solid waste constituents, leachate, and landfill gases to the surface water, groundwater, or atmosphere.</li> </ul> <p>(NOTE: Checklist item repeated in SO.140.38.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that a conceptual closure plan for a new industrial landfill is submitted at the time of initial (i.e., construction) permit application.</p> <p>Verify that at least 180 days prior to the projected date when wastes will no longer be accepted at the landfill or cell, written notification of intent to close the facility or cell is submitted to the Department, and that a closure schedule and a closure</p>

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<p><b>SO.150.51.DE.</b> Industrial landfill closure plans must contain specific information (DE 7 1000 1301, Section 6.10.3) [Revised December 1999; Citation Revised January 2008].</p>	<p>plan or revised closure plan are also submitted.</p> <p>Verify that a closure permit is obtained before commencing closure of a completed landfill or landfill cell.</p> <p>Verify that, if the Department determines that the closure plan and closure schedule are sufficient to ensure closure in accordance with performance standards, it issues a closure permit.</p> <p>Verify that a copy of the closure plan is maintained at the facility or at some other location designated by the owner or operator through the postclosure care period of the facility.</p> <p>(NOTE: Checklist item repeated in SO.140.39.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that a description of the methods, procedures, and processes to be used to close a landfill and each individual cell thereof in accordance with the closure performance standard is included.</p> <p>Verify that the closure plan includes a description of the capping system, including a description of the system design, the type of cover to be used, and a discussion of how the capping system will achieve the objectives of SO.150.49.DE.</p> <p>Verify that the closure plan contains a description of other activities necessary to satisfy the closure performance standard, including, but not limited to, the removal or disposal of all nonlandfilled wastes located onsite (e.g., wastes from landfill runoff collection ponds).</p> <p>Verify that the plan includes a plan for postclosure care of the facility sufficient to ensure that the standards described in SO.150.49.DE. will be met, this includes:</p> <ul style="list-style-type: none"> <li>- a description of the monitoring and maintenance activities required and the frequency at which these activities are performed</li> <li>- the name, address, and telephone number of the person or office to contact about the facility during the postclosure period</li> <li>- a description of the planned uses of the property during the postclosure period</li> <li>- a topographical map of the site showing the proposed post-closure elevation with reference to mean sea level</li> <li>- a closure construction quality assurance plan.</li> </ul> <p>Verify that a plan for control and/or recovery of landfill gases is included, if appropriate.</p>

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<p><b>SO.150.52.DE.</b> Industrial landfills must meet minimum closure requirements (DE 7 1000 1301, Section 6.10.4) [Revised December 1999; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.40.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the Department is notified at least 30 working days prior to commencing closure activities at the landfill, and that the Department inspects the site, and any corrective work which the Department deems necessary is performed.</p> <p>Verify that finished portions of the landfill receive a capping system.</p> <p>Verify that finished portions of the landfill are planted with appropriate vegetation to promote stabilization of the cover.</p> <p>Verify that the closure is carried out in accordance with the approved closure plan and according to the approved closure schedule, and that any significant deviations from the plan or the schedule are approved by the Department prior to being initiated.</p> <p>Verify that, upon closure of an entire landfill, all nonlandfilled wastes located onsite are removed or disposed of in a manner approved by the Department.</p> <p>Verify that, after closure of the facility, the site is returned to an acceptable appearance consistent with the surrounding area and the intended use of the land.</p> <p>Verify that when closure is completed, certification by a professional engineer registered in Delaware that the landfill or cell has been closed in accordance with the specifications in the approved closure plan is submitted to the Department.</p> <p>Verify that the Department inspects the cell or facility and certifies complete closure.</p>
<p><b>SO.150.53.DE.</b> Industrial landfills must follow general postclosure care requirements (DE 7 1000 1301, Section 6.11.1) [Revised December 2004; Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.41.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that postclosure care is continued for 30 yr after the completion of closure.</p> <p>(NOTE: The Department may remove one or more of the postclosure care requirements, reduce the length of the postclosure care period or, extend the postclosure care period based upon its determination to protect human health and environment.)</p> <p>Verify that if at any time during the postclosure care period there is evidence of a</p>

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<p><b>SO.150.54.DE.</b> Industrial landfills must meet minimum postclosure care requirements (DE 7 1000 1301, Section 6.11.2) [Citation Revised January 2008].</p>	<p>contaminant release from the landfill that presents a significant threat to human health or the environment, action is taken to mitigate the threat.</p> <p>(NOTE: Checklist item repeated in SO.140.42.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that postclosure care maintains the integrity and effectiveness of the capping system, including making repairs as necessary to correct the effects of settling, subsidence, erosion, or other events, and preventing run-on and runoff from eroding or otherwise damaging the cap.</p> <p>Verify that the cover is reseeded if insufficient vegetation exists to stabilize the surface.</p> <p>Verify that the leachate collection and treatment systems are maintained and operated until the Department determines that the leachate no longer poses a threat to human health or the environment, and the leachate quantity and quality data are submitted to the Department for those parameters and at such frequencies as specified by the Department.</p> <p>Verify that the groundwater monitoring system is maintained and operated as regulated, and that groundwater quality data is submitted as specified by the Department.</p> <p>Verify that the gas control system is maintained and operated as regulated, and that gas data are submitted as specified by the Department.</p> <p>Verify that the surface water management system is maintained and monitored according to regulations.</p>
<p><b>SO.150.55.DE.</b> Specific prohibitions exist for postclosure care in industrial landfills (DE 7 1000 1301, Section 6.11.3) [Citation Revised January 2008].</p>	<p>(NOTE: Checklist item repeated in SO.140.43.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that standing water is not allowed on the closed landfill.</p> <p>Verify that open burning is not allowed on the closed landfill.</p> <p>Verify that, unless approved by the Department, no activities are conducted on a closed landfill that will disturb the integrity of the capping system, liner, containment system, or monitoring systems.</p> <p>Verify that access to the closed landfill is limited to those persons who are</p>



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SOLID WASTE MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>SO.150.56.DE.</b> Industrial landfills must follow postclosure land use requirements (DE 7 1000 1301, Section 6.11.4) [Citation Revised January 2008].</p>	<p>engaging in activities which are compatible with the intended postclosure use of the site.</p> <p>(NOTE: Checklist item repeated in SO.140.44.DE., inert waste landfills.)</p> <p>(NOTE: This checklist item applies to those landfills that dispose of only industrial waste.)</p> <p>Verify that the postclosure land use plan approved by the Department is implemented.</p>

**COMPLIANCE CATEGORY:  
SOLID WASTE MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>SO.165.</b></p> <p><b>YARD WASTE/ COMPOSTING</b></p> <p><b>SO.165.1.DE.</b> All composting operations must have written Departmental approval (DE 7 1000 1301, Section 2.5.1) [Citation Revised December 1999; Revised December 2001; Revised December 2004; Revised January 2008].</p>	<p>Verify that composting operations obtain written approval from the Department prior to commencing the composting operation for its written plan of operation.</p> <p>(NOTE: Individual household composting is exempt from these requirements.)</p>



## SECTION 10

### STORAGE TANK MANAGEMENT

#### Delaware Supplement, January 2010

This section covers the state requirements for Storage Tank Management and is intended to supplement the U.S. TEAM Guide. Refer to the U.S. TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

#### Regulations Incorporated by Reference

- In DE 7 1000 1120, Section 4, the State of Delaware adopts by reference 40 Code of Federal Regulations (CFR) 60, Subpart K, Standards of Performance for Storage Vessels for Petroleum Liquids for which construction, reconstruction, or modification commenced after 11 June 1973 and prior to 19 May 1978, amended in the *Federal Register* on 8 April 1987 [Revised January 2010].
- In DE 7 1000 1120, Section 13, the State of Delaware adopts by reference 40 CFR 60, Subpart Ka, Standards of Performance for Storage Vessels for Petroleum Liquids for which construction, reconstruction, or modification commenced after 18 May 1978 and prior to 1 July 1986, amended in the *Federal Register* on 8 April 1987 [Revised January 2010].
- In DE 7 1000 1120, Section 27, the State of Delaware adopts by reference 40 CFR 60, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for which construction, reconstruction, or modification commenced after 23 July 1984 [Revised January 2010].

#### Definitions

- *Above Ground Release* - any release to the surface of the land or to surface water. This includes, but is not limited to, releases from the above ground portion of an UST system and above ground releases associated with overfills and transfer operations as the regulated substance moves to or from an UST system (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Aboveground Storage Tank or AST* - a single aboveground containment vessel having a capacity of greater than 250 gallons and currently or previously having contained regulated substances on or after January 1, 1992. The term includes all ancillary aboveground pipes and dispensing systems up to the first point of isolation and all ancillary underground pipes and dispensing systems. Within this definition, the word "vessel" includes any container that can be partially visually inspected, from the exterior, in an underground area. The term AST does not include any of the following (DE ADC 7 1000 1352 2.0) [Added January 2006; Revised December 2008]:
  1. septic tank
  2. pipeline facility (including gathering lines) regulated under:
    - a. the Natural Gas Pipeline Safety Act of 1968 as amended [49 U.S.C. 1671 et seq.]
    - b. the Hazardous Liquid Pipeline Safety Act of 1979 as amended [49 U.S.C. 2001 et seq.]
    - c. Pipelines regulated pursuant to 33 U.S.C. and 49 CFR 195 Transportation of Hazardous Liquids by Pipeline
    - d. Pipelines regulated pursuant to 46 U.S.C. and 33 CFR 154 Facilities transferring oil or hazardous material in bulk and 33 CFR 156 Oil and hazardous material transfer operations
  3. surface impoundment, pit, pond, or lagoon
  4. liquid trap or associated gathering lines directly related to oil or gas production or gathering operations
  5. flow through process tank that contains a regulated substance or substances and that forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of material during the operation of the process. Flow Through Process Tanks include, but are not limited to,

seal tanks, surge tanks, bleed tanks, check and delay tanks, phase separator tanks, or tanks in which physical or chemical change of a material is accomplished. A flow through process tank does not include: 1) a tank that is used for the storage of material before its introduction into a production process; 2) a tank that is used for storage of products or by-products from the production process; or 3) a tank that is used only to recirculate material

6. transformer, regulators and breakers used for the sole purpose of electrical power distribution

7. containment vessels operated as part of a publicly owned treatment works as defined pursuant to Title 7 Del.C. Ch. 60, Environmental Controls, 6002 and regulated pursuant to Title 7 Del.C. Ch. 60, Environmental Controls, 6003 or used for the storage and conveyance of wastewater to a treatment plant regulated in accordance with the requirements of the Clean Water Act.

- *Accidental Release* - any sudden or non-sudden release of regulated substance from an UST system that results in a need for corrective action and/or compensation for bodily injury or property damage neither expected nor intended by the tank Owner or Operator (DE 7 1 000 1351, Part A 2.1) [Added January 2006; Revised December 2008].
- *Agricultural/Farm AST* - an AST less than 40,000 gallons containing a regulated substance, the contents of which are applied to the soil, crops, or livestock or ingested by livestock and used solely to directly facilitate the production of crops, livestock, livestock products or golf course turf. Crops include fish hatcheries, rangeland, cropland and nurseries including turf grass growing operations. Agricultural/Farm ASTs do not include ASTs used to store substances used in a manufacturing process. A manufacturing process does not include Agricultural/Farm ASTs used to store and blend regulated substances for retail sales (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Agricultural Farm Tank* - a tank located on a tract of land devoted to the production of crops or raising animals, including fish, and associated residences and improvements. An agricultural/farm tank is located on the farm property. Agricultural/Farm includes fish hatcheries, rangeland, and nurseries with growing operations (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Airport Hydrant Fuel System* - a fuel distribution system utilizing underground piping that supplies vertical pipe dispensing points located in flush, surface mounted, below grade pits (DE 7 1000 1351, Part A 2.1) [Added December 2008].
- *Ancillary Equipment* - any devices including, but not limited to, such devices as piping, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of regulated substances to and from a UST (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Ancillary Piping* - all piping, including valves, elbows, joints, flanges, and flexible connectors, attached to an AST through which regulated substance may flow (DE 7 1000 1352 2.0) [Citation Revised December 2008].
- *API* - American Petroleum Institute (DE 7 1000 1351, Part A 2.1) [Added December 2008].
- *ASTM* - American Society for Testing and Materials (DE 7 1000 1351, Part A 2.1) [Added December 2008].
- *Below Ground Release* - any release to the subsurface of the land and to groundwater. This includes, releases from the belowground portions of a UST system and belowground releases as associated with overfills and transfer operations as the regulated substance moves to or from a UST (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Beneath the Surface of the Ground* - beneath the ground surface or otherwise covered with earthen materials (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].

- *Blanketing* - the technique of maintaining the ullage volume in a regulated AST below the limiting oxidant concentration (LOC) by the use of an Inert Gas (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Bulk Gasoline Plant* - a gasoline storage and distribution facility with an average daily throughput equal to or less than 76,000 L (20,000 gal) which receives gasoline from bulk terminals by trailer transport, stores it in tanks, and subsequently dispenses it via account trucks to local farms, businesses, and service stations (DE 7 1000 1101) [Citation Revised January 2008; Citation Revised December 2008].
- *Bulk Gasoline Terminal* - a gasoline storage facility which receives gasoline from its supply source primarily by pipeline, ship, or barge, and delivers gasoline to bulk gasoline plants or to commercial or retail accounts primarily by tank truck and has an average daily throughput of more than 76,000 L (20,000 gal) of gasoline (DE 7 1000 1101) [Citation Revised January 2008; Citation Revised December 2008].
- *Bulk Storage* - as it is used in Part B, Section 12 of these regulations, means an AST which is used to store a flammable regulated substance and has the flammable regulated substance added to or withdrawn from the AST by a vessel, tanker truck, rail car or pipeline (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Cathodic Protection System* - a method to prevent corrosion to metal objects by forcing protective current from an external source onto the structure to be protected to counter or overcome any corrosion activity on its surface (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Cathodic Protection* - a technique to prevent the corrosion of a metal surface by making that surface the cathode of an electrochemical cell. Protection can be accomplished by means of a impressed current system or a sacrificial anode system (DE 7 1000 1351, Part A 2.1) [Added December 2008].
- *Change-in-Service* - a change in status of the UST system from either in service to out of service or a change in status of the UST system from out of service to in service (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Change In Service* - any change to a registered AST to include but not be limited to permanent change in nature of contents, removal, permanent change in contents, relocation, permanent closure in place, change in status from either in-service tank or out-of-service tank, conversion to storage of other than regulated substances (DE 7 1000 1352 2.0) [Added January 2006; Revised December 2008].
- *Change in Substance Stored* - the exchange of one substance stored in an UST system for another (DE 7 1000 1351, Part A 2.1) [Added December 2008].
- *Closed In Place* - the cleaning and filling of an UST system through the use of prescribed techniques to render it permanently unfit for service (DE 7 1000 1351, Part A 2.1) [Added December 2008].
- *Closure* - removing an AST from active use with the intent to not introduce a regulated substance into or otherwise use the AST for dispensing or storage of a regulated substance (DE 7 1000 1352 2.0) [Added December 2008].
- *Compatible* - the ability of two or more substances to maintain their respective physical and chemical properties upon contact with one another for the design life of the UST system under conditions likely to be encountered in the UST system (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Compatible* - the ability of two or more substances to maintain their respective physical and chemical properties upon contact with one another for the design life of an AST under conditions likely to be encountered at an AST facility (DE 7 1000 1352 2.0) [Added December 2008].

- *Connected Piping* - all underground piping including valves, elbows, joints, flanges, and flexible connectors attached to a UST system through which regulated substances flow. For the purpose of determining how much piping is connected to an individual UST system, the piping that joins two UST systems should be allocated equally between them (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Consumptive Use* - with respect to heating oil, consumed on the premises where stored for noncommercial purposes (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Consumptive Use* - with respect to heating fuel means consumed on the premises where stored (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Continuous Leak Detection* - the uninterrupted measurement of the contents or other characteristics or parameters of an AST which immediately notifies the operator of the failure of an AST to contain a regulated substance (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Dielectric Material* - a material that does not conduct direct electrical current. Dielectric coatings are used to electrically isolate UST systems from the surrounding soils. Dielectric bushings are used to electrically isolate portions of the UST system (e.g., tank from piping) (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Dispensing* - as it is used in Part B, Section 12 of these regulations, means an AST which stores a flammable regulated substance which is transferred directly from the AST into a portable container, or into the fuel tank of a motor, a motor vehicle or a boat to be used as a motor fuel (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Dispensing System* - any device including, but not limited to, hoses (rigid or flexible), piping, fittings, fixtures, gauges, alarms, rupture disks, pressure release valves, flanges, or valves and pumps that are used to distribute, meter or control the flow of regulated substance to and from an AST (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Electrical Equipment* - underground equipment that contains dielectric fluid that is necessary for the operation of equipment such as transformers and buried electrical cable (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Electrically Isolated* - the electrical separation of the AST from the piping and from other metallic structures and the environment by means of a nonconductive fitting or bushing (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Excavation Zone* - the volume containing the tank system and backfill material bounded by the ground surface, walls, and floor of the pit and trenches into which the UST system is placed at the time of installation (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Existing Tank* - a facility or tank for which installation of a tank system began prior to 12 July 1985 (DUST, Part A, Section 2).
- *Facility* - any location or part thereof containing one or more USTs (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Facility* - any location or part thereof containing or having contained one or more ASTs (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Field-Constructed* - an AST which is constructed by assembling on-site at a facility (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].

- *Fixed Roof* - an AST which has an immovable roof or cover used as the sole means to either contain the vapors from a regulated substance stored within the AST or prevent unwanted contaminants from entering the AST (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Flammable* - a regulated substance which meets the definition of an NFPA 30 flammable liquid (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Floating Roof* - an AST which has a movable roof or cover which floats or rides upon the surface of a regulated substance to contain vapors from a regulated substance stored within the AST or prevent unwanted contaminants from entering the AST (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Floating Roof* - a storage vessel cover consisting of a double deck, pontoon single deck, internal floating cover or covered floating roof, which rests upon and is supported by the petroleum liquid being contained, and is equipped with a closure seal or seals to close the space between the roof edge and tank wall (DE 7 1000 1101) [Added December 2008].
- *Flow-Through Process Tank* -
  1. a tank that forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of materials during the operation of the process. Flow-through process tanks do not include tanks used for the storage of materials prior to their introduction into the production process or for the storage of finished products or byproducts from the production process (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
  2. a tank that contains a regulated substance or substances and that forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of material during the operation of the process. Flow Through Process Tanks include, but are not limited to, seal tanks, surge tanks, bleed tanks, check and delay tanks, phase separator tanks, or tanks in which physical or chemical change of a material is accomplished. A Flow Through Process Tank does not include:
    - 1) a tank that is used for the storage of material before its introduction into a production process; 2) a tank that is used for storage of products or by-products from the production process; or 3) a tank that is used only to recirculate materials (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Free Product* -
  1. a regulated substance that is present as a nonaqueous phase liquid (e.g., liquid not dissolved in water) (DUST, Part A, Section 2).
  2. immiscible liquid phase regulated substance existing in the subsurface with a positive pressure such that it can flow into a well (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Gathering Lines* - any pipeline, equipment, facility, or building used in the transportation of oil or gas during oil or gas production or gathering operations (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Hazardous Substance UST system* - an UST system that contains a hazardous substance defined in Section 101(14) of the CERCLA, but not including any substance regulated as a hazardous waste under the *Resource Conservation and Recovery Act (RCRA)-C* or any mixture of such substances and petroleum and which is not a petroleum UST system (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Heating Fuel* - also known as heating oil, means a type of fuel oil that is one of seven technical grades. These grades are: No. 1, No. 2, No 4-light, No. 4-heavy, No. 5-light, No. 5-heavy, and No. 6 residual and other fuels used as substitutes for one of these fuels such as kerosene and diesel when used for heating purposes (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Heating Fuel or Heating Oil* - petroleum that is one of the eight technical grades: No. 1; No. 2; No.4-light; No. 4-heavy; No. 5-light; No. 5-heavy; No. 6 technical grade of fuel oil; other residential fuel oils (including Navy



Special Fuel Oil and Bunker C); and other fuels used as substitutes for one of these fuels such as kerosene or diesel when used for heating purposes. Heating oil is typically used in the operation of heating equipment, boilers, or furnaces (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].

- *Hydraulic Lift Tank* - a tank holding hydraulic fluid for a closed loop mechanical system that uses compressed air or hydraulic fluid to operate lifts, elevators, and other similar devices (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Impervious* - a material of sufficient thickness, density and composition that is impenetrable, or has a permeability of less than  $1 \times 10^{-7}$  cm/sec. to the regulated substance, and that will prevent the discharge to the lands, ground waters, or surface waters of the state of any regulated substance for a period of at least as long as the maximum anticipated time during which the regulated substance will be in contact with the material (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Impervious Material* - a material of sufficient thickness, density, and composition that is impenetrable to the regulated substance, has a permeability of less than  $1 \times 10^{-7}$  cm/s, and that will prevent the discharge to the lands, groundwater, or surface waters of the state of any regulated substance for a period of at least as long as the maximum anticipated time during which the regulated substance will be in contact with the material (DE 7 1000 1352 2.1) [Citation Revised December 2008].
- *Impressed Current System* - direct current supplied to a cathodic protection system (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Inert Gas* - a gas which is nonreactive with the contents of an AST. Inert gases may include but shall not be limited to nitrogen, carbon dioxide, helium, argon, xenon and krypton. An inert gas may consist of a mixture of different inert gases (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Inerting* - the technique by which a combustible mixture in the ullage volume of an AST is rendered non-ignitable by the addition of an inert gas which reduces the oxidant concentration below the limiting oxidant concentration (LOC) (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *In-Service* - a storage system that is not abandoned, contains regulated substances, and/or has regulated substances regularly added or withdrawn (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *In Service* - an AST that (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008]:
  1. is being actively maintained or operated
  2. contains a regulated substance or has a regulated substance regularly added to or withdrawn from the tank
  3. is emptied solely for the purpose of cleaning, routine maintenance, or a change in product, for a time period not to exceed 45 days.
- *Leak* - the failure of an AST to contain a regulated substance (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Leak Detection* - electronic, manual or mechanical measurement of the contents or other characteristics or parameters of an AST which notifies the operator of the failure of an AST to contain a regulated substance (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Liquid Trap* - sumps, well cellars, and other traps used in association with oil and gas production, gathering, and extraction operations (including gas production plants), for the purpose of collecting oil, water, and other liquids. These liquid traps may temporarily collect liquids for subsequent disposition or reinjection in to a production or pipeline stream, or may collect and separate liquids from a gas stream (DE 7 1000 1351, Part A 2.1) [Added December 2008].

- *Local Government* - shall have the meaning given this term by applicable state law and includes Indian tribes. The term is generally intended to include (DE 7 1000 1351, Part A 2.1 and DE 7 1000 1352 2.0) [Added December 2008]:
  1. counties, municipalities, townships, separately chartered and operated special districts (including local government public transit systems and redevelopment authorities), and independent school districts authorized as governmental bodies by state charter or constitution
  2. special districts and independent school districts established by counties, municipalities, townships, and other general purpose governments to provide essential services.
  
- *Maintenance* - the normal operation upkeep to prevent a UST system from releasing product (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
  
- *Major Repair or Major Alteration* - operations that require cutting, addition, removal and/or replacement of the annular plate ring, the shell to bottom weld, or a sizable portion of the shell of an AST. These include but are not limited to the following (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008]:
  1. the installation of any shell penetration beneath the design liquid level larger than 12 inches national pipe standard, or any bottom penetration located within 12 in. of the shell.
  2. the removal and replacement or addition of any shell plate beneath the design liquid level, or any annular plate ring material where the longest dimension of the replacement plate exceeds 12 in.
  3. the complete or partial (more than one-half of the weld thickness) removal and replacement of more than 12 in. of vertical weld joining shell plates, or radial weld joining the annular plate ring.
  4. the installation of a new bottom. This does not include new bottoms in tanks where the foundation under the new bottom is not disturbed and either condition 1 or 2 are met:
  5. for tanks with annular rings, the annular ring remains intact.
  6. for tanks without annular rings, the repair does not result in welding on the existing bottom within the critical zone.
  7. the removal and replacement of any part of the weld attaching the shell to the bottom or to the annular ring.
  8. jacking of a tank shell.
  
- *Monitor Well* - a well installed in accordance with Delaware's Regulations Governing the Construction of Water Wells that will be used for the monitoring of ground water quality (DE 7 1000 1351, Part A 2.1 and DE 7 1000 1352 2.0) [Revised December 2008].
  
- *Motor Fuel* - petroleum or other substance that includes motor gasoline, aviation gasoline, No. 1 or No. 2 diesel fuel, alternative fuels including but not limited to ethanol, methanol or biodiesel and is typically used in the operation of a motor engine quality (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
  
- *Motor Fuel* - petroleum or a petroleum-based substance which is typically used in the operation of a motor vehicle, small engine or aircraft engine, including: (DE 7 1000 1352 2.0) [Added December 2008]:
  1. Motor gasoline;
  2. Aviation gasoline;
  3. No. 1 or No. 2 diesel fuel
  4. Any grade of gasohol.
  
- *New Tank or New facility* - a tank or facility for which installation began on or after 12 July 1985 (DUST, Part A, Section 2).
  
- *Noncommercial Purposes* - with respect to motor fuel, heating oil, or hazardous substance means the product in the UST system is not used for any activities that result in monetary gain (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
  
- *Noncommercial Purposes* - with respect to motor fuel or motor oil means the product in the AST is not used for any activities that result in monetary gain (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].

- *Non-Ignitable* - a gas or vapor in the presence of an oxidant in which combustion cannot be initiated by the introduction of an ignition source such as a flame, spark, or heat (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Observation Tube* - a leak detection device placed within the excavation zone which reaches the water-table and can be inspected periodically to determine whether contamination of the aquifer by a regulated substance has occurred (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *On the Premises Where Stored* - with respect to heating fuel means UST systems located on the same property where the stored heating oil is used (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Operational Life* - the period beginning when installation of the tank system has commenced until the tank system is properly closed (DUST, Part A, Section 2).
- *Operational Life* - the period beginning when installation of the UST system has commenced until the time the UST system is properly removed or closed in place in accordance with the requirements of these regulations (DE 7 1000 1351, Part A 2.1) [Added December 2008].
- *Operator* - any person who has responsibility for the care, custody, and control of the daily operation of an UST system, including but not limited to responsibility conferred by lease, contract or other form of a authorization agreement. An Operator's duties and responsibilities under 7 Del.C. Chapter 74 and these Regulations continue regardless of whether the UST system is in fact operational (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Operator* - a person who has responsibility for the care, custody, and control of the daily operation of an AST, including but not limited to responsibility conferred by lease, contract or other form of authorization agreement (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Orphan Tank* - (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008]:
  1. a tank for which the last person to operate the tank cannot be identified; or
  2. a tank on property as to which the property owner can establish that the owner did not obtain and could not have obtained, through the exercise of reasonable and due diligence, knowledge of the existence of the tank prior to purchase of the property.
- *Out of Service* - an UST system which: (DE 7 1000 1351, Part A 2.1) [Revised December 2008]
  1. Is not in use; that is, which does not have regulated substances added to or withdrawn from the UST system, and
  2. Is intended to be placed back In Service.
- *Out-Of-Service* - an AST that is (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008]:
  1. designated as an out-of-service by the owner and operator and the owner and operator shall provide notification to the Department on a Department registration form; or
  2. an empty tank; or
  3. not in use, in that it has not had, within any 45-day period, a regulated substance transferred into or withdrawn from the tank and has been drained of all contents and is empty.
- *Overfill Release* - a release that occurs when a tank is filled beyond its capacity, resulting in a discharge of the regulated substance to the environment (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Oxidant* - any material that can react with a regulated substance to support combustion in the ullage of an AST. Oxygen in a air is the most common oxidant (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].

- *Person* - any individual, trust, firm, joint stock company, Federal agency, corporation (including a government corporation), partnership, association, state municipality, commission, political subdivision of a state, or any interstate body, a consortium, a joint venture, a commercial entity, and the United States Government (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Person* - an entity, individual, trust, firm, joint stock company, federal agency, corporation (including a government corporation), partnership, company, association, state, municipality, commission, political subdivision of a state, or any interstate body (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Person-in-Charge* - the UST owner or person designated by the UST owner, an UST operator, or any person delivering regulated substance to an UST, as the one with direct supervisory responsibility for an activity or operation at a facility, such as the transfer of a regulated substance to or from any point in the Facility (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Permeability* - the ease with which fluid can move through a material and is measured by the rate of flow in suitable units (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Pipe or Piping* - an impermeable hollow cylinder or tubular conduit that conveys or transports regulated substances, or is used for venting, filling, or removing regulated substances (DE 7 1000 1351, Part A 2.1) [Added January 2006; Citation Revised December 2008].
- *Pipe* - an impermeable hollow cylinder or tubular conduit that conveys or transports regulated substances, or is used for venting, filling, or removing regulated substances (DE 7 1000 1352 2.0) [Revised December 2008].
- *Pipeline Facilities* - new and existing pipe rights-of-way and any associated equipment (including gathering lines), facilities, or buildings (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Positive Pressurized Delivery System* - a regulated substance delivery system in which part or all of the system is continuously under pressure greater than the atmospheric pressure (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Regulated Substance* - (DE 7 1000 1351, Part A 2.1) [Revised December 2008]
  1. one percent (1 percent) or more by volume of a hazardous substance as defined in 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 (42 U.S.C. 9601(14)) and any amendments thereto; but not including any substance regulated as a hazardous waste under RCRA Subtitle C
  2. one tenth percent (.1 percent) or more by volume of a carcinogen as defined by EPA in the Integrated Risk Information System (IRIS) April 2002 and as updated
  3. petroleum, including crude oil or any fraction thereof, including without limitation petroleum and substances containing petroleum comprised of a complex blend of hydrocarbons derived from crude oil through processes of separation, conversion, upgrading and finishing, such as motor fuels, motor oil, heating fuel, residual fuel oils, lubricants, petroleum solvents, used oils, and biodiesel
  4. alternative fuels including but not limited to ethanol and methanol in concentrations up to one hundred percent (100 percent)
  5. any mixture of the foregoing 1 through 4.
- *Regulated Substance* - means a liquid or gas that (DE 7 1000 1352 2.0) [Citation Revised December 2008]:
  1. contains one percent or more of a hazardous substance as defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980 [42U.S.C. 9601(14)] and any amendments thereto
  2. contains 0.1 percent or more of a carcinogen as defined by EPA in the Integrated Risk Information System (IRIS) April 2002 and as updated
  3. is a petroleum product, including crude oil or any fraction thereof, which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute);

4. is a substance determined by the Secretary through regulation to present a risk to public health or welfare or the environment if released into the environment.

- *Release* - any spilling, overfilling, leaking, emitting, discharging, escaping, leaching or disposing of a regulated substance into groundwater, surface water, air or soils that is not permitted by law, regulation or permit (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Release* - the spilling, leaking, discharging, leaching, or disposing of a regulated substance into groundwater, surface water, soil, or air that is not permitted by law, regulation or permit (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Release Detection* – a method or process of determining whether a release of a regulated substance has occurred from the UST system into the environment or into the interstitial space between the UST system and its secondary barrier or secondary containment around it (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Release Prevention Barrier* - an impervious barrier that serves to prevent the escape of regulated substance or to contain or channel the released regulated substance for leak detection (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Removal or Removed* - the process of removing and disposing of a UST system, through the use of prescribed techniques for the purging of residues and vapors and removal of the vessel from the ground (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Repair* - to restore or replace an UST system component that is not functioning per manufacturer's specifications or department requirements (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Residential Tank* - a tank located on a single family property used primarily for dwelling purposes (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Retrofit* - to modify an UST system to meet standards contained in these regulations (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Retrofit* - to modify an AST to meet standards contained in these regulations (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Sacrificial Anode* - a device to reduce or prevent corrosion of a metal in an electrolyte by galvanic coupling to a more anodic metal (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Sacrificial Anode System* - a system to control corrosion of a metal surface which entails installing an electrode of an electrochemical cell that will oxidize preferentially to the metal surface that has been made the cathode of the electrochemical cell (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Secondary Containment* - a system installed to prevent any volume of regulated substance released from the primary containment tank and piping system from reaching the soils or water outside the system for the anticipated period of time necessary to detect and recover the released substance (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Secondary Containment* - a containment system designed and constructed to retain any regulated substance that leaves the primary containment including an AST and ancillary piping and prevent any regulated substance from reaching the surface water, groundwater, or adjacent land before cleanup occurs. Included are structures/ devices sufficiently impermeable to contain released regulated substances for a period of time sufficient for the cleanup and removal of captured material including (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008]:
  1. dikes, berms or retaining walls

2. curbing
  3. diversion ponds, holding tanks, sumps
  4. vaults
  5. double-walled tanks
  6. liners external to the tanks
  7. other means as approved by the Department.
- *Secretary* - the Secretary of the Department of Natural Resources and Environment Control or a duly authorized designee (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
  - *Septic Tank* - a water tight covered receptacle designed to receive or process, through liquid separation or biological digestion, the sewage discharged from a building sewer. The effluent from such receptacle is distributed for disposal through the soil and settled solids and scum from the tank are pumped out periodically and hauled to a treatment facility (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
  - *Shop-Fabricated* - an AST which is constructed at a tank manufacturer's plant and transported to a facility for installation (DE 7 1000 1352 2.0) [Added December 2008].
  - *Site Assessment* - means to measure for the presence of a release where contamination is most likely to be present at an UST site. Selection of sample types, sample locations and measurement methods shall be based on the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a release. A site assessment is not restricted to the property containing the UST system (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
  - *State* - the State of Delaware (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
  - *Storage Vessel* - any tank, reservoir, or container used for the storage of volatile organic liquids, but does not include: (DE 7 1000 1124, Section 2) [Revised January 2008]:
    1. frames, housing, auxiliary supports or other components that are not directly involved in the containment of liquids or vapors; or
    2. subsurface caverns or porous rock reservoirs.
  - *Stormwater or Wastewater Collection System* - piping, pumps, conduits, and any other equipment necessary to collect and transport the flow of surface water runoff resulting from precipitation, or domestic, commercial, or industrial wastewater to and from retention areas or any areas where treatment is designated to occur. The collection of stormwater and wastewater does not include treatment except where incidental to conveyance (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
  - *Submerged Fill* - the method of filling a delivery vessel or storage vessel where product enters within 150 millimeters (mm) (5.9 inches [in.]) of the bottom of the delivery or storage vessel. Bottom filling of delivery and storage vessels is included in this definition (DE 7 1000 11 01) [Revised January 2008; Citation Revised December 2008].
  - *Surface Impoundment* - a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials (although it may be lined with manmade materials), that is not an injection well (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
  - *Tank* - a stationary containment vessel or stationary device designed to contain an accumulation of regulated substances and constructed of nonearthen materials (e.g., concrete, steel, plastic) that provides structural support (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
  - *Tank Management Branch* - the Tank Management Branch of the Division of Air and Waste Management in the Delaware Department of Natural Resources and Environmental Control (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].

- *Ullage* - the volume of a fixed roof AST which does not contain a regulated substance in liquid form. It is synonymous with the vapor space (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Underground Area* - an underground room, such as a basement, cellar, shaft, or vault, providing enough space for physical inspection of the exterior of the tank situated on or above the surface of the floor (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Underground Pipe* - piping or portions of piping meeting all of the following conditions (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008]:
  1. is physically underground and cannot be visually inspected
  2. conveys or transports a regulated substance stored in the AST
  3. is located between the AST and the first vessel, tank or other piece of equipment (other than piping components such as pumps, valves and the Dispensing System) that does not meet the definition of an AST.
- *Underground Release* - any below ground release (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Underground Storage Tank (UST)* - any one or combination of tanks including underground pipes connected thereto, which is used to contain an accumulation of regulated substances, and the volume of which, including the volume of underground pipes connected thereto, is 10 percent or more beneath the surface of the ground. Such term does not include any (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
  1. septic tank
  2. pipeline facility (including gathering lines) regulated under:
    - a. The *Natural Gas Pipeline Safety Act* of 1968 (49 U.S.C. App. 1671, et seq.)
    - b. The *Hazardous Liquid Pipeline Safety Act* of 1979 (49 U.S.C. App. 2001, et seq.)
    - c. which is an intrastate pipeline facility regulated under state laws comparable to either the *Natural Gas Pipeline Safety* or *Hazardous Liquid Pipeline Safety Acts*
  3. surface impoundment, pit, pond, or lagoon
  4. stormwater or wastewater collection system
  5. flow-through process tank
  6. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations
  7. storage tank situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor
  8. the terms "Underground Storage Tank" or USTs, does not include any pipes connected to any tank that is described in 1 through 7 of this definition.
- *Underground Storage Tank (UST) System* - a UST, connected underground piping and its associated ancillary equipment and containment system, if any (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Used Oil* - a petroleum-based or synthetic oil used as an engine lubricant, engine oil, motor oil, or lubricating oil for use in an internal combustion engine, or a lubricant for motor vehicle transmissions, gears or axles which through use, storage, or handling has become unsuitable for its original purpose due to the presence of impurities or loss of original properties (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Used Oil System* - a UST system used for storing used oil and its associated ancillary equipment and containment system (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008].
- *Upgrade* - the addition of a component to improve the ability of an UST system to prevent or detect the release of regulated substances from the UST system (DE 7 1000 1351, Part A 2.1) [Revised December 2008].

- *Upper Flammable Limit (UFL)* - the highest concentration of a flammable substance in which combustion can propagate in the presence of an Oxidant (DAST, Part A, Section 2.0) [Added January 2006].
- *U-Tube* - a release detection device placed under the longitudinal axis of a new UST in an excavation that is always above the watertable, can collect regulated substance released from a tank, and can be inspected periodically to determine whether a release of regulated substance has occurred (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Vadose Zone Vapor Detection Tube* - a release detection device placed within the tank field which does not reach the watertable and can be continuously monitored by electronic means or periodically inspected for vapors emanating from released regulated substances (DE 7 1000 1351, Part A 2.1) [Revised December 2008].
- *Vapor Recovery System* - a vapor-gathering system capable of collecting VOC vapors and gases emitted during the operation of any transfer, storage, or process equipment (DE 7 1000 1124, Section 2) [Revised January 2008].
- *Vaportight* - equipment that allows no loss of vapors. Compliance with vapor-tight requirements can be determined by checking to ensure that the concentration at a potential leak source is not equal to or greater than 100 percent of the LEL when measured with a combustible gas detector, calibrated with propane, at a distance of 2.54 centimeters (cm) (1 in.) from the source (DE 7 1000 1124, Section 2) [Revised January 2008].
- *Vault* - a structure that completely encloses the tank and must be constructed of materials compatible with the regulated substance to be contained in the AST (DE 7 1000 1352 2.0) [Added January 2006; Citation Revised December 2008].
- *Wastewater Treatment Tank* - a tank that is designed to receive and treat an influent wastewater through physical, chemical, or biological methods (DE 7 1000 1351, Part A 2.1) [Citation Revised December 2008; Citation Revised December 2008].



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**REFER TO CHECKLIST ITEMS:**

Missing Checklist Items	ST.2.1.DE.
Aboveground Storage Tanks	ST.5.1.DE. through ST.5.38.DE.
Emissions From Bulk Gasoline Terminals	ST.10.1.DE. through ST.10.14.DE.
Emissions/Discharges From POL Storage Vessels	ST.15.1.DE. through ST.15.8.DE.
Substandard USTs	ST.25.1.DE. through ST.25.8.DE.
UST State Specific	ST.30.1.DE. through ST.30.29.DE.
Heating Fuel USTs	ST.32.1.DE. through ST.32.59.DE.
New or Upgraded USTs	ST.35.1.DE. through ST.35.17.DE.
UST Filling	ST.45.1.DE. through ST.45.8.DE.
UST Corrosion Protection	ST.50.1.DE. and ST.50.2.DE.
UST Repairs	ST.55.1.DE. and ST.55.2.DE.
Release Detection for USTs	
General	ST.60.1.DE. through ST.60.4.DE.
Petroleum UST systems	ST.65.1.DE. through ST.65.11.DE.
Hazardous Substance USTs	ST.70.1.DE. through ST.70.12.DE.
USTs Connected to Emergency Generators	ST.75.1.DE. and ST.75.2.DE.
UST Releases	ST.80.1.DE. through ST.80.10.DE.
Deferred USTs	ST.85.1.DE.
UST Documentation	ST.90.1.DE. through ST.90.3.DE.
Changes in Service or Closure of USTs	ST.95.1.DE. through ST.95.11.DE.
Hazardous Waste Storage Tanks	
Small Quantity Generators	ST.100.1.DE. through AT.100.3.DE.
Generators	ST.105.1.DE. through AT.105.3.DE.
TSD Facilities	Deleted [Equivalent to Federal]
Used Oil Storage Tanks	ST.139.1.DE. and ST.139.2.DE.

**STORAGE TANK MANAGEMENT  
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**REFER TO APPENDIX NUMBERS:**

**REFER TO APPENDIX TITLES:**

10-1	Alternative Compliance Upgrade Requirements for Existing Heating Fuel UST systems
10-2	Aboveground Storage Tank Secondary Containment Options
10-3	Aboveground Storage Tank New Underground Piping Requirements
10-4	Aboveground Storage Tank Applicability and Exemptions
10-5	Manual Tank Gauging for Oil UST systems

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.2.</b></p> <p><b>MISSING CHECKLIST ITEMS</b></p> <p><b>ST.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.5.</b></p> <p><b>ABOVEGROUND STORAGE TANKS</b></p> <p><b>ST.5.1.DE.</b> Aboveground storage tanks (ASTs) must be registered and meet notification requirements (DE 7 1000 1352 Part A 4 .0) [Added December 2004 ; Revised January 2006 ; Citation Revised January 2008; Revised December 2008].</p>	<p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that each AST is registered with the Department on an AST registration form provided by the Department.</p> <p>Verify that registration of ASTs is renewed annually, on or before February 1 of every year and until the Department receives a formal notice that the AST has been removed or permanently closed or undergone a permanent change in contents.</p> <p>(NOTE: Owners and operators may provide notice for multiple USTs at a single facility using one notification form. Owners with USTs located at more than one facility must file a separate notification form for each facility.)</p> <p>Verify that the owner notifies the Department in writing of any significant change in the information presented on the original registration form at least 10 days prior to the change including:</p> <ul style="list-style-type: none"> <li>- change of address</li> <li>- change of tank ownership</li> <li>- change in tank status</li> <li>- change in products stored from a regulated substance to an unregulated substance.</li> </ul> <p>Verify that the Department is notified at least 10 days prior to removing, permanently closing in place or making a change in service to an AST unless such action is in response to an imminent threat to human health, safety or the environment.</p> <p>Verify that a new owner and operator operates the AST for no more than 72 hours after assuming ownership without the Department having received the new registration form and a transfer of ownership form.</p> <p>Verify that the new owner receives all available documents and information relevant to the AST.</p> <p>Verify that AST owners and operators notify the Department of all retrofits or upgrades of an AST at least 10 days prior to beginning the retrofit or upgrade work.</p>

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<p><b>ST.5.2.DE.</b> AST owners or operators must meet the requirements for Release Preparedness Plans (DE 7 1000 1352 Part A 7.0) [Added December 2004 ; Revised January 2006; Citation Revised December 2008].</p>	<p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that the AST owner or operator prepares a release preparedness plan and keeps a copy of the plan is kept at the facility at all times.</p> <p>Verify that the plan contains the following information:</p> <ul style="list-style-type: none"> <li>- a facility map showing the location of buildings, ASTs and their stored products, and site utilities</li> <li>- emergency contact phone numbers (i.e. fire, police, DNREC, USCG, hospitals, environmental contractors)</li> <li>- the general location of area receptors and points of exposure such as natural resources, surface water bodies, public and private supply wells, and residential communities</li> <li>- fire, explosion and health and safety contingencies</li> <li>- contaminated soil excavation, staging, treatment and disposal contingencies</li> <li>- regulated substance removal, containment and recovery contingencies</li> <li>- the actions facility personnel are required to take to respond to fires, explosions or any unplanned sudden or non-sudden release of a regulated substance to air, soil or surface water at the facility</li> <li>- a list of all emergency equipment at the facility, including the location and a physical description and its capabilities of each item on the list</li> <li>- an evacuation plan (with alternate routes) for facility personnel where there is a possibility that evacuation could be necessary.</li> </ul> <p>Verify that the plan lists names, addresses, and office phone numbers of all persons qualified to act as emergency coordinator is kept up to date.</p> <p>(NOTE: Where more than one person is listed, one is named as primary emergency coordinator and others are listed in the order in which they will assume responsibility as alternates.)</p> <p>Verify that a facility emergency coordinator is available to respond at all times.</p> <p>(NOTE: A release preparedness plan formulated under the direction of another local, state or federal program or a facility emergency or operational plan that meets the objectives may be accepted by the Department as proof of compliance.)</p> <p>Verify that the release preparedness plan is reviewed and amended if:</p> <ul style="list-style-type: none"> <li>- applicable regulations are revised</li> <li>- the plan fails after a release</li> <li>- the facility changes its design or operations</li> <li>- the list of emergency coordinators changes.</li> </ul>
<p><b>ST.5.3.DE.</b> AST owners and operators must meet release</p>	<p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>and leak documentation, response, confirmation, and reporting requirements (DE 7 1000 1352 Part A 8.0) [Added December 2004 ; Revised January 2006 ; Revised January 2008 ; Citation Revised December 2008].</p> <p><b>ST.5.4.DE.</b> AST owners and operators must notify the department at least 60 days prior to installation of a new aboveground storage tanks</p>	<p>Verify that owners and operators take immediate action to contain any release and to immediately identify and mitigate fire, explosion and vapor hazards.</p> <p>Verify that a release of a regulated substance from an AST in excess of the reportable quantities is reported to the Department.</p> <p>Verify that documentation on the routine in-service inspection report is made at the time of discovery of any release or a suspected release of a regulated substance from an AST in an amount less than the reportable quantities that impacts soil, groundwater, or surface water outside a secondary containment area.</p> <p>Verify that, if the commencement of cleanup activities cannot begin within 24 hours of discovery and cannot be completed within 7 days, the routine in-service inspection report is sent to the Tank Management Branch via fax or electronic mail.</p> <p>Verify that, upon an indication of a suspected release of a regulated substance from an AST, the owner and operator immediately investigates and within 7 days confirms whether or not a release has occurred.</p> <p>Verify that a leak of a regulated substance in a quantity less than the reportable quantities inside the secondary containment area or that does not impact soil, groundwater, or surface water, and cannot be cleaned up within 7 days is reported to the Tank Management Branch as soon as possible but in no instance exceeding 7 days from the time of discovery.</p> <p>Verify that no person knowingly allows any leak of a regulated substance from an AST to continue.</p> <p>Verify that documentation of a leak and the calculations of how the amount leaked was determined is maintained by the owner and operator at the facility for the operational life of the AST.</p> <p>Verify that actions, including but not limited to the following, are taken to prevent a recurrence of the leak, including but not limited to:</p> <ul style="list-style-type: none"> <li>- repairing or replacing defective equipment</li> <li>- modifying operating procedures</li> <li>- retraining employees.</li> </ul> <p>Verify that actions to mitigate evidence of a leak are initiated within 30 days.</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that AST owners and operators notify the Department of all proposed new ASTs used for storing regulated substances at least 60 days prior to installation.</p>

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<p>(DE 7 1000 1 352, Part B 1.0) [Added December 2004 ; Revised January 2006 ; Citation Revised December 2008].</p> <p><b>ST.5.5.DE.</b> New ASTs must meet requirements for secondary containment (DE 7 1000 1352 Part B 7.0) [Added December 2004 ; Revised January 2006 ; Citation Revised December 2008].</p> <p><b>ST.5.6.DE.</b> ASTs must meet specific requirement to prevent overflow and spills (DE 7 10 00 1352 Part B 8.0) [Added December 2004 ;</p>	<p>Verify that Departmental approval letters are posted at the construction site where the new AST installation is or AST relocation is in progress.</p> <p>Verify that, during construction, an owner and operator does not cause or allow a substantial design change which is not in accordance with the approved plans and all terms and conditions of the Department's approval.</p> <p>Verify that the design engineer of record approves in writing any and all substantial design changes and resubmits to the Department for formal approval.</p> <p>(NOTE: Department approval for installation of an AST does not eliminate the need to obtain applicable approvals and/or permits from the authority(ies) enforcing the state fire prevention regulations, local building codes or other state or federal laws or regulations.)</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that all new ASTs constructed after June 11, 2004 have secondary containment.</p> <p>Verify that materials are not stored in the secondary containment.</p> <p>Verify that, if not roofed or otherwise protected from the accumulation of precipitation, the secondary containment area is equipped with one of the following:</p> <ul style="list-style-type: none"> <li>- a manually-controlled pump</li> <li>- siphon</li> <li>- a gravity drain pipe which has a manually-controlled valve.</li> </ul> <p>Verify that the secondary containment is designed and constructed to retain any regulated substance that leaves the primary containment including an AST and ancillary piping and prevents any regulated substance from reaching the surface water, groundwater, or adjacent land before cleanup occurs.</p> <p>Verify that all drainage valves located within the secondary containment system remain closed at all times except during controlled drainage events.</p> <p>(NOTE: See Appendix 10-2 for detailed secondary containment options.)</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that owners and operators institute safe fill, shutdown and transfer procedures or equivalent measures established by the Department that ensure that spills resulting from AST overfills or other regulated substance transfer operations</p>

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<p>Citation Revised December 2008].</p> <p><b>ST.5.7.DE.</b> Existing ASTs must meet upgrade requirements ( DE 7 1000 1352 Part B 11. 0) [Added December 2004 ; Revised January 2006 ; Revised December 2008].</p>	<p>do not occur.</p> <p>Verify that receipts of regulated substance are authorized by the operator or facility personnel trained by the operator and owner.</p> <p>Verify that the authorizing person ensures the volume available in the ASTs is greater than the volume of regulated substance to be transferred to the ASTs before the transfer operation commences.</p> <p>Verify that all AST fill valves not in use are secured and that only the ASTs designated is receiving regulated substance.</p> <p>Verify that, if the transfer operations are not being continuously monitored by a transfer operator appropriately trained in safe transfer procedures, the AST is equipped with overfill prevention equipment that will automatically shut off the flow into the AST when the AST is no more than 95 percent full or other safe fill level approved by the Department.</p> <p>Verify that, if the transfer operations are being continuously monitored by a transfer operator appropriately trained in safe transfer procedures, the AST is equipped with a high level alarm or other automatic mechanism approved by the Department, that will immediately alert the operator to prevent an overfill event.</p> <p>Verify that all regulated substance transfer areas where filling connections are made with vehicles are equipped with a spill containment system capable of containing and collecting those spills and overfills.</p> <p>Verify that all ASTs are equipped with a gauge or other measuring device that is readily visible and accurately indicates the level of regulated substance or quantity of regulated substance in the AST.</p> <p>Verify that the overfill prevention and measuring device are independent of each other.</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>(NOTE: See ST.5.24.DE. for piping system upgrade requirements.)</p> <p>Verify that, by June 11, 2005, all ASTs are equipped with a gauge or other measuring device that accurately shows the level of regulated substance or quantity of regulated substance in the AST.</p> <p>Verify that, by June 11, 2005, all ASTs had an overfill prevention procedure.</p> <p>Verify that, by June 11, 2007, all ASTs had normal and emergency venting installed in accordance with API 2000 or NFPA 30 or UL142 or UL2085 as</p>

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<p><b>ST.5.8.DE.</b> All new ASTs without a floating roof containing a flammable regulated substance, spent acids or caustics or other regulated substance as defined by the Department must meet inerting requirements for ullage volumes (DE 710 00 1352 Part B 12. 0) [Added December 2004 ; Revised January 2006 ; Citation Revised December 2008].</p>	<p>applicable.</p> <p>Verify that, by June 11, 2014, the required overfill prevention equipment and the measuring device function independently of each other.</p> <p>Verify that by June 11, 2019, an AST which is not equipped with cathodic protection or an internal liner, is upgraded to meet one of the requirements:</p> <ul style="list-style-type: none"> <li>- leak detection equipment</li> <li>- release prevention barrier</li> <li>- double bottom</li> <li>- annual in service test or inspection approved by the Department</li> <li>- annual internal inspection in accordance with API 653 or other applicable standard.</li> </ul> <p>(NOTE: If the AST is equipped with cathodic protection or an internal liner, the AST must meet the above requirements by June 11, 2019.)</p> <p>(NOTE: This checklist item applies to all ASTs without a floating roof installed or erected after June 11, 2004 and containing flammable regulated substances as defined by NFPA 30, spent acids, spent caustics, or other regulated substances as defined by the Department.)</p> <p>Verify that all applicable ASTs have an automatic system in place to maintain the ullage volume of the AST below the limiting oxidant concentration (LOC), for any gaseous oxidant which may be present, by the use of an inert gas blanketing system in accordance with NFPA 69.</p> <p>(NOTE: Systems operated above the upper flammable limit (UFL) are subject to approval by the Department prior to installation. Other methods to prevent a deflagration, such as but not limited to, spark extinguishing systems, deflagration suppression, or deflagration pressure containment must be approved by the Department prior to installation.)</p> <p>(NOTE: The following ASTs are exempt from these inerting requirements:</p> <ul style="list-style-type: none"> <li>- all existing shop fabricated ASTs which meet the requirements of UL 142 and any requirements of the state fire prevention regulations</li> <li>- all existing field constructed ASTs and new field constructed horizontal or vertical ASTs used for dispensing which meet the requirements of API 650, API 2000 and any requirements of the state fire prevention regulations</li> <li>- new shop fabricated horizontal ASTs less than or equal to 50,000 gallons and new shop fabricated vertical ASTs less than or equal to 30,000 gallons used for bulk storage which meet their requirements of UL 142 and any requirements of the state fire prevention regulations</li> <li>- new shop fabricated horizontal ASTs less than or equal to 50,000 gallons and new shop fabricated vertical ASTs less than or equal to 30,000 gallons used for dispensing which meet the requirements of UL 142 and UL 2085 and the</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.5.9.DE.</b> ASTs that are designated Out of Service must meet specific requirements (DE 7 1000 1352 Part B 13. 0) [Added December 2004 ; Revised January 2006 ; Citation Revised December 2008].</p>	<p>requirements of the state fire prevention regulations - new field constructed horizontal or vertical ASTs used for Dispensing that meet the requirements of API 650 and API 2000 and the requirements of the state fire prevention regulations.)</p> <p>Verify that the system is in place, in use and operated to designed specifications unless the AST has been cleaned sufficiently and purged of flammable vapors to safely permit hot work in, on or around the AST.</p> <p>Verify that work to return the system to specified operating parameters begins immediately after an alarm is registered and that the Department is notified within 24 hours when the affected AST is returned to the required LOC.</p> <p>Verify that, if the AST cannot be returned to the required LOC within 24 hours, the Department is notified.</p> <p>Verify that the Department is notified within 24 hours when the affected AST is returned to the required LOC.</p> <p>Verify that the gases exhausted or vented from a regulated AST operating under an inerting system are treated in a manner which is compliant with all applicable Department regulations and permits.</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>(NOTE: An AST is out-of-service if the AST:</p> <ul style="list-style-type: none"> <li>- is designated as out-of-service by the owner and operator</li> <li>- is empty</li> <li>- is not in use, in that it has not had, within any 45-day period, a regulated substance transferred into or withdrawn from the AST and has been drained of all contents and is empty.)</li> </ul> <p>Verify that the owner and operator notifies the Department, on a form provided by the Department, upon taking an AST out-of-service unless the AST is empty because of scheduled testing or inspection.</p> <p>Verify that, if the AST has remained out of service for greater than 18 months, the following actions are taken:</p> <ul style="list-style-type: none"> <li>- remove all the regulated substance from the AST and isolate connected piping</li> <li>- secure the AST to prevent unauthorized entrance or tampering</li> <li>- thoroughly clean the interior of the AST and all ancillary piping of all sludge, solids, and residual regulated substance.</li> </ul> <p>Verify that owner/operator of an AST that has remained out-of-service for a</p>

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<p><b>ST.5.10.DE.</b> When there is evidence of soil or groundwater contamination from a regulated substance from an AST, specific requirements must be met (DE 7 1000 1352 Part B 14.0) [Added December 2004 ; Revised January 2006 ; Citation Revised December 2008].</p> <p><b>ST.5.11.DE.</b> AST owners and operators must meet inventory control requirements (DE 7 1000 1352 Part C 1.0) [Added December 2004 ; Revised January 2006 ; Citation Revised December 2008].</p>	<p>period greater than 3 years assess the site to determine whether there is soil or groundwater contamination attributable to the AST.</p> <p>Verify that an AST that has been taken out-of-service is not placed back into service until the owner and operator certifies to the Department in writing that the AST is in compliance with all applicable statutes and regulations.</p> <p>Verify that an AST owner/operator who reactivates an AST which has been designed out-of-service notifies the Department by amending the AST registration form required 10 days prior to putting the AST back into service.</p> <p>Verify that, prior to placing an AST that has been out-of-service for more than 1 year, back into service, the owner/operator thoroughly inspects and tests the AST for evidence of the following conditions:</p> <ul style="list-style-type: none"> <li>- corrosion of the interior or exterior of the AST or ancillary piping</li> <li>- abnormal thinning of the AST walls or bottom</li> <li>- perforations through the AST walls or bottom</li> <li>- any other condition that would indicate a weakening of the structural integrity of the AST or identify a situation which could result in a Release of regulated substance from the AST.</li> </ul> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that, if, during an AST removal, permanent closure in place, permanent change in contents, converting the AST to another use, or when an AST has been out of service for more than 3 years, there is evidence of soil or groundwater contamination from a regulated substance attributable to the AST, detected by site assessment, observation, or analysis, the Department is notified immediately.</p> <p>Verify that all applicable requirements of Part E (see ST.5.30.DE.) are complied with.</p> <p>Verify that a site assessment is completed within 30 days of a change-in-service, change in product from a regulated substance to a non-regulated substance, or AST removal or permanent closure in place and the results submitted to the Department within 30 days of the completion of the site assessment.</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that every owner and operator maintains inventory control records for each AST or cluster of ASTs, if they are normally interconnected, containing a regulated substance including the following:</p> <ul style="list-style-type: none"> <li>- the description and quantity of the regulated substance in the AST</li> <li>- measurements of transfers of a regulated substance into and out of the AST</li> </ul>

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	<p>- measurements of inventory on hand - records of gains and losses.</p> <p>Verify that reconciliation of records is kept current, account for all variables that could affect an apparent loss or gain, and is in accordance with generally accepted practices.</p> <p>Verify that the records are accumulated for each day an AST has a regulated substance added or withdrawn with no instance where the interval between measurements of inventory on hand exceeds 7 days.</p> <p>Verify that the equipment used is capable of measuring the level of regulated substance over the full range of the AST's height.</p> <p>Verify that inventory control procedures are established capable of detecting a significant variation of inventory.</p> <p>(NOTE: A significant variation is considered as a gain or a loss in excess of 1 percent of the throughput or storage capacity of each individual AST on a 30 day basis. If the AST is equipped with a continuous leak detection monitoring system and cathodic protection of the AST and ancillary piping, a significant variation of inventory is considered as a gain or a loss in excess of 3 percent of the throughput or storage capacity of each individual AST on a 30 day basis.)</p> <p>Verify that reconciliations of inventory measurements are conducted monthly or every 30 days.</p> <p>Verify that, if a significant variation persists for 2 consecutive 30 day periods, an investigation is conducted to determine the cause of the variation.</p> <p>Verify that the investigation is completed within 10 working days of the end of the second reconciliation period that shows significant variation.</p> <p>Verify that, if this investigation does not reveal the cause of the inventory variation, the Department is notified.</p> <p>(NOTE: If the AST is equipped with a continuous leak detection monitoring system and cathodic protection of the AST and ancillary piping, a significant variation of inventory is considered as a gain or a loss in excess of 3 percent of the throughput or storage capacity of each individual AST on a monthly or 30 day basis.)</p> <p>Verify that inventory records are maintained for a period of not less than 3 years and are made available for Department inspection within 10 days upon request.</p>
<p><b>ST.5.12.DE.</b>      AST underground piping      must</p>	<p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p>

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<p>meet inspection, monitoring, and testing requirements (DE 7 1000 135 2 Part C 4 .0) [Added December 2004 ; Revised January 2006 ; Citation Revised December 2008].</p> <p><b>ST.5.13.DE.</b> Secondary containment for all ASTs must be inspected (DE 7 1000 1352 Part C 2 .0) [ Added December 2004 ; Revised January 2006 ; Citation Revised December 2008].</p>	<p>Verify that underground piping complies with the inspection and testing schedule in accordance with API 570 or other schedule approved by the Department.</p> <p>(NOTE: All existing underground piping not in compliance with an API 570 inspection and testing schedule are pressure tested annually, per API 570, until it is upgraded to the new piping standards or removed from service. In lieu of annual testing, the Department may approve an alternative risk-based schedule on a case-by-case basis.)</p> <p>Verify that underground piping that has been repaired or reactivated after being out-of-service, is reassessed to ensure the Underground Piping meets or exceeds the original performance specifications prior to returning to service.</p> <p>Verify that the steam return and exhaust lines of heating coils that discharge to the environment, or which pass the steam return or exhaust lines through a settling tank, skimmer, or other separation or retention system, is inspected for any possible contamination every month or every 30 days.</p> <p>Verify that records of compliance with all testing requirements are kept on file at the facility for the life of the underground piping system and made available to the Department upon request.</p> <p>Verify that any underground piping determined to be leaking or releasing a regulated substance is removed from service (by prohibiting the introduction of additional regulated substances into the underground piping) within 24 hours and evacuated as soon as practicable.</p> <p>Verify that faulty underground piping remains out of service until repaired.</p> <p>(NOTE: Release reporting and corrective actions must be accomplished in accordance with Part A, Section 8 and Part E of these regulations.)</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that secondary containment for all ASTs is inspected as a part of external inspections and routine in-service inspections.</p> <p>Verify that, if the secondary containment is tested or inspected and fails to meet criteria, the owner and operator identifies the problem to correct within 60 days from the date of the inspection.</p> <p>Verify that the routine in-service inspection monitors the condition of the secondary containment at an interval that does not exceed 31 days.</p> <p>Verify that the routine in-service inspection of the secondary containment includes visual inspection from the ground.</p>

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<p><b>ST.5.14.DE.</b> Overfill prevention systems for all ASTs must meet testing and calibration requirements (DE 7 1000 135 2 Part C 3 .0) [Added December 2004 ; Revised January 2006 ; Citation Revised December 2008].</p> <p><b>ST.5.15.DE.</b> Cathodic protection systems for all ASTs must meet inspection, testing, and maintenance requirements (DE 7 1000 1352 Part C 5 .1) [ Added December 2004 ; Revised January 2006 ; Citation Revised December 2008].</p>	<p>Verify that external inspections of the secondary containment monitor the condition of the secondary containment at an interval not to exceed 5 years.</p> <p>Verify that external inspections of secondary containment are performed by inspectors familiar with secondary containment and qualified by experience for such inspections.</p> <p>Verify that secondary containment is inspected to ensure that it has been maintained in a condition that ensures it is capable of retaining any regulated substance that leaves the primary containment including an AST and ancillary piping and prevent any regulated substance from reaching the surface water, groundwater, or soil outside the secondary containment before cleanup occurs.</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that the overfill prevention system is tested no less frequently than every 93 days to ensure proper function and records of testing are maintained at the facility for 3 years.</p> <p>Verify that the gauge or measuring device is calibrated no less frequently than once every 12 months and records of testing maintained at the facility for 3 years.</p> <p>Verify that existing ASTs with a gauge or measuring device implement the calibration requirements.</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that all cathodic protection systems are operated and maintained to provide continuous corrosion protection to the external soil side portion of the metal components of that portion of the AST and underground piping that contain a regulated substance and are in contact with the soil.</p> <p>Verify that the cathodic protection system is inspected and maintained to meet or exceed the requirements of the most recent edition of the following industry standards:</p> <ul style="list-style-type: none"> <li>- NACE Standard RP0193, External Cathodic Protection of On-Grade Carbon Steel Storage Tank Bottoms</li> <li>- API RP651, Cathodic Protection of Aboveground Petroleum Storage Tanks</li> <li>- NACE Standard RP0169 Control of External Corrosion on Underground or Submerged Metallic Piping Systems.</li> </ul> <p>Verify that by June 11, 2005, existing ASTs with a cathodic protection system have test stations or access points which enable the owner and operator to test the</p>

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<p><b>ST.5.16.DE.</b> Impressed current systems for ASTs must meet monitoring, testing, and management requirements (DE 7 1000 1352 Part C 5 .2.1) [Added December 2004 ; Revised January 2006 ; Citation Revised December 2008].</p>	<p>adequacy of cathodic protection.</p> <p>(NOTE: For the maintenance and repair of existing Cathodic Protection Systems, or the replacement of an existing system component with a similar component, excluding minor maintenance procedures that do not substantially change the system such as replacement of fuses, the individual must be certified by NACE for Cathodic Protection at Level 1, Level 2, or Level 3 and have specific knowledge and experience in the maintenance and repair of Cathodic Protection Systems for ASTs and Underground Piping. The NACE certified individual performing a specific task on a Cathodic Protection System shall be qualified at the appropriate Certification Level for that specific task as defined by NACE. For the inspection of Cathodic Protection Systems such as identifying damaged components or the recording of rectifier readings the individual does not need to be certified by NACE for Cathodic Protection.)</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that the source of protective current for an impressed current system is monitored every 63 days and the results recorded.</p> <p>Verify that all impressed current systems are inspected and tested every 12 months as part of a preventative maintenance program to minimize in-service failure.</p> <p>Verify that impressed current systems that are not operating as required are repaired or replaced within 90 days or other schedule approved by the Department.</p> <p>Verify that the impressed current source is not de-energized at any time including periods when the facility is closed (except during power failures or during service work on the AST, underground piping or the impressed current system).</p> <p>Verify that the impressed current source is equipped with a continuously operating meter or meters which display voltage, amperage and run time to show that the system is working.</p> <p>Verify that records of the continuous operation, inspection, and testing of impressed current systems are maintained at the facility for the operational life of the AST and underground piping.</p> <p>(NOTE: For the maintenance and repair of existing Cathodic Protection Systems, or the replacement of an existing system component with a similar component, excluding minor maintenance procedures that do not substantially change the system such as replacement of fuses, the individual must be certified by NACE for Cathodic Protection at Level 1, Level 2, or Level 3 and have specific knowledge and experience in the maintenance and repair of Cathodic Protection Systems for ASTs and Underground Piping. The NACE certified individual performing a specific task on a Cathodic Protection System shall be qualified at the appropriate</p>

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<p><b>ST.5.17.DE.</b> Sacrificial anode systems for ASTs must meet monitoring, testing, and management requirements (DE 7 1000 1 352 Part C 5.3.1) [ Added December 2004; Revised January 2006; Citation Revised December 2008].</p>	<p>Certification Level for that specific task as defined by NACE. For the inspection of Cathodic Protection Systems such as identifying damaged components or the recording of rectifier readings the individual does not need to be certified by NACE for Cathodic Protection.)</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that sacrificial anode systems are inspected and tested at a minimum of once every 12 months.</p> <p>Verify that sacrificial anode systems that are not operating as required are repaired or replaced within 90 days or other schedule approved by the Department.</p> <p>Verify that records of the operation, inspection, and testing of sacrificial anode systems are maintained at the facility for the operational life of the AST and underground piping.</p> <p>(NOTE: For the maintenance and repair of existing Cathodic Protection Systems, or the replacement of an existing system component with a similar component, excluding minor maintenance procedures that do not substantially change the system such as replacement of fuses, the individual shall be certified by NACE for Cathodic Protection at Level 1, Level 2, or Level 3 and have specific knowledge and experience in the maintenance and repair of Cathodic Protection Systems for ASTs and Underground Piping. The NACE certified individual performing a specific task on a Cathodic Protection System shall be qualified at the appropriate Certification Level for that specific task as defined by NACE. For the inspection of Cathodic Protection Systems such as identifying damaged components or the recording of rectifier readings the individual does not need to be certified by NACE for Cathodic Protection.)</p>
<p><b>ST.5.18.DE.</b> Metallic and non-metallic field constructed and shop-fabricated ASTs must meet internal inspection requirements ( DE 7 1000 1352 Part C 6 .4) [ Added December 2004 ; Revised December 2008].</p>	<p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that owners and operators notify the Department in writing 10 days prior to work commencing when new and existing ASTs are emptied for maintenance, repairs, or removed from service.</p> <p>Verify that new ASTs and existing ASTs complete internal inspections according to the following schedule:</p> <ul style="list-style-type: none"> <li>- all metallic field-constructed ASTs with new tank bottoms and all new metallic shop fabricated ASTs, within 10 years of the date of completion of the installation of the AST or completion of the installation of the new tank bottom</li> <li>- all existing metallic field constructed and shop-fabricated ASTs, by June 11,</li> </ul>

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	<p>2007 except those ASTs that are in compliance with an established, documented inspection schedule</p> <ul style="list-style-type: none"> <li>- all new fiber reinforced thermosetting plastic field constructed and shop-fabricated ASTs, within one year of being placed into service</li> <li>- all existing fiber reinforced thermosetting plastic shop-fabricated and field constructed ASTs, by June 11, 2007 except those ASTs that have an established, documented inspection schedule.</li> </ul> <p>Verify that new ASTs and existing ASTs complete external inspections according to the following schedule:</p> <ul style="list-style-type: none"> <li>- all new metallic field constructed and shop-fabricated ASTs, within 5 years of the date of completion of the installation</li> <li>- all existing metallic field constructed and shop-fabricated ASTs, by June 11, 2005, except those ASTs that are in compliance with an established, documented inspection schedule</li> <li>- all new fiber reinforced thermosetting plastic shop-fabricated and field-constructed ASTs, within 3 years of the date of the AST being placed into service</li> <li>- all existing fiber reinforced thermosetting plastic shop-fabricated and field-constructed ASTs, by June 11, 2007, except ASTs that have an established, documented inspection schedule.</li> </ul> <p>(NOTE: Owners and Operators of non-metallic Field-Constructed or Shop-Fabricated ASTs constructed of material other than fiber reinforced thermosetting plastic, must submit to the Department for approval before implementation, a schedule and criteria for inspections and testing.)</p> <p>Verify that, when an AST has been tested or inspected, the owner and operator immediately initiates the actions required or recommended by the report of the Certified API 653 Inspector, including but not limited to requirements or recommendations for repair or removal from service.</p> <p>Verify that a report of the findings of any inspection that concludes the AST is not fit for service is submitted to the Department and the AST owner and operator within 30 days of the conclusion of the inspection.</p> <p>Verify that removal of the AST contents commences within 5 days of the conclusion that the AST is not fit for service and completion of the removal of the AST contents does not exceed 90 days, unless an alternative schedule is approved by the Department.</p> <p>Verify that any existing AST not meeting the material specification requirements of API 650 and API 653 is reviewed and analyzed by the appropriate professional engineering disciplines to determine the AST's fitness for service.</p> <p>Verify that the review does not exceed 90 days and a report is written and submitted to the AST owner and operator and the Department within 30 days of the conclusion of the review detailing the findings of the review and proposes a</p>



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<p><b>ST.5.19.DE.</b> In-service inspection requirements must be met for metallic and non-metallic field constructed and shop-fabricated ASTs (DE 7 1000 1352 Part C 7.2) [Added December 2004 ; Revised January 2006 ; Citation Revised December 2008].</p>	<p>course of action.</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that a routine in-service inspection program is developed and implemented.</p> <p>Verify that routine in-service inspections meet the following requirements:</p> <ul style="list-style-type: none"> <li>- monitor the external condition of the AST and all aboveground ancillary piping at an interval not to exceed 30 days</li> <li>- completed in accordance with the guidance contained in API 653 and API 570 or other equivalent procedure approved by the Department.</li> </ul> <p>Verify that an appropriate check list including the condition of the secondary containment, is developed and completed for each AST and aboveground ancillary piping for each routine in-service inspection.</p> <p>(NOTE: The routine in-service inspection may be completed by owner and operator designated personnel other than an API certified inspector.)</p> <p>Verify that, if designated personnel are not specifically certified in accordance with API 653, training includes but is not limited to the following:</p> <ul style="list-style-type: none"> <li>- basic information regarding occupational safety, hazard recognition, personnel protection, and facility operations</li> <li>- the procedures to be followed in conducting the daily visual and weekly facility inspections</li> <li>- the procedures to be followed upon recognition of a hazard or the potential for a hazard</li> <li>- the procedure for evaluating the condition of the AST and appurtenances</li> <li>- the procedures for responding to releases and leaks of a regulated substance.</li> </ul> <p>Verify that records of training are maintained at the facility by the owner and operator for 5 years after the termination date of employment for personnel.</p> <p>Verify that the routine in-service inspection includes close visual inspection from the ground.</p> <p>Verify that routine in-service inspection reports are retained at the facility by the owner and operator for 5 years after the routine in-service inspection.</p>
<p><b>ST.5.20.DE.</b> External inspection requirements must be met for metallic and non-metallic field constructed and</p>	<p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that external inspections, at a minimum, follow the latest approved edition of nationally recognized codes, standards, guidelines or recommended practices</p>

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<p>shop-fabricated ASTs (DE 7 1000 1352 Part C 7.3) [Added December 2004 ; Revised January 2006 ; Revised December 2008].</p> <p><b>ST.5.21.DE.</b> Internal inspection requirements must be met for ASTs (DE 7 1000 1352 Part C 7.4) [ Added December 2004 ; Revised January 2006 ; Revised January 2008 ; Revised December 2008].</p>	<p>including but not limited to API 653, API 570, and NACE RP-294 or STI-SP001.</p> <p>Verify that external inspection frequencies for ASTs and aboveground ancillary piping follow the recommended guidelines, codes, standards or recommended practices including but not limited to the calculated corrosion rate.</p> <p>Verify that the external inspection frequency does not exceed 5 years.</p> <p>Verify that only certified API 653 inspectors or certified STI-SP001 inspectors or certified API 570 inspectors perform external inspections.</p> <p>Verify that an appropriate check list containing at a minimum the criteria in API 653 Appendix C, <i>Tank In-service Inspection Checklist</i> and API 570 Appendix D, <i>External Inspection Checklist for Process Piping</i> and including the condition of the secondary containment is developed and completed for each AST and aboveground Ancillary Piping at each external inspection.</p> <p>(NOTE: Where material thickness measurements are performed, only qualified American Society for Non Destructive Testing (ASNT) SNT-TC-1A, latest edition, Level II technician or ASNT Central Certification Program Level II technician or Certified API 653 Inspectors with experience in performing material thickness measurements shall perform the test.)</p> <p>Verify that external inspection reports are retained at the facility for the life of the AST by current and future owners and operators.</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that internal inspections meet the following requirements:</p> <ul style="list-style-type: none"> <li>- follow the latest approved edition of nationally recognized standards, guidelines or recommended practices including but not limited to API 653 and, if applicable, NACE RP-0294</li> <li>- completed in accordance with the recommended guidelines, codes, standards or recommended practices referenced in 6.4.1 or other equivalent procedure approved by the Department. An appropriate check list containing at a minimum the criteria in API 653 Appendix C, <i>Tank Out-Of-Service Inspection Checklist</i> shall be developed and completed for each AST at each internal inspection.</li> </ul> <p>Verify that an appropriate check list is developed and completed for each AST at each internal inspection.</p> <p>Verify that the AST corrosion rates are not based on experience with ASTs in similar service unless previously approved by the Department.</p> <p>Verify that only certified API 653 inspectors perform the internal inspections and</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.5.22.DE.</b> ASTs must have leak detection and meet leak detection inspection and monitoring requirements ( DE 7 1000 135 2 Part C 9 .0) [Added December 2004 ; Revised January 2006 ; Revised December 2008].</p>	<p>where non-destructive testing methods are performed, only qualified American Society for Non Destructive Testing (ASNT) SNT-TC-1A, latest edition, Level II technician or ASNT Central Certification Program Level II technician or certified API 653 inspectors with experience in performing non-destructive testing perform the test.</p> <p>Verify that internal inspection reports are submitted to the Department and are retained at the facility for the life of the AST by current and future owners and operators.</p> <p>Verify that only inspectors familiar with ASTs constructed of fiber reinforced thermosetting plastic and qualified by experience perform external and internal inspections.</p> <p>Verify that the inspector is able to read a Jaeger Type No. 1 Standard Chart at a distance of not less than 12 inches.</p> <p>Verify that the inspector is capable of distinguishing and differentiating contrast between colors and that visual acuity is checked annually.</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that, if a regulated substances leak is detected, it is contained to prevent an impact on surface water, groundwater, or soil outside the secondary containment.</p> <p>Verify that all new ASTs have a method, or combination of methods, of leak detection that can detect a leak from any portion of the AST.</p> <p>Verify that leak detection systems are approved by the Department prior to installation.</p> <p>Verify that leak detection methods, other than visual, are installed, calibrated, tested, operated, and maintained in accordance with the manufacturer's instructions, including routine maintenance checks for operability to ensure that the device is functioning as designed.</p> <p>Verify that all manufacturers' instructions and the performance claims and their manner of determination described in writing by the equipment manufacturer or installer for the leak detection method are retained at the facility for the life of the AST.</p> <p>Verify that the leak detection method or combination of methods used, except for those ASTs equipped with a release prevention barrier or a double bottom, are inspected and monitored at least weekly.</p> <p>Verify that any interstitial spaces, including but not limited to those located in double-walled ASTs, double-walled piping, and double bottoms that are installed</p>

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<p><b>ST.5.23.DE.</b> Inspection and monitoring requirements must be met for ASTs inerting or deflagration prevention systems (DE 7 1000 1352 Part C 10. 0) [ Added December 2004; Revised January 2 005; Citation Revised December 2008].</p>	<p>as part of new or upgraded AST, are equipped with interstitial monitoring equipment capable of detecting a discharge of regulated substance into the interstitial space under all operating conditions.</p> <p>Verify that a checklist for each leak detection monitoring point is generated to document whether a leak did or did not occur.</p> <p>Verify that leak detection checklists that did not document a leak are retained at the facility by the owner and operator for 5 years after the leak detection inspection.</p> <p>Verify that leak detection checklists that did document a leak are retained at the facility by the owner and operator for the life of the AST by current and future owners and operators.</p> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that all ASTs have an inerting system or other Department approved deflagration prevention system continuously in place, in use, and operating to design specifications whenever an AST is in service and has the potential for a flammable atmosphere.</p> <p>Verify that the inerting system is in place, in use and operated to design specifications unless the AST has been cleaned sufficiently and purged of flammable vapors to safely permit hot work in, on or around the AST.</p> <p>Verify that inerting systems and other Department approved deflagration prevention systems are calibrated, tested, operated, and maintained in accordance with the manufacturer's instructions, including routine maintenance checks for operability to ensure that the system is functioning as designed.</p> <p>Verify that, in no instance, does the time between calibration and testing of the inerting system or other Department approved deflagration system exceed 1 year.</p> <p>Verify that records of the calibration, testing, and maintenance of inerting systems and other Department approved deflagration prevention systems are made and retained at the facility by the owner and operator for 5 years after the report was generated.</p> <p>Verify that all manufacturers' instructions, and the performance claims and their manner of determination described in writing by the equipment manufacturer or installer for the inerting system or deflagration prevention system are retained at the facility for the life of the AST.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.5.24.DE.</b> The upgrading of AST underground piping systems must meet specific requirements ( DE 7 1000 1352 Part B 11.2) [Added January 2006 ; Revised December 2008].</p>	<p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that, within 10 years of June 1, 2004, all existing underground piping that does not meet the requirements for new underground piping is upgraded to meet those requirements.</p>
<p><b>ST.5.25.DE.</b> AST underground piping systems must meet specific requirements ( DE 7 1000 1352 Part B 6.1 and 6.7.1) [Added January 2006 ; Citation Revised December 2008].</p>	<p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that the AST piping meets the applicable requirements in Appendix 10-3.</p> <p>Verify that any underground pipe that is repaired equals or exceeds standards of its original condition.</p> <p>(NOTE: Owner and operator may repair holes in underground pipe and fittings such as patching, welding, or clamping as a temporary repair for up to 30 days.)</p> <p>Verify that permanent repairs replace the affected section of underground piping or fully weld the affected section of underground piping.</p>
<p><b>ST.5.26.DE.</b> Relocated, repaired, and modified ASTs must meet specific requirements (DE 7 1000 1352 Part B 10.0) [Added January 2006 ; Revised December 2008].</p>	<p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that repairs, modifications and relocations are performed, inspected and tested in accordance with API 653 or other standards approved.</p> <p>Verify that any relocated ASTs meet the following requirements before it is utilized for storage of regulated substances:</p> <ul style="list-style-type: none"> <li>- a thorough internal and external cleaning and inspection determines in its new location that it is free of pinholes, cracks, structural damage, or excessive corrosion</li> <li>- the AST is determined to be structurally sound in its new location by a professional engineer or an inspector certified per the applicable code or qualified by training and experience in the absence of a code certification process.</li> </ul>
<p><b>ST.5.27.DE.</b> AST removal must meet notification and management requirements (DE 7 1000 1352 Part B 15.0) [Added January 2006 ; Citation Revised December</p>	<p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that the Department is notified of the scheduled removal of an AST not later than 10 days prior to the removal of an AST.</p>

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<p>2008].</p> <p><b>ST.5.28.DE.</b> AST permanent closure must meet notification and management requirements ( DE 7 1000 1352 Part B 16. 0) [Added January 2006 ; Citation Revised December 2008].</p> <p><b>ST.5.29.DE.</b> Permanent change in contents of an AST must meet notification and management requirements (DE 7 1000 1352 Part B 17.0) [Added January 2006 ; Citation Revised December 2008].</p>	<p>Verify that following requirements are met:</p> <ul style="list-style-type: none"> <li>- all the regulated substance are removed from the AST and ancillary piping</li> <li>- the interior of the AST and all ancillary piping is thoroughly cleaned of all sludge, solids, and residual regulated substance with documentation of the proper disposition of the removed sludge, solids and residual regulated substances</li> <li>- the AST and ancillary piping is completely displaced from its installed location</li> <li>- the AST and ancillary piping is rendered permanently non-useable or its use as an AST and ancillary piping is discontinued with the intent of not introducing a regulated substance into the AST and ancillary piping.</li> </ul> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that the Department is notified of the scheduled permanent closure in place of an AST not later than 10 days prior to the permanent closure in place of an AST.</p> <p>Verify that following requirements are met:</p> <ul style="list-style-type: none"> <li>- all the regulated substance are removed from the AST and ancillary piping</li> <li>- the interior of the AST and all ancillary piping is thoroughly cleaned of all sludge, solids, and residual regulated substance with documentation of the proper disposition of the removed sludge, solids and residual regulated substances</li> <li>- the AST and ancillary piping is secured to prevent unauthorized entrance or tampering so that a regulated substance is not accidentally or intentionally introduced into the AST and ancillary piping, by means such as securely bolting and locking or welding all manways and valves or capping or plugging fill lines, gauge openings, or pump lines and disconnecting a and blanking all ancillary piping.</li> </ul> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that the Department is notified of the scheduled permanent change in contents of an AST not later than 10 days prior to the permanent change in contents of an AST.</p> <p>Verify that, if applicable, the site assessment requirements are met.</p> <p>Verify that following requirements are met:</p> <ul style="list-style-type: none"> <li>- all the regulated substance are removed from the AST and ancillary piping</li> <li>- the interior of the AST and all ancillary piping is thoroughly cleaned of all sludge, solids, and residual regulated substance with documentation of the</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.5.30.DE.</b> AST release investigation and corrective actions must meet specific requirements (DE 7 1000 1352 Part E) [Added January 2006; Citation Revised December 2008 ; Revised December 2008].</p>	<p>proper disposition of the removed sludge, solids and residual regulated substances</p> <ul style="list-style-type: none"> <li>- continue active use of the AST and ancillary piping with the intent of only storing and conveying a non-regulated substance in the AST and ancillary piping.</li> </ul> <p>(NOTE: See Appendix 10-4 for applicability and exemptions.)</p> <p>Verify that, after a release, other than those that comply secondary with containment release requirements, is confirmed, the owner/operator conducts an investigation as the first step in the corrective action process unless directed to do otherwise by the Department.</p> <p>Verify that the Department receives the results of the investigation no later than 120 days after the release was reported and confirmed.</p> <p>(NOTE: At any point after reviewing the information contained in the investigation report, the Department may require owner and operator to submit additional information or to develop and submit a corrective action work plan for responding to contaminated soils, surface water and/or ground water.)</p> <p>Verify that the approved action plan is implemented, including any modifications to the corrective action work plan made by the Department, within 30 days.</p> <p>Verify that, at a minimum, the owner/operator monitors, evaluates, and reports the results of implementing the corrective action work plan quarterly (4 times per calendar year), or within the time schedule approved by the Department in the corrective action work plan.</p> <p>Verify that the effectiveness of the implemented corrective action plan is evaluated after 1 year and one of the following is submitted to the Department:</p> <ul style="list-style-type: none"> <li>- a request for no further action</li> <li>- a revised corrective action work plan prepared</li> <li>- a request to continue implementation of the approved corrective action work plan and monitoring schedule.</li> </ul> <p>Verify that copies of all manifests and records documenting the off-site transport and disposal of any free product, contaminated water and soil, or other waste that is generated at the site as a result of the implementation of the corrective action work plan, is submitted to the Department not less than once per quarter necessary.</p> <p>(NOTE: After approving the final report the Department shall issue a letter of no further action, documenting that site clean-up objectives have been met. The approval for no further action does not absolve the owner and operator from</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.5.31.DE.</b> ASTs greater than 250 gallons and less than 12,499 gallons and ASTs less than 40,000 gallons used solely to store diesel, kerosene, or heating fuel must meet registration and documentation requirements (DE 710001352 Part A 1.2.3 and 4.0) [ Added December 2008].</p> <p><b>ST.5.32.DE.</b> ASTs greater than 250 gallons and less than 12,499 gallons and ASTs less than 40,000 gallons used solely to store diesel,</p>	<p>previously incurred or potential future liability.)</p> <p>Verify that all ASTs that contained a regulated substance on or after January 1, 1992 are registered with the Department.</p> <p>Verify that registration of ASTs is renewed annually, on or before February 1 of every year and until the Department receives a formal notice that the AST has been removed or permanently closed or undergone a permanent change in contents.</p> <p>(NOTE: Owners and operators may provide notice for multiple USTs at a single facility using one notification form. Owners with USTs located at more than one facility must file a separate notification form for each facility.)</p> <p>Verify that the owner notifies the Department in writing of any significant change in the information presented on the original registration form at least 10 days prior to the change including:</p> <ul style="list-style-type: none"> <li>- change of address</li> <li>- change of tank ownership</li> <li>- change in tank status</li> <li>- change in products stored from a regulated substance to an unregulated substance.</li> </ul> <p>Verify that the Department is notified at least 10 days prior to removing, permanently closing in place or making a change in service to an AST unless such action is in response to an imminent threat to human health, safety or the environment.</p> <p>Verify that a new owner and operator operates the AST for no more than 72 hours after assuming ownership without the Department having received the new registration form and a transfer of ownership form.</p> <p>Verify that the new owner receives all available documents and information relevant to the AST.</p> <p>Verify that AST owners and operators notify the Department of all retrofits or upgrades of an AST at least 10 days prior to beginning the retrofit or upgrade work.</p> <p>Verify that owners and operators institute safe fill, shutdown and transfer procedures or equivalent measures established by the Department, that will ensure that spills resulting from AST overfills or other regulated substance transfer operations do not occur.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>kerosene, or heating fuel must meet overfill and spill prevention requirements (DE 7 1000 1352 Part A 1.2.3 and 8) [Added December 2008].</p>	<p>Verify that receipts of regulated substance are authorized by the operator, or facility personnel trained by the operator and owner.</p> <p>Verify that the authorizing person ensures the volume available in the AST(s) is greater than the volume of regulated substance to be transferred to the AST(s) before the transfer operation commences.</p> <p>Verify that all AST fill valves not in use are secured and that only the designated AST(s) receives regulated substance.</p> <p>Verify that the transfer operation is monitored either by manual or automatic means to prevent an overfill.</p> <p>Verify that, if the transfer operations are not being continuously monitored by a transfer operator appropriately trained in safe transfer procedures, the AST is equipped with overfill prevention equipment that will automatically shut off the flow into the AST when the AST is no more than 95 percent full or other safe fill level approved by the Department.</p> <p>Verify that all automatic shutoff equipment is equipped with a fail-safe mechanism that will function in the event of power failure, malfunction or similar event.</p> <p>Verify that, if the transfer operations are being continuously monitored by a transfer operator appropriately trained in safe transfer procedures, the AST is equipped with a high level alarm or other automatic mechanism approved by the Department, that will immediately alert the operator to prevent an overfill event.</p> <p>Verify that high level alarm is monitored continuously and upon alert the operator implements safe shut down procedures to prevent an overfill.</p> <p>Verify that the alarm consists of a visual and audible device capable of alerting the transfer operator both by sight and hearing, to prevent an overfill situation.</p> <p>Verify that, if the operator is in a surveillance station, this alarm causes a warning light and a audible signal in that station to activate overfill prevention, failure, malfunction, or power lost.</p> <p>Verify that all regulated substance transfer areas where filling connections are made with vehicles are equipped with a spill containment system capable of containing and collecting those spills and overfills and preventing a release.</p> <p>Verify that, if installed, an automatic shutdown system utilized during transfer of regulated substance includes the capability to direct the flow of regulated substance to another AST capable of receiving the transferred regulated substance or the capability to shut down the pumping or transfer system.</p> <p>Verify that ASTs are equipped with a gauge or other measuring device that is readily visible and accurately indicates the level of regulated substance or quantity</p>

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<p><b>ST.5.33.DE.</b> ASTs greater than 250 gallons and less than 12,499 gallons and ASTs less than 40,000 gallons used solely to store diesel, kerosene, or heating fuel must meet leak detection requirements ( DE 7 1000 1352 Part A 1.2.3 and 9) [Added December 2008].</p> <p><b>ST.5.34.DE.</b> ASTs greater than 250 gallons and less than 12,499 gallons and ASTs less than 40,000 gallons used solely to store diesel,</p>	<p>of regulated substance in the AST.</p> <p>Verify that the overfill prevention and measuring device are independent of each other.</p> <p>Verify that new ASTs (as of June 11, 2004) have a method, or combination of methods, of leak detection that can detect a leak from any portion of the AST.</p> <p>Verify that a leak of regulated substances is detected and contained before contamination of soil outside the containment area or water resources occurs.</p> <p>Verify that leak detection methods other than visual are installed, calibrated, tested, operated and maintained in accordance with the manufacturer's instructions, including routine maintenance checks for operability to ensure that the device is functioning as designed.</p> <p>Verify that all manufacturers' instructions, and the performance claims and their manner of determination described in writing by the equipment manufacturer or installer is retained at the facility for the life of the AST.</p> <p>Verify that leak detection systems is approved by the Department prior to installation.</p> <p>(NOTE: A leak detection response level shall be described in writing for each method or combination of methods of leak detection used for an AST.)</p> <p>Verify that the leak detection method or combination of methods used is capable of being inspected at least every 7 days to determine if a leak from the AST has occurred.</p> <p>Verify that any interstitial spaces, including but not limited to those located in double-walled ASTs, double-walled piping, and double bottoms that are installed as part of new or upgraded AST, are equipped with interstitial monitoring equipment capable of detecting a discharge of regulated substance into the interstitial space under all operating conditions.</p> <p>(NOTE: Double-walled ASTs that are not in contact with the soil and that additionally meets the requirements for secondary containment are not required to comply with the inspection and interstitial space requirements above.)</p> <p>Verify that, after a release, other than that that comply with secondary containment release requirements, is confirmed, the owner/operator conducts an investigation as the first step in the corrective action process unless directed to do otherwise by the Department.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>kerosene, or heating fuel must meet corrective action requirements ( DE 7 1000 1352 Part A 1.2.3 and Part E) [Added December 2008].</p> <p><b>ST.5.35.DE.</b> ASTs of 1, 100 gallons or less and ASTs used to store propane gas, ASTs installed on a temporary basis, and ASTs regulated under boiler regulations and extremely hazardous risk management regulations must meet overflow and spill prevention requirements (DE 7 1000 1352 Part A 1.2.2 and</p>	<p>Verify that the Department receives the results of the investigation no later than 120 days after the release was reported and confirmed.</p> <p>(NOTE: At any point after reviewing the information contained in the investigation report, the Department may require owner and operator to submit additional information or to develop and submit a corrective action work plan for responding to contaminated soils, surface water and/or ground water.)</p> <p>Verify that the approved action plan is implemented, including any modifications to the corrective action work plan made by the Department, within 30 days.</p> <p>Verify that, at a minimum, the owner/operator monitors, evaluates, and reports the results of implementing the corrective action work plan quarterly (4 times per calendar year), or within the time schedule approved by the Department in the corrective action work plan.</p> <p>Verify that the effectiveness of the implemented corrective action plan is evaluated after 1 year and one of the following is submitted to the Department:</p> <ul style="list-style-type: none"> <li>- a request for no further action</li> <li>- a revised corrective action work plan prepared</li> <li>- a request to continue implementation of the approved corrective action work plan and monitoring schedule.</li> </ul> <p>Verify that copies of all manifests and records documenting the off-site transport and disposal of any free product, contaminated water and soil, or other waste that is generated at the site as a result of the implementation of the corrective action work plan, is submitted to the Department not less than once per quarter necessary.</p> <p>(NOTE: After approving the final report the Department shall issue a letter of no further action, documenting that site clean-up objectives have been met. The approval for no further action does not absolve the owner and operator from previously incurred or potential future liability.)</p> <p>(NOTE: The following ASTs are only subject to the requirements of Part A, 1, Part A, 2, and Part A 8 and Part E of these Regulations:</p> <ul style="list-style-type: none"> <li>- ASTs of 1,100 gallons or less in capacity, located on a farm, and used solely to facilitate the production of crops, livestock, or livestock products on the farm</li> <li>- ASTs used solely to store propane gas</li> <li>- ASTs of 1,100 gallons or less in capacity used solely to store heating fuel for consumptive use on the premises where stored</li> <li>- ASTs of 1,100 gallons or less in capacity used solely to store Motor Fuel or motor oil for Noncommercial purposes</li> <li>- ASTs installed on a temporary basis, not to exceed six months</li> <li>- ASTs regulated pursuant to Title 29 Del. C. Ch. 8028, <i>Division of Boiler</i></li> </ul>

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8) [Added December 2008].	<p><i>Safety</i></p> <ul style="list-style-type: none"> <li>- ASTs and associated equipment regulated as a part of a process regulated pursuant to Title 7 Del. C. Ch. 77 <i>Extremely Hazardous Substances Risk Management Act.</i>)</li> </ul> <p>Verify that owners and operators institute safe fill, shutdown and transfer procedures or equivalent measures established by the Department, that will ensure that spills resulting from AST overfills or other regulated substance transfer operations do not occur.</p> <p>Verify that receipts of regulated substance are authorized by the operator, or facility personnel trained by the operator and owner.</p> <p>Verify that the authorizing person ensures the volume available in the AST(s) is greater than the volume of regulated substance to be transferred to the AST(s) before the transfer operation commences.</p> <p>Verify that all AST fill valves not in use are secured and that only the designated AST(s) receives regulated substance.</p> <p>Verify that the transfer operation is monitored either by manual or automatic means to prevent an overfill.</p> <p>Verify that, if the transfer operations are not being continuously monitored by a transfer operator appropriately trained in safe transfer procedures, the AST is equipped with overfill prevention equipment that will automatically shut off the flow into the AST when the AST is no more than 95 percent full or other safe fill level approved by the Department.</p> <p>Verify that all automatic shutoff equipment is equipped with a fail-safe mechanism that will function in the event of power failure, malfunction or similar event.</p> <p>Verify that, if the transfer operations are being continuously monitored by a transfer operator appropriately trained in safe transfer procedures, the AST is equipped with a high level alarm or other automatic mechanism approved by the Department, that will immediately alert the operator to prevent an overfill event.</p> <p>Verify that high level alarm is monitored continuously and upon alert the operator implements safe shut down procedures to prevent an overfill.</p> <p>Verify that the alarm consists of a visual and audible device capable of alerting the transfer operator both by sight and hearing, to prevent an overfill situation.</p> <p>Verify that, if the operator is in a surveillance station, this alarm causes a warning light and a audible signal in that station to activate overfill prevention, failure, malfunction, or power lost.</p> <p>Verify that all regulated substance transfer areas where filling connections are</p>

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<p><b>ST.5.36.DE.</b> ASTs of 1, 100 gallons or less and ASTs used to store propane gas, ASTs installed on a temporary basis, and ASTs regulated under boiler regulations and extremely hazardous risk management regulations must meet corrective action requirements ( DE 7 1000 1352 Part 1.2.2 and Part E ) [Added December 2008].</p>	<p>made with vehicles are equipped with a spill containment system capable of containing and collecting those spills and overfills and preventing a release.</p> <p>Verify that, if installed, an automatic shutdown system utilized during transfer of regulated substance includes the capability to direct the flow of regulated substance to another AST capable of receiving the transferred regulated substance or the capability to shut down the pumping or transfer system.</p> <p>Verify that ASTs are equipped with a gauge or other measuring device that is readily visible and accurately indicates the level of regulated substance or quantity of regulated substance in the AST.</p> <p>Verify that the overfill prevention and measuring device are independent of each other.</p> <p>(NOTE: The following ASTs are only subject to the requirements of Part A, 1, Part A, 2, and Part A 8 and Part E of these Regulations:</p> <ul style="list-style-type: none"> <li>- ASTs of 1,100 gallons or less in capacity, located on a farm, and used solely to facilitate the production of crops, livestock, or livestock products on the farm</li> <li>- ASTs used solely to store propane gas</li> <li>- ASTs of 1,100 gallons or less in capacity used solely to store heating fuel for consumptive use on the premises where stored</li> <li>- ASTs of 1,100 gallons or less in capacity used solely to store motor fuel or motor oil for noncommercial purposes</li> <li>- ASTs installed on a temporary basis, not to exceed six months</li> <li>- ASTs regulated pursuant to Title 29 Del. C. Ch. 8028, <i>Division of Boiler Safety</i></li> <li>- ASTs and associated equipment regulated as a part of a process regulated pursuant to Title 7 Del. C. Ch. 77 <i>Extremely Hazardous Substances Risk Management Act.</i>)</li> </ul> <p>Verify that, after a release, other than those that comply with secondary containment release requirements, is confirmed, the owner/operator conducts an investigation as the first step in the corrective action process unless directed to do otherwise by the Department.</p> <p>Verify that the Department receives the results of the investigation no later than 120 days after the release was reported and confirmed.</p> <p>(NOTE: At any point after reviewing the information contained in the investigation report, the Department may require owner and operator to submit additional information or to develop and submit a corrective action work plan for responding to contaminated soils, surface water and/or ground water.)</p> <p>Verify that the approved action plan is implemented, including any modifications</p>

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<p><b>ST.5.37.DE.</b> [Moved January 2010].</p> <p><b>ST.5.38.DE.</b> [Moved January 2010].</p>	<p>to the corrective action work plan made by the Department, within 30 days.</p> <p>Verify that, at a minimum, the owner/operator monitors, evaluates, and reports the results of implementing the corrective action work plan quarterly (4 times per calendar year), or within the time schedule approved by the Department in the corrective action work plan.</p> <p>Verify that the effectiveness of the implemented corrective action plan is evaluated after 1 year and one of the following is submitted to the Department:</p> <ul style="list-style-type: none"> <li>- a request for no further action</li> <li>- a revised corrective action work plan prepared</li> <li>- a request to continue implementation of the approved corrective action work plan and monitoring schedule.</li> </ul> <p>Verify that copies of all manifests and records documenting the off-site transport and disposal of any free product, contaminated water and soil, or other waste that is generated at the site as a result of the implementation of the corrective action work plan, is submitted to the Department not less than once per quarter necessary.</p> <p>(NOTE: After approving the final report the Department shall issue a letter of no further action, documenting that site clean-up objectives have been met. The approval for no further action does not absolve the owner and operator from previously incurred or potential future liability.)</p> <p>(NOTE: Moved to ST.100.2.DE. and repeated in ST.105.2.DE.)</p> <p>(NOTE: Moved to ST.100.3.DE. and repeated in ST.105.3.DE.).</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<b>ST.10.</b>	
<b>EMISSIONS FROM BULK GASOLINE TERMINALS</b>	
<b>ST.10.1.DE.</b> [Deleted January 2008].	(NOTE: DE 7 1000 1124 revised.)
<b>ST.10.2.DE.</b> [Deleted January 2008].	(NOTE: DE 7 1000 1124 revised.)
<b>ST.10.3.DE.</b> [Deleted January 2008].	(NOTE: DE 7 1000 1124 revised.)
<b>ST.10.4.DE.</b> [Deleted January 2008].	(NOTE: DE 7 1000 1124 revised.)
<b>ST.10.5.DE.</b> [Deleted January 2008].	(NOTE: DE 7 1000 1124 revised.)
<b>ST.10.6.DE.</b> [Deleted January 2008].	(NOTE: DE 7 1000 1124 revised.)
<b>ST.10.7.DE.</b> Gasoline dispensing facilities must meet stage I vapor recovery operating requirements (DE 7 1000 1124, Section 26.1 and 26.3) [ Revised December 2002; Revised January 2008].	(NOTE: This checklist item applies to any stationary gasoline storage tank located at any gasoline dispensing facility in the State of Delaware, except: <ul style="list-style-type: none"> <li>- the storage tank(s) at any gasoline dispensing facility, which never has a throughput of greater than 10,000 gallons of gasoline</li> <li>- any stationary gasoline storage tank that is equipped with a floating roof or its equivalent that has been approved by the Administrator of the U.S. EPA</li> <li>- any stationary gasoline storage tank with a capacity of less than 550 gallons used exclusively for the fueling of farm equipment</li> <li>- any stationary gasoline storage tank with a capacity of less than 2,000 gal that was constructed prior to January 1, 1979</li> <li>- any stationary gasoline storage tank with a capacity of less than 250 gal that was constructed after December 31, 1978.)</li> </ul>

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<p><b>ST.10.8.DE.</b> Gasoline dispensing facilities must meet recordkeeping requirements ( DE 7 1000 1124, Section 26.4) [ Revised December 2002 ; Citation Revised January 2008].</p> <p><b>ST.10.9.DE.</b> Transfers of gasoline into the fuel tank of any motor vehicle must meet stage I vapor recovery requirements ( DE 7 1000 1124, Sections 36.1 and 36.3) [Revised December 2002; Revised January 2008].</p>	<p>Verify that the stationary gasoline storage tank(s) is loaded by submerged fill using a drop tube that extends to within 150 mm (5.9 in.) from the bottom of the tank including the following storage tanks that are exempt from the rest of the requirements:</p> <ul style="list-style-type: none"> <li>- any stationary gasoline storage tank that is equipped with a floating roof or its equivalent that has been approved by the Administrator of the U.S. EPA</li> <li>- any stationary gasoline storage tank with a capacity of less than 550 gallons used exclusively for the fueling of farm equipment</li> <li>- any stationary gasoline storage tank with a capacity of less than 2,000 gal that was constructed prior to January 1, 1979</li> <li>- any stationary gasoline storage tank with a capacity of less than 250 gal that was constructed after December 31, 1978.</li> </ul> <p>Verify that a stage I vapor recovery system operates such that the vapors displaced by the liquid gasoline are returned to the delivery vessel and transported back to the bulk plant or terminal.</p> <p>Verify that Stage I systems utilize dual point vapor connections to return vapors from the storage tank to the delivery truck.</p> <p>Verify that storage tanks are filled only by uploading from vaportight gasoline tank trucks.</p> <p>Verify that any stationary gasoline storage tank exempted from Stage I vapor recovery requirements by virtue of having a monthly throughput that never exceeds 10,000 gal (see ST.10.7.DE. above) keeps on the facility premises records showing monthly throughput for at least 5 years from the date of record.</p> <p>(NOTE: This section applies to any gasoline dispensing facility, except:</p> <ul style="list-style-type: none"> <li>- any gasoline dispensing facility, which never has a throughput of greater than 10,000 gallons of gasoline, is subject only to the recordkeeping requirements (see ST.10.11.DE. below)</li> <li>- any gasoline dispensing facility that is used exclusively for refueling marine vehicles, aircraft, farm equipment, and/or emergency vehicles.)</li> </ul> <p>(NOTE: Any gasoline dispensing facility that ever exceeds the throughput of 10,000 gallons of gasoline, is subject to all of the requirements of this section, and remains subject to these requirements even if its throughput later falls below the exemption throughput.)</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.10.10.DE.</b> Gasoline dispensing equipment must be tested (DE 7 1000 1124, Sections 36.4) [Revised December 2002 ; Citation Revised January 2008].</p>	<p>Verify that any gasoline dispensing facility meets the following standards</p> <ul style="list-style-type: none"> <li>- designs, installs, operates, and maintains one of the Stage II Vapor Recovery Systems</li> <li>- for systems with manifolded vapor lines, the liquid returns into the lowest octane tank</li> <li>- for non-manifolded systems with separate vapor lines, the liquid returns to the tank that has the same product as is dispensed at the nozzle where the liquid was introduced into the vapor lines</li> <li>- installs and maintains a vapor shear valve that functions similarly to the product shear valve</li> <li>- conspicuously posts "Operating Instructions" on both sides of each gasoline dispenser that include: <ul style="list-style-type: none"> <li>- a clear description of how to correctly dispense gasoline</li> <li>- a warning that repeated attempts to continue dispensing gasoline, after the system has indicated that the vehicle fuel tank is full ( by automatically shutting off), may result in spillage or recirculation of gasoline</li> <li>- a toll-free telephone number to report problems experienced with the vapor recovery system to the Department.</li> </ul> </li> </ul> <p>Verify that at least one representative from each facility, or facilities under common ownership, attend a training program on the operation and maintenance requirements of the Stage II equipment that is selected for installation and/or installed on their facility premises.</p> <p>Verify that the trained personnel perform routine maintenance inspections and record the inspection results on a daily basis.</p> <p>Verify that the owner and/or operator posts "Out of Order" signs and "Bags-out" the nozzle associated with any part of the defective vapor recovery system until said system has been repaired or replaced.</p> <p>(NOTE: See ST.10.9.DE. for applicability.)</p> <p>Verify that any gasoline dispensing facility with a Stage II Vapor Recovery System performs and passes the following tests in accordance with the test methods and procedures stated, or as otherwise approved by the Department and the Administrator of the EPA:</p> <ul style="list-style-type: none"> <li>- within 10 days of installation of the Stage II vapor recovery system: <ul style="list-style-type: none"> <li>- a Pressure Decay/Leak Test, conducted in accordance with Test Procedure TP-96-1 of the San Diego Protocol, Revision III dated 3-1-96</li> <li>- a Dynamic Backpressure and Liquid Blockage Test, conducted in accordance with the procedures in "Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Fueling</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.10.11.DE.</b> Gasoline dispensing facilities must meet specific recordkeeping requirements ( DE 7 1000 1124, Sections 36.4.6 and 36.4.7) [ Revised December 2002; Revised January 2008].</p>	<p>Sites, PEI/RP300-97", Chapter 8</p> <ul style="list-style-type: none"> <li>- for assist systems, an Air to Liquid Volume Ratio Test conducted in accordance with the procedures in " Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Fueling Sites, PEI/RP300-97", Chapter 9</li> <li>- a Vapor Tie Test, conducted in accordance with Test Procedure TP-96-1 of the San Diego Protocol, Revision III dated 3-1-96</li> </ul> <p>-annually for each Stage II vapor recovery system:</p> <ul style="list-style-type: none"> <li>- a Pressure Decay/Leak Test</li> <li>- for Balance Systems, A Dynamic Backpressure and Liquid Blockage Test</li> <li>- for Assist Systems, An Air to Liquid Volume Ratio Test.</li> </ul> <p>Verify that written notification is submitted to the Department not less than 10 working days prior to the performance of any compliance test, unless approval by the Department is granted to the contrary.</p> <p>Verify that the owner and/or operator and test contractor reports all test failures to the Department within 24 hours of the failure.</p> <p>Verify that the owner and/or operator submits the following to the Department within 30 days of the test date:</p> <ul style="list-style-type: none"> <li>- the actual test date</li> <li>- the installing and/or testing companies' name(s), address(es), and phone number(s)</li> <li>- if any corrective action was performed.</li> </ul> <p>(NOTE: See ST.10.9.DE. for applicability.)</p> <p>Verify that a gasoline dispensing facility keeps on the facility premises all of the following information for at least 3 years from the date of record:</p> <ul style="list-style-type: none"> <li>- copies of the Stage I and Stage II System permit applications and the current Construction/Operation Permits and are maintained permanently)</li> <li>- the test results, dated and noting the installing and test companies' names, addresses, and phone numbers</li> <li>- any maintenance conducted on any part of the Stage II vapor recovery system</li> <li>- a file of all daily inspection reports including records of daily self-inspections, and any third party inspection records</li> <li>- a file of all compliance records.</li> </ul> <p>Verify that any gasoline dispensing facility exempted from the requirements of this section by virtue of never having a monthly throughput of greater than 10,000 gallons of gasoline, maintains records of monthly throughput for a minimum of 3</p>

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	years from the date of record.
<b>ST.10.12.DE.</b> [Deleted January 2008].	(NOTE: DE 7 1000 1124 revised.)
<b>ST.10.13.DE.</b> [Moved December 2000].	(NOTE: Moved to ST.15.7.DE.; December 2000.)
<b>ST.10.14.DE.</b> [Moved December 2000].	(NOTE: Moved to ST.15.8.DE.; December 2000.)

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<p><b>ST.15.</b></p> <p><b>EMISSIONS/ DISCHARGES FROM POL STORAGE VESSELS</b></p> <p><b>ST.15.1.DE.</b> [Deleted January 2008].</p> <p><b>ST.15.2.DE.</b> [Deleted January 2008].</p> <p><b>ST.15.3.DE.</b> [Deleted January 2008].</p> <p><b>ST.15.4.DE.</b> [Deleted January 2008].</p> <p><b>ST.15.5.DE.</b> [Deleted January 2008].</p> <p><b>ST.15.6.DE.</b> [Deleted January 2008].</p> <p><b>ST.15.7.DE.</b> [Deleted January 2008].</p> <p><b>ST.15.8.DE.</b> [Deleted January 2008].</p>	<p>(NOTE: DE 7 1000 1124 revised and Section 30 reserved.)</p> <p>(NOTE: DE 7 1000 1124 revised and Section 30 reserved.)</p> <p>(NOTE: DE 7 1000 1124 revised and Section 30 reserved.)</p> <p>(NOTE: DE 7 1000 1124 revised and Section 30 reserved.)</p> <p>(NOTE: DE 7 1000 1124 revised and Section 31 reserved.)</p> <p>(NOTE: DE 7 1000 1124 revised and Section 31 reserved.)</p> <p>(NOTE: DE 7 1000 1124 revised and Section 27 reserved.)</p> <p>(NOTE: DE 7 1000 1124 revised and Section 27 reserved.)</p>

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<p><b>ST.25.</b></p> <p><b>SUBSTANDARD USTS</b></p> <p><b>ST.25.1.DE.</b> Existing regulated substance UST systems installed prior to July 12, 1985 must meet specific requirements (DE 7 1000 1351 Part B 2. 34) [Revised December 2008].</p> <p><b>ST.25.2.DE.</b> [Deleted December 2008].</p> <p><b>ST.25.3.DE.</b> [Deleted December 2008].</p> <p><b>ST.25.4.DE.</b> [Deleted December 2008].</p>	<p>Verify that, not later than January 1, 1991, all UST systems storing regulated substance (excluding heating fuel or hazardous substance) installed prior to July 12, 1985 is in compliance with one of the following:</p> <ul style="list-style-type: none"> <li>- the permanent removal or closure in place of the UST system in accordance with the requirements of Part B, 4 these regulations and the applicable hydrogeologic investigation and Remedial Action requirements of Part E</li> <li>- the requirements of the following: <ul style="list-style-type: none"> <li>- release detection requirements of 2.9</li> <li>- piping release detection requirements of 2.19, and 2.20 or 2.21</li> <li>- spill protection requirements of 2.22</li> <li>- overfill protection requirements of 2.23</li> <li>- fill line protection requirements of 2.24.</li> </ul> </li> </ul> <p>Verify that, not later than December 22, 1998, all UST systems storing regulated substance (excluding heating fuel or hazardous substance) installed prior to July 12, 1985 was in compliance with the requirements of one of the following:</p> <ul style="list-style-type: none"> <li>- UST system design requirements of 2.3</li> <li>- UST system cathodic protection requirements of 2.6 and 2.25 of this Part</li> <li>- System cathodic protection requirements of 2.6 and 2.25 and UST system Internal Lining requirements of 2.33</li> <li>- permanent removal or closure in place of the UST system in accordance with the requirements of Part B, 4 these regulations and the applicable hydrogeologic investigation and remedial action requirements of Part E.</li> </ul> <p>(NOTE: See ST.25.1.DE.)</p> <p>(NOTE: See ST.25.1.DE.)</p> <p>(NOTE: See ST.25.1.DE.)</p>

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<b>ST.25.5.DE.</b> [Deleted December 2008].	(NOTE: See ST.25.1.DE.)
<b>ST.25.6.DE.</b> [Deleted December 2008].	(NOTE: See ST.25.1.DE.)
<b>ST.25.7.DE.</b> [Deleted December 2008].	(NOTE: See ST.25.1.DE.)
<b>ST.25.8.DE.</b> [Deleted December 2008].	(NOTE: See ST.25.1.DE.)

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**ST.30.**

**UST STATE SPECIFIC**

**ST.30.1.DE.** Exempt UST systems must meet specific requirements ( DE 7 1000 1351 Part A 1 .2.1) [Revised December 2008].

(NOTE: The following UST systems are only subject to the requirements of Part A 4.10., and Part B 4.6., and Part C 4.5., and Part D 3.6., and Part E of these Regulations:

- agricultural/farm and residential UST systems of 1,100 gallons or less used for storing motor fuels for non commercial purposes
- UST systems containing heating fuel of 1,100 gallons or less for consumptive use on the premises where stored
- any UST system holding hazardous wastes listed or identified under Subtitle C of the Solid Waste Disposal Act, or a mixture of such hazardous waste and other regulated substances
- any wastewater treatment tank system that is part of a wastewater treatment facility regulated under 402 or 307(b) of the Clean Water Act
- equipment and machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment tanks
- any UST system whose capacity is 110 gallons or less
- any emergency spill or overflow containment UST system that is expeditiously emptied after use.)

Verify that exempted tanks meet the following:

- UST system tightness testing requirements
- release prohibition and reporting of suspected releases requirements from a previously removed or closed UST
- reporting and cleanup of spills and overfill requirements (ST.80)
- release and corrective action response requirements for petroleum and hazardous substance UST systems (ST.80).

**ST.30.2.DE.** USTs must meet requirements when delivery is prohibited ( DE 7 1000 1351 Part A 9.0) [Added December 2008].

(NOTE: Delivery prohibition tag shall mean a tamper resistant tag, approximately 4.5 inches x 7.5 inches, colored red, which shall include without limitation the following wording, printed in white, in all capital letters, in at least 36 point bold-faced type:

- "PETROLEUM DELIVERY PROHIBITED"
- "No person shall remove, deface, alter or otherwise tamper with this delivery Prohibition Tag. This Delivery Prohibition Tag is affixed by the Tank Management Branch, Delaware Department of Natural Resources and Environmental Control, pursuant to Part A, 9.1.1. through 9.1.15. of the Regulations Governing Underground Storage Tank systems, as amended. Violators are subject to civil and criminal penalties pursuant to 7 Del.C. 6005, 6013, and 7411." Contact information for the Tank Management

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.3.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet general requirements (DE 71000 1351, Part B 2.1, 2.2, and 2.3) [Added January 2010].</p>	<p align="center">Branch shall be included on the Delivery Prohibition Tag.)</p> <p>Verify that no person orders, delivers or accepts delivery of a regulated substance into an UST system that has a delivery prohibition tag affixed to the UST system.</p> <p>Verify that no person removes, defaces, alters or otherwise tampers with a delivery prohibition tag so that any information contained on it becomes illegible or otherwise is rendered unavailable to any person considering or commencing delivery of regulated substance into the UST system.</p> <p>Verify that all UST systems are designed, constructed, installed and operated in accordance with manufacturer's specifications, and accepted engineering practices and procedures; in a manner which will prevent releases of regulated substances to the ground waters, surface waters or soils of the state due to corrosion, structural failure, spills and overfills for the operational life of the tank.</p> <p>Verify that the material used in the construction and lining of the tank are compatible with the substances to be stored in the UST system.</p> <p>Verify that bare steel UST systems or steel UST systems coated with asphalt are prohibited.</p> <p>Verify that all double elbow swing joints are replaced with flexible connectors not later than January 1, 2011.</p> <p>Verify that dispenser hoses are a maximum of 18 feet in length unless otherwise approved by the Department.</p> <p>Verify that, when not in use, hoses are reeled, racked or otherwise protected from damage.</p> <p>Verify that a written plan of the tank facility was submitted to the Department and to any designated state or local government agency for approval 30 days before the installation.</p> <p>(NOTE: The following are acceptable designs for UST system construction:  <ul style="list-style-type: none"> <li>- cathodically protected steel</li> <li>- fiberglass-reinforced plastic</li> <li>- steel fiberglass reinforced plastic composite</li> <li>- composite coated</li> <li>- cathodically protected double-walled steel</li> <li>- double-walled fiberglass-reinforced plastic</li> <li>- other equivalent design approved by the Department.)</li> </ul> </p> <p>Verify that the UST systems was installed in accordance with these regulations, the manufacturer's specifications, accepted engineering practices and the</p>



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<p><b>ST.30.4.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet testing requirements (DE 71000 1351, Part B 2.13.3) [Added January 2010].</p> <p><b>ST.30.5.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet secondary containment requirements (DE 71000 1351, Part B 2.4) [Added January 2010].</p>	<p>following industry standards:</p> <ul style="list-style-type: none"> <li>- PEI, RPI 00, Recommended Practices for Installation of Liquid Storage systems</li> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 30A, Motor Fuel Dispensing Facilities and Repair Garages.</li> </ul> <p>Verify that, after installation of the tank and integral piping is completed, the entire UST system is tested in accordance with current industry standards and practices and in the following manner to prove tightness prior to the initial use of the UST system.</p> <p>Verify that all testing of UST systems is accomplished by the precision test method described in NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases, or other test approved by the Department which is of equivalent or superior accuracy.</p> <p>Verify that all testing of UST systems accounts for the effects of thermal expansion or contraction of the regulated substances, vapor pockets, Tank deformation, evaporation or condensation, and the location of the water table.</p> <p>Verify that tests are conducted by a person trained and certified in the correct use of the necessary equipment, and are performed in accordance with the testing procedures and requirements established by the test system manufacturer and with current industry standards and practices.</p> <p>(NOTE: The Department reserves the right to require secondary containment or equivalent protection on any portion of the UST system where aquifers underlying the UST facility are determined to need such protection, or where groundwater below the UST facility is within a well head protection area, or where groundwater is susceptible to contamination in order to protect the safety, health, welfare and/or environment of the State.)</p> <p>Verify that secondary containment systems are designed, constructed and installed to:</p> <ul style="list-style-type: none"> <li>- contain the regulated substances released from the UST system until they are detected and removed</li> <li>- prevent the release of regulated substance to the environment at any time during the operational life of the UST system</li> <li>- checked for evidence of a release at least once during each calendar month.</li> </ul> <p>Verify that secondary containment systems include the following:</p> <ul style="list-style-type: none"> <li>- a cathodically protected double walled steel tank and double walled piping</li> </ul>

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<p><b>ST.30.6.DE.</b> Regulated substance U STs installed prior to January 11, 2008 must meet requirements for double walled tanks (DE 7 1000 1351, Part B 2. 5) [Added January 2010].</p>	<ul style="list-style-type: none"> <li>- a double walled fiberglass reinforced plastic tank and double walled piping</li> <li>- a double walled fiberglass reinforced plastic composite tank and double walled piping</li> <li>- a single wall tank placed within a cut-off wall, an excavation liner or trough liner made of material impervious to the regulated substance stored</li> <li>- a vault constructed to meet the following requirements:               <ul style="list-style-type: none"> <li>- the vault is water tight, impervious to leakage of regulated substances and able to withstand chemical deterioration and structural stresses from internal and external causes</li> <li>- the vault is a continuous structure with a chemically resistant water stop used at any joint</li> <li>- there is no drain connections or other entries through the vault other than top entry manholes and other top openings for filling and for emptying the tank, venting and for monitoring and pumping of regulated substance which may leak into the vault</li> <li>- the tank or tanks within the vault is encased or embedded in a manner consistent with acceptable engineering practices</li> <li>- a cut off wall constructed to meet the following:                   <ul style="list-style-type: none"> <li>- cut off wall may be used where groundwater levels are above the bottom of the tank excavation</li> <li>- cut off wall consists of a non permeable barrier which has a permeability rate with respect to water equal to or less than <math>1 \times 10^{-7}</math> cm/sec. It shall not deteriorate in an underground environment or in the presence of regulated substances</li> <li>- a cut off wall shall extend around the perimeter of the excavation and to an elevation above the mean high groundwater level</li> <li>- if a synthetic membrane is used for a cut-off wall, any seams, punctures or tears in the membrane were repaired and made leak tight prior to backfilling (no penetrations of the cut-off wall are permitted)</li> <li>- other equivalent technology approved by the Department.</li> </ul> </li> </ul> </li> </ul> <p>Verify that secondary containment systems are constructed in accordance with acceptable engineering practice and industry standards and have release detection.</p> <p>(NOTE: A double walled tank that is designed and manufactured in accordance with the following requirements satisfies their requirements for secondary containment in 2.4 of this part and the requirements for release detection set forth in 2.9 of this Part.)</p> <p>Verify that the interstitial space of the double walled tank can be monitored for releases.</p> <p>Verify that outer jackets made of steel are coated with a suitable dielectric material in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank systems by Cathodic Protection.</p>

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<p><b>ST.30.7.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet design requirements for cathodically protected steel USTs (DE 7100 1351, Part B 2. 6) [Added January 2010].</p>	<p>Verify that there are no penetrations of any kind through the jacket to the tank except top entry manholes and fittings.</p> <p>Verify that the outer jacket, at a minimum, covers the bottom 80 percent of the UST.</p> <p>Verify that the jacket is able to contain a liquid or be able to contain a vacuum from the time of manufacture completion until the time of installation.</p> <p>Verify that all tanks are equipped with a strike plate located beneath all tank openings.</p> <p>Verify that cathodically protected steel UST systems were designed, constructed, installed and tested in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank systems by Cathodic Protection, and the applicable industry standards, including but not limited to the following:</p> <ul style="list-style-type: none"> <li>- API RP 1632, Cathodic Protection of Underground Petroleum Storage Tanks</li> <li>- NACE RP 0285, Corrosion Control of Underground Storage Tank systems by Cathodic Protection</li> <li>- UL 58, Standard for Steel Underground Storage Tanks for Flammable and Combustible Liquids</li> <li>- UL 1746, Standard for Safety: External Corrosion Protection systems for Steel Underground Storage Tanks</li> <li>- STI, Specification for sti-P3® System for External Corrosion Protection of Underground Steel Storage Tanks.</li> </ul> <p>Verify that tank is coated with a suitable dielectric material in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection.</p> <p>Verify that field-installed cathodic protection systems are designed and installed in accordance with manufacturer's specifications, accepted engineering practice and the requirements listed in this Section.</p> <p>Verify that each cathodic protection system includes sufficient monitoring stations that enable owners and operators to check on the adequacy of the cathodic protection system.</p> <p>Verify that UST systems protected by sacrificial anodes (sti-P3® tanks) are electrically insulated from the piping system with dielectric fittings, bushings, washers, sleeves or gaskets that are chemically stable when exposed to regulated substances, additives, corrosive soils or groundwater.</p> <p>Verify that UST systems not protected by sacrificial anodes are factory coated with a material that will provide equivalent protection and corrosion resistance.</p>

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<p><b>ST.30.8.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet design requirements for fiberglass reinforced plastic USTs (DE 7 1000 1351, Part B 2. 7) [Added January 2010].</p> <p><b>ST.30.9.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet design requirements for steel with non-metallic outer shell USTs (DE 7 1000 1351, Part B 2.8) [Added January 2010].</p> <p><b>ST.30.10.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet general release detection requirements USTs (DE 7 1000 1351, Part B 2.9.1, 2.9.2 and 2.9.11) [Added January 2010].</p>	<p>Verify that defects and any inadequacies in the coating are repaired in accordance with the manufacturer's instructions and standard engineering practice.</p> <p>Verify that fiberglass reinforced plastic UST systems was designed, constructed, installed and tested in accordance with UL 1316, Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols and Alcohol Gasoline Mixtures.</p> <p>Verify that fiberglass reinforced plastic tanks was tested for deflection in accordance with the manufacturer's requirements at the time of installation.</p> <p>Verify that steel fiberglass reinforced plastic UST systems were designed, constructed, installed and tested in accordance with the following industry standards, as applicable:</p> <ul style="list-style-type: none"> <li>- UL 1746, Standard for Safety: External Corrosion Protection systems for Steel Underground Storage Tanks</li> <li>- UL 58; Standard for Steel Underground Tanks for Flammable and Combustible Liquids</li> <li>- STIF-922, Specification for Permatank®</li> <li>- STIF-894, ACT-100® Specification for External Corrosion Protection of FRP Composite Steel Underground Storage Tanks.</li> <li>- STIF-961, ACT-100U® Specification for External Corrosion Protection of Composite Steel Underground Storage Tanks.</li> <li>- STIF-841, Standard for Dual Wall Underground Steel Storage Tanks.</li> </ul> <p>Verify that a release can be detected from any portion of the tank and the connected underground piping that routinely contain regulated substance.</p> <p>Verify that the release detection is installed, calibrated, operated, and maintained in accordance with the manufacturer's specifications, including routine maintenance and service checks for operability or running condition.</p> <p>Verify that release detection is capable of detecting the leak rate or quantity specified for precision Tank testing, automatic tank gauging, line leak detectors, and line tightness testing methods specified in these regulations with a probability of detection of at least 0.95 and a probability of false alarm no greater than 0.05.</p> <p>Verify that owners and operators implement the indicated release investigation procedure if the release detection equipment or methods shows indication of a</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.11.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet inventory control requirements USTs (DE 710001351, Part B 2.9.3) [Added January 2010].</p>	<p>release.</p> <p>(NOTE: Failure by owners and operators to maintain records of required release detection monitoring and inspection may be cause for the Department to require tank tightness test(s) and inspection(s) of the UST facility and a release investigation in accordance with Part E at the expense of owners and operators.)</p> <p>Verify that the UST systems is monitored for releases through the use of inventory control procedures and at least one of the following release detection methods:</p> <ul style="list-style-type: none"> <li>- interstitial monitoring</li> <li>- automatic tank gauging</li> <li>- observation tubes</li> <li>- tank tightness test</li> <li>- monitoring wells</li> <li>- vadose zone vapor detection tubes</li> <li>- u-tubes</li> <li>- Department approved alternative method.</li> </ul> <p>Verify that, if an alternative method or a combination of methods or devices is approved, owners and operators complies with any conditions imposed by the Department on its use to ensure the protection of human health, safety or the environment.</p> <p>Verify that every owner and operator performs inventory control procedures and maintains inventory control records for each tank containing a regulated substance.</p> <p>Verify that records are kept for each tank, or cluster of tanks if they are interconnected, and includes measurements of bottom water levels, sales, use, deliveries, inventory on hand and losses or gains.</p> <p>Verify that reconciliation of records is kept current, accounts for all variables which could affect an apparent loss or gain and shall be in accordance with generally accepted practices.</p> <p>Verify that the data is accumulated for each day a tank has regulated substance added or withdrawn (but not less frequently than once a week), and includes as a minimum:</p> <ul style="list-style-type: none"> <li>- a description and amount of regulated substances</li> <li>- all measurement of water level in the bottom of a tank is made to the nearest one eighth (1/8 ") of an inch.</li> <li>- equipment used is capable of measuring the level of regulated substance over the full range of the tank's height to the nearest one eighth (1/8") of an inch with inches are converted to gallons</li> <li>- inputs and outputs of regulated substance recorded daily in gallons.</li> </ul>

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(NOTE: All measurements must be converted from inches to gallons.)

Verify that all deliveries and measurements are made through a drop tube that extends to within 5.9 inches of the tank bottom.

Verify that regulated substance dispensing equipment is metered and recorded within the local standards for meter calibration or an accuracy of 6 cubic inches for every 5 gallons of substance withdrawn.

Verify that weekly assessment of the amount of water in UST systems storing non-ethanol regulated substance (excluding heating fuel or hazardous substance or other UST systems with prior Department approval) meets the following requirements:

- measurement of water level in the bottom of the tank is made to the nearest one eighth (1/8 ") of an inch
- if the measurement is 2 inches or more of water, the water is removed from the tank within 7 days and properly disposed in accordance with all local, state and federal requirements.

Verify that, for daily assessment of the amount of water in UST systems storing ethanol blended regulated substance, the measurement of water level in the bottom of the tank is made to the nearest one eighth (1/8") of an inch.

Verify that, if the measurement is 1 inch or more of water for UST systems of 8000 gallons or less, the water is removed from the tank within 7 days and the water is properly disposed in accordance with all local, state and federal requirements.

Verify that, if the measurement is 2 inches or more of water for UST systems greater than 8000 gallons, the water is removed from the tank within 7 days and the water is properly disposed in accordance with all local, state and federal requirements.

(NOTE: Recommended procedures for tank inventory and reconciliation procedures are detailed in API RP 16.21, Bulk Liquid Stock Control at Retail Outlets.)

Verify that losses or gains from each day's inventory are reconciled once during each calendar month.

Verify that, for any day in which there is a loss of 5 percent or more of the regulated substance, or for any month in which there is a significant loss or gain of regulated substance that meets or exceeds 1 percent of the total monthly throughput plus 130 gallons, or any month in which there is an unexplainable consistent negative trend, the release investigation procedure in Part E are followed.

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.12.DE.</b> Regulated substance USTs installed prior to January 11, 2008 using interstitial monitoring release detection must meet specific requirements (DE 710001351, Part B 2.9.4) [Added January 2010].</p>	<p>(NOTE: Tanks equipped with automatic inventory control systems or continuously operating automatic in tank gauging systems may use these devices to perform inventory reconciliation procedures.)</p> <p>(NOTE: The Department may, at its discretion, approve other types of inventory control methods or a combination of methods or devices not specified in this section upon a determination that the proposed method or combination of methods is no less protective of human health, safety or the environment than the above requirements.)</p> <p>(NOTE: Failure to maintain and reconcile inventory control records may be cause for the Department to require tank tightness test(s) and inspection(s) of the UST facility at the expense of owners and operators.)</p> <p>Verify, if that interstitial monitoring between the UST system and a secondary barrier immediately around or beneath the system, it is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains regulated substance and also meets one of the following requirements:</p> <ul style="list-style-type: none"> <li>- for double walled UST systems, the sampling or testing method can detect a Release through the inner wall in any portion of the tank that routinely contains regulated substance</li> <li>- for UST systems with a secondary barrier within the excavation zone, the sampling or testing method can detect a release between the UST system and the secondary barrier</li> <li>- the secondary barrier around or beneath the UST system consists of artificially constructed material that is sufficiently impermeable (at least 1 x 10<sup>-7</sup> cm/sec for the regulated substance stored) to direct a release to the monitoring point and permit its detection</li> <li>- the barrier is compatible with the regulated substance stored so that a release from the UST system will not cause deterioration of the barrier allowing a release to pass through undetected</li> <li>- for cathodically protected tanks, the secondary barrier is installed so that it does not interfere with the proper operation of the cathodic protection system</li> <li>- ground water, soil moisture, or rainfall will not render the testing or sampling method used inoperative so that a release can go undetected for more than 30 days</li> <li>- the site is assessed to ensure that the secondary barrier is always above the ground water and not in a 25 year flood plain, unless the barrier and monitoring are designed for use under such conditions.</li> </ul> <p>(NOTE: For tanks with an internally fitted liner, an automated device may be used to detect a release between the inner wall of the tank and the liner, and the liner shall be compatible with the substance stored.)</p> <p>Verify that, at a minimum of once every 30 calendar days, all interstitial monitoring devices utilized for release detection are inspected for evidence of a</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.13.DE.</b> Regulated substance USTs installed prior to January 11, 2008 using automatic tank gauging release detection must meet specific requirements (DE 710001351, Part B 2.9.5) [Added January 2010].</p>	<p>release from the UST system.</p> <p>Verify that interstitial monitoring results are recorded and maintained for the life of the UST system.</p> <p>Verify that all interstitial monitoring equipment is inspected by a certified technician once every 12 months as part of a preventive maintenance program to minimize in-service failures.</p> <p>Verify that the inspection at a minimum include the following:</p> <ul style="list-style-type: none"> <li>- inspection of the console for printer operation if so equipped</li> <li>- verification of the system setup values and battery backup</li> <li>- verification of the test programming</li> <li>- verification of the operability of all warning and alarm indicator lights and audible alarms</li> <li>- inspection and testing of all interstitial sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper sensor operation</li> <li>- inspection of all cables that are visible during normal operating conditions for any cracking or swelling</li> <li>- correction of any problems found as a result of the required inspection.</li> </ul> <p>Verify that monthly tank tightness testing using automatic tank gauging (ATG) equipment meets the following requirements:</p> <ul style="list-style-type: none"> <li>- the ATG equipment can detect a 0.2 gallons per hour leak rate from any portion of the tank that routinely contains regulated substance</li> <li>- the ATG equipment is capable of producing a record of release detection test results</li> <li>- at a minimum of once during each calendar month, the ATG equipment performs a release detection test for each tank and produces a record of such test</li> <li>- if used for inventory control, the ATG equipment is capable of conducting inventory control.</li> </ul> <p>Verify that all ATGs are inspected by a certified technician once every 12 months as part of a preventive maintenance program to minimize in-service failures.</p> <p>Verify that the inspection at a minimum includes the following:</p> <ul style="list-style-type: none"> <li>- inspection of the ATG console for printer operation if so equipped</li> <li>- verification of the system setup values and battery backup</li> <li>- verification of the test programming</li> <li>- verification of the operability of all warning and alarm indicator lights and audible alarms</li> <li>- inspection and testing of the magnetostrictive probes and sensors in</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.14.DE.</b> Regulated substance USTs installed prior to January 11, 2008 using observation tube release detection must meet specific requirements (DE 71000 1351, Part B 2.9.6) [ Added January 2010].</p>	<p>accordance with the manufacturer's specifications or as directed by the Department to verify proper probe and sensor operation</p> <ul style="list-style-type: none"> <li>- inspection of all cables that are visible during normal operating conditions for any cracking or swelling</li> <li>- correction of any problem noted as a result of the required inspection.</li> </ul> <p>Verify that a record of all release detection tests performed by the ATG equipment is maintained for the life of the UST system.</p> <p>Verify that observation tubes are designed, constructed, installed and maintained to detect a release from any portion of the tank that routinely contains heating fuel.</p> <p>Verify that observation tubes are not used to comply with the release detection requirements after January 1, 2013.</p> <p>(NOTE: A network of observation tubes shall be placed within the excavation of the tank field without the use of conventional well drilling methods during the installation of an UST and without the need for the installer to obtain a water well contractor's license, pay a monitoring well permit fee, obtain a monitoring well permit, or submit a well completion report to the Department as required in the Delaware regulations governing the construction and use of wells. The observation tube however, shall meet the remaining standards set forth in the Department's Regulations Governing the Construction and Use of Wells including the requirement for installation of the tube to a depth of at least 5 feet below the water table. This exception from the standard monitoring well construction criteria pertains only to observation tubes placed within the UST excavation pit.)</p> <p>Verify that the minimum number of observation tubes within an UST system excavation pit is:</p> <ul style="list-style-type: none"> <li>- four observation tubes installed for one UST</li> <li>- six observation tubes installed for two to three USTs</li> <li>- eight observation tubes installed for four to five USTs</li> <li>- ten or more observation tubes installed for six or more USTs.</li> </ul> <p>Verify that observation tubes are clearly marked and secured to avoid unauthorized access and tampering.</p> <p>Verify that observation are used only if the following conditions are met:</p> <ul style="list-style-type: none"> <li>- the regulated substance stored is immiscible in water and has a specific gravity of less than one</li> <li>- ground water is never more than 20 feet from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the observation tubes is not less than <math>1 \times 10^{-2}</math> cm/sec (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.15.DE.</b> Regulated substance USTs installed prior to January 11, 2008 using tank tightness release detection must meet specific requirements (DE 71000 1351, Part B 2.9.7) [ Added January 2010].</p>	<p>materials)</p> <ul style="list-style-type: none"> <li>- the continuous monitoring devices or manual methods used can detect the presence of at least one eighth of an inch of free product on the top of the ground water on the observation tubes</li> <li>- the level of background contamination will not interfere with the method used to detect releases from the UST system.</li> </ul> <p>Verify that all observation tubes are tested for evidence of a release from the UST system by:</p> <ul style="list-style-type: none"> <li>- monitoring with a continuously functioning release detection device</li> <li>- testing at least once during each calendar month with a portable device inserted into the tube</li> <li>- sampling at least once every 30 calendar days with the removal of at least 8 ounces of fluid from the tube, using a bailer or a sampler of similar design.</li> </ul> <p>Verify that the fluid is taken from the surface of the water table unless otherwise directed by the Department and is tested on site for the presence of heating fuel using portable devices; or sent to an independent certified laboratory and analyzed for the presence of the Heating fuel(s) stored at the facility.</p> <p>Verify that results of the required testing are maintained for the life of the UST system.</p> <p>Verify that tank tightness testing is not utilized as a primary method of release detection after December 31, 2008.</p> <p>Verify that a separate tightness test is conducted for each UST system at least once every 12 months until December 22, 1998 or for 10 years after UST installation, whichever is later.</p> <p>Verify that all testing of UST systems is conducted in accordance with the Precision Test methods and procedures specified in NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases, or other test approved by the Department which is of equivalent or superior accuracy.</p> <p>Verify that testing of UST systems utilizes a method capable of detecting a release of a regulated substance at a rate of 0.1 gallons per hour with a probability of detection of 0.95 and a probability of false alarm of 0.05 from any part of the tank that routinely contains heating fuel.</p> <p>(NOTE: These testing methods are limited to those tests that account for the following, if applicable:</p> <ul style="list-style-type: none"> <li>- the presence of vapor pockets</li> <li>- the expansion or contraction of the heating fuel, which include any density</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.16.DE.</b> Regulated substance USTs installed prior to January 11, 2008 using monitoring well release detection must meet specific requirements (DE 71000 1351, Part B 2.9.8) [ Added January 2010].</p>	<p>considerations</p> <ul style="list-style-type: none"> <li>- temperature stratification in the tank</li> <li>- evaporation</li> <li>- pressure variations in the tank</li> <li>- deflection of the tank ends</li> <li>- the location of the water table.)</li> </ul> <p>Verify that tests are conducted by a person trained and certified in the correct use of the necessary equipment, and are performed in accordance with the testing procedures and requirements established by the test system manufacturer.</p> <p>Verify that a copy of the results of the tank tightness tests is maintained for the life of the UST system.</p> <p>Verify that, if the UST system fails NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases, criteria, the tank test failure is reported to the Department within 24 hours and a paper copy of the test results are submitted to the Department within 7 days of the test failure.</p> <p>Verify that test results include, at a minimum, the following information:</p> <ul style="list-style-type: none"> <li>- the procedures used including any deviations from those recommended by the developer of the test procedure for the release detection method</li> <li>- the name of the company performing the test</li> <li>- the method used</li> <li>- the results of the test.</li> </ul> <p>Verify that monitoring wells are designed, constructed, installed and maintained to detect a release from any portion of the tank that routinely contains heating fuel.</p> <p>Verify that monitoring wells are not used to comply with the release detection requirements after January 1, 2013.</p> <p>Verify that monitoring wells are designed, constructed and installed in accordance with the Delaware Regulations Governing the Construction and Use of Wells.</p> <p>Verify that a network of a minimum of 4 monitoring wells are placed immediately outside of the excavation around the tank.</p> <p>Verify that monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.</p> <p>Verify that monitoring wells are used only if the following conditions are met:</p> <ul style="list-style-type: none"> <li>- the regulated substance stored is immiscible in water and has a specific gravity of less than one</li> <li>- ground water is never more than 20 feet from the ground surface and the</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.17.DE.</b> Regulated substance USTs installed prior to January 11, 2008 using U tube release detection must meet specific requirements (DE 71000 1351, Part B 2.9.10) [ Added January 2010].</p>	<p>hydraulic conductivity of the soil(s) between the UST system and the monitoring wells or devices is not less than <math>1 \times 10^{-2}</math> cm/sec (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials)</p> <ul style="list-style-type: none"> <li>- the continuous monitoring devices or manual methods used can detect the presence of at least one eighth of an inch of free product on the top of the ground water in the monitoring wells</li> <li>- the level of background contamination will not interfere with the method used to detect releases from the tank system.</li> </ul> <p>Verify that all monitor wells are tested for evidence of a release from the UST system by one of the following:</p> <ul style="list-style-type: none"> <li>- monitoring with a continuously functioning release detection device</li> <li>- tested at a minimum of once every 30 calendar days with a portable device inserted into the monitor well</li> <li>- sampled at least once every 30 calendar days with the removal of at least 8 ounces of fluid from the well, using a bailer or a sampler of similar design.</li> </ul> <p>Verify that the fluid is taken from the surface of the water table unless otherwise directed by the Department and is tested on site for the presence of regulated substance using portable devices; or sent to an independent certified laboratory and analyzed for the presence of the heating fuel(s) stored at the facility.</p> <p>Verify that the results of monthly testing and are maintained for the life of the UST system.</p> <p>Verify that U tubes are not used to comply with the release detection requirements after January 1, 2013.</p> <p>Verify that U tubes are clearly marked and secured to avoid unauthorized access and tampering.</p> <p>Verify that all U-tubes are monitored for evidence of a release from the UST system by one of the following:</p> <ul style="list-style-type: none"> <li>- monitoring with a continuously functioning release detection device</li> <li>- testing at a minimum of once every 30 calendar days with a portable device inserted into the tube</li> <li>- sampling at least once during each calendar month with the removal of at least 8 ounces of fluid from the well, using a bailer or a sampler of similar design.</li> </ul> <p>Verify that the fluid is taken from the surface of the water table unless otherwise directed by the Department and is tested on site for the presence of regulated substance using portable devices; or sent to an independent certified laboratory</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.18.DE.</b> Regulated substance USTs installed prior to January 11, 2008 using vadose zone vapor release detection must meet specific requirements (DE 7 1000 1 351, Part B 2. 9.9) [Added January 2010].</p>	<p>and analyzed for the presence of the regulated substance(s) stored at the facility.</p> <p>(NOTE: The presence or odor of a regulated substance or a signal from a release detection device shall be evidence of a release unless owners and operators affirmatively demonstrate that no release has occurred.)</p> <p>Verify that the record the results of the testing required are recorded monthly and maintained for the life of the UST system.</p> <p>Verify that vadose zone vapor detection tubes are not used to comply with the release detection requirements of 2.9 of this Part after January 1, 2013</p> <p>Verify that a network of vadose zone vapor detection tubes are placed within the excavation pit.</p> <p>Verify that the tubes extend from the surface of the ground to the water table or to a position at least 2feet below the tank bottom whichever is less.</p> <p>Verify that, if the vapor detection tube is installed within a tank excavation pit lined for secondary containment, the tube extends to within 6 inches of the bottom of the tank excavation.</p> <p>Verify that, for UST systems with vadose zone vapor detection tubes installed after July 12, 1985 the minimum number of vadose zone vapor detection tubes within an UST system excavation pit is:</p> <ul style="list-style-type: none"> <li>- 4 vapor detection tubes for a single UST</li> <li>- 6 vapor detection tubes for 2 to 3 USTs</li> <li>- 8 vapor detection tubes for 4 to 5 USTs</li> <li>- 10 vapor detection tubes for 6 or more USTs.</li> </ul> <p>Verify that, for UST systems with vadose zone vapor detection tubes installed prior to July 12, 1985 have a minimum of four vapor detection tubes within the UST system excavation pit.</p> <p>Verify that vapor detection tubes are clearly marked and secured to avoid unauthorized access and tampering.</p> <p>Verify that all vadose zone vapor detection tubes are equipped with continuously functioning release detection devices or are tested at least once every 30 days with a portable device inserted into the tubes.</p> <p>(NOTE: The presence or odor of a regulated substance or a signal from a release detection device shall be prima facie evidence of a release unless owners and operators affirmatively demonstrate that no release has occurred.)</p> <p>Verify that all operating release detection devices are equipped with an automatic</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.19.DE.</b> Regulated substance U STs installed prior to January 11, 2008 must meet anchoring and backfill requirements U STs (DE 7 1000 1351, Part B 2.10 and 2.11) [Added January 2010].</p> <p><b>ST.30.20.DE.</b> Regulated substance U STs installed prior to January 11, 2008 must meet piping requirements USTs (DE 7 1000 1351, Part B 2.14, 2.15, and 2.16) [Added January</p>	<p>audible or visual alert system.</p> <p>Verify that all continuously operating release detection devices are inspected at least once every 30 calendar days to verify proper sensor operation.</p> <p>Verify that the results of the testing required are recorded once every 30 calendar days and are maintained for the life of the UST system.</p> <p>Verify that support and anchorage are provided for all new installations to avoid tank flotation and are installed in accordance with the PEI RP100, Recommended Practices for Installation of Underground Liquid Storage systems.</p> <p>Verify that one or more of the following methods of anchorage is utilized:</p> <ul style="list-style-type: none"> <li>- reinforced concrete deadmen anchors</li> <li>- bottom hold-down pad which consists of eight inches of reinforced concrete that extends 18 inches beyond tank sides and 12 inches beyond each end</li> <li>- reinforced concrete slab over tank.</li> </ul> <p>Verify that all exposed metallic components of hold down systems are electrically isolated and cathodically protected when the hold down system is required by the Department.</p> <p>Verify that adequate bed of backfill are provided between the tank and concrete.</p> <p>Verify that backfill material consists of sand, crushed rock or pea gravel.</p> <p>Verify that backfill material is clean, washed, inert, free flowing, homogeneous, well granulated, non corrosive, and free of debris, rock, ice, snow or organic material.</p> <p>Verify that particle length of crushed rock or pea gravel is no less than 1/8" and no more than 3/4" in size.</p> <p>Verify that backfill material complies with the tank manufacturer's specifications.</p> <p>Verify that backfill is not mixed with native soil and/or foreign objects.</p> <p>Verify that double elbow swing joints are replaced with flexible connectors by January 1, 2011.</p> <p>Verify that, if crossing of lines is unavoidable, clearance is provided to prevent contact of the pipes.</p> <p>Verify that all regulated substance, vent and vapor return piping slope back to the tank with a minimum slope of one-eighth (1/8") inch per foot.</p>

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2010].	<p>Verify that the pipe joints are cut and deburred according to manufacturer's specifications to provide liquid tight seals.</p> <p>Verify that all underground metal pipe, fittings, flexible connectors, joints, and pipes are coated or wrapped and shall have cathodic protection.</p> <p>Verify that underground piping is protected from corrosion in accordance with accepted corrosion engineering practices and shall be designed, constructed, installed and tested in accordance with the following industry standards, as applicable:</p> <ul style="list-style-type: none"> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 30A, Motor Fuel Dispensing Facilities and Repair Garages</li> <li>- NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases</li> <li>- API RP 1632, Cathodic Protection of Underground Petroleum Storage Tanks</li> <li>- NACE R P 0169, Control of External Corrosion on Underground or Submerged Metallic Piping Systems</li> <li>- UL 971, Standard for Nonmetallic Underground Piping for Flammable Liquids</li> <li>- UL 567, Standard for Emergency Breakaway Fittings, Swivel Connectors and Pipe-Connection Fittings for Petroleum Products and LP-Gas</li> <li>- PEI RP 100, Recommended Practices for Installation of Underground Liquid Storage Systems.</li> </ul> <p>Verify that all integral piping systems are designed, constructed, and installed in a manner which will permit periodic tightness testing of the entire piping system without the need for extensive excavation.</p> <p>(NOTE: Acceptable designs for underground piping construction include cathodically protected metallic, fiberglass reinforced plastic and flexible plastic piping.)</p> <p>Verify that the use of metal piping without either sacrificial anodes or impressed current cathodic protection is prohibited.</p> <p>Verify that cathodically protected piping systems of the sacrificial anode type measure the structure to soil potential at least once every 12 months thereafter.</p> <p>Verify that, if inadequate cathodic protection is indicated, the cause is determined, and necessary repairs made in accordance with accepted engineering practices and one of the applicable standards within 30 days of the test.</p> <p>Verify that, when a sacrificial anode or impressed current system is used, a monitor station to check on the adequacy of the cathodic protection system is installed and kept in proper working condition.</p> <p>Verify that, if at any time the monitor station shows that the electrical current necessary to prevent corrosion is not being maintained the cathodic protection</p>

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<p><b>ST.30.21.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet requirements for fiberglass, plastic, and suction piping USTs (DE 71000 1351, Part B 2.17 and 2.18) [Added January 2010].</p> <p><b>ST.30.22.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet general release detection requirements for UST piping USTs (DE 71000</p>	<p>system is restored, and the piping is tested for tightness in accordance with NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.</p> <p>Verify that fiberglass reinforced plastic and flexible plastic piping is designed, constructed, installed and tested in accordance with the manufacturer's specifications and the following industry standards, as applicable:</p> <ul style="list-style-type: none"> <li>- UL 971, Standard for Nonmetallic Underground Piping for Flammable Liquids</li> <li>- UL Standard 567, Standard for Emergency Breakaway Fittings, Swivel Connectors and Pipe Connection Fittings for Petroleum Products and LP-Gas</li> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 30A, Motor Fuel Dispensing Facilities and Repair Garages.</li> <li>- NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases</li> <li>- PEI RP 100, Recommended Practices for Installation of Underground Liquid Storage Systems.</li> </ul> <p>Verify that pipes, fittings and adhesives are designed, fabricated, and factory tested in accordance with generally accepted structural, material and performance standards for underground piping systems.</p> <p>Verify that suction piping systems are designed and constructed in accordance with the following requirements:</p> <ul style="list-style-type: none"> <li>- the below grade piping is constructed so that if suction is released the contents of the pipe will drain back into the tank</li> <li>- only 1 check valve is included in each suction line</li> <li>- the check valve is located directly below and as close as practical to the suction pump.</li> </ul> <p>Verify that suction piping systems with a foot valve (U.S. Suction) are designed and constructed in accordance with the following requirements:</p> <ul style="list-style-type: none"> <li>- the below grade piping is constructed so that the piping slopes back to the tank</li> <li>- a foot valve is installed at the tank.</li> </ul> <p>Verify that all underground piping that routinely contains regulated substances is equipped with a method, or combination of methods of release detection that can detect a release from any portion of the underground piping that routinely contains regulated substance.</p> <p>Verify that UST piping interstitial or sump monitoring systems are designed,</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>1351, Part B 2.19 and 2.20) [Added January 2010].</p>	<p>constructed installed and maintained to detect a release from any portion of the piping that routinely contains regulated substance.</p> <p>(NOTE: Release detection methods not specified in this section will be considered an alternative by the Department. A written request detailing the method or combination of methods proposed shall be submitted to the Department prior to installation for approval.)</p> <p>Verify that, if an alternative the method or a combination of methods or devices is approved, owners and operators complies with any conditions imposed by the Department on its use to ensure the protection of human health, safety or the environment.</p> <p>Verify that owners and operators implement the indicated release investigation procedure in Part E if the piping release detection equipment or method shows indication of a release.</p> <p>Verify that underground piping that conveys regulated substances under pressure is equipped with an automatic line leak detector.</p> <p>Verify that automatic line leak detector alert owners and operators to the presence of a release by restricting or shutting off the flow of the regulated substance through the piping or triggering an audible or visual alarm:</p> <ul style="list-style-type: none"> <li>- mechanical and electronic automatic line leak detectors is capable of reacting to leaks of 3 gallons per hour at 10 pounds per square inch line pressure within 1 hour</li> <li>- an annual test of the operation of the automatic line leak detector is conducted in accordance with the manufacturer's test protocols.</li> </ul> <p>Verify that all mechanical and electronic automatic line leak detectors pass a function test at least once every 12 months at 3 gallons per hour (gph) at 10 pounds per square inch line pressure within 1 hour.</p> <p>Verify that an annual tightness test of the entire pressurized underground piping system, including primary and secondary piping, is conducted in accordance with NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.</p> <p>Verify that, if owners and operators of UST systems with underground pressurized piping systems constructed of double wall design utilize interstitial monitoring systems to comply with the annual piping tightness test requirements, the following requirements are met:</p> <ul style="list-style-type: none"> <li>- all interstitial monitoring devices are designed, constructed, installed and maintained to continuously detect a release from any portion of the piping that routinely contains regulated substance</li> <li>- at a minimum once every 30 calendar days, proof is provided via the automatic tank gauge record that the interstitial monitoring device is</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.23.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet overflow protection requirements USTs (DE 710001351, Part B 2.23) [Added January 2010].</p>	<p>functioning in accordance with the manufacturer's specifications</p> <ul style="list-style-type: none"> <li>- records of the monthly interstitial release detection automatic tank gauge are maintained for the life of the UST system</li> <li>- the interstitial monitoring device alerts the owner and operator to the presence of a release by shutting off the flow of the regulated substance</li> <li>- all sump and interstitial sensors comply with the testing and monitoring requirements of 2.28 of this part.</li> </ul> <p>Verify that all USTs are constructed, installed, used, or maintained with a reliable means of detecting and preventing an overflow.</p> <p>Verify that the person in charge of the transfer of regulated substance to the tank adheres to proper safety precautions and procedures for transfer as found in NFPA 385, Standard for Tank Vehicles for Flammable and Combustible Liquids or API RP 1621, Bulk Liquid Stock Control at Retail Outlets.</p> <p>Verify that the person in charge of the transfer operation first checks the UST to ensure that the volume available in the UST is greater than the volume of regulated substance to be transferred to the UST before the transfer is made.</p> <p>Verify that, during the transfer, the person in charge continuously monitor the entire transfer operation to prevent an overflow release.</p> <p>Verify that, at the conclusion of the transfer, the person in charge collect any regulated substance that remains in the transfer hose and ensures it is properly managed and does not reach the environment.</p> <p>Verify that the person in charge takes all precautions to prevent spilling and dripping.</p> <p>Verify that overflow protection equipment that meets the one of the following requirements:</p> <ul style="list-style-type: none"> <li>- automatically shut off the flow into the UST when the UST is no more than 95 percent full</li> <li>- alert the transfer operator when the UST is no more than 90 percent full by restricting the flow into the UST or triggering a high level alarm</li> <li>- restrict flow 30 minutes prior to overflowing, alert the operator with a high level alarm one minute before overflowing, or automatically shut off flow into the UST so that none of the fittings located on top of the Tank are exposed to regulated substance due to overflowing</li> <li>- an automatic partial flow shut off float vent or vapor valve installed inside the UST(s) set to restrict flow when the UST is no more than 90 percent full.</li> </ul> <p>Verify that vent or vapor restriction devices are not installed in UST systems that are equipped with suction pumps, remote fill lines, remote vapor lines or receive pressurized deliveries.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.24.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet fill line protection requirements USTs (DE 7 1000 13 51, Part B 2. 24) [Added January 2010].</p> <p><b>ST.30.25.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet sacrificial anode and impressed current cathodic corrosion protection requirements USTs (DE 7 1000 13 51, Part B 2. 25) [Added January 2010].</p>	<p>Verify that UST systems that receive pressurized deliveries require a high level alarm that is triggered at no more than 90 percent full for overfill protection or an automatic flow shut-off valve designed for pressurized deliveries.</p> <p>Verify that owners and operators report, investigate, and clean up any spills and overfills in accordance with Part E (see ST.80).</p> <p>Verify that all fill lines are clearly marked for UST systems to indicate the size of the tank and the type of regulated substance stored.</p> <p>Verify that the markings meet the following requirements:</p> <ul style="list-style-type: none"> <li>- a label or permanent tag at the fill connection which states the size of the UST and the specific type of regulated substance stored</li> <li>- a color symbol system is implemented according to the following requirements: <ul style="list-style-type: none"> <li>- and vapor recovery covers are marked consistent with API RP 1637, Using the API Color-Symbol System to Mark Equipment and Vehicles for Product Identification at Service Stations and Distribution Terminals or API IP 1542, Identification Markings for Dedicated Aviation Fuel Manufacturing and Distribution Facilities, Airport Storage and Mobile Fuel Equipment</li> <li>- a different color symbol is used for each type of regulated substance or grade of substance being stored at the facility.</li> </ul> </li> </ul> <p>Verify that pipes and other openings not used for transfer of regulated substance at the storage facility are not painted any color which would be associated with the color symbol designated for marking the regulated substance stored at the facility.</p> <p>(NOTE: It is particularly important that openings with access to soil and ground water, such as monitor wells, release detection tubes, vadose zone vapor detection tubes and u tubes, not be confused with regulated substance fill lines.)</p> <p>Verify that steel UST systems with corrosion protection systems install, operate and maintain the system in accordance with the following industry standards:</p> <ul style="list-style-type: none"> <li>- NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection</li> <li>- NACE TM0101, Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Tank Systems</li> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 30A, Motor Fuel Dispensing Facilities and Repair Garages.</li> </ul> <p>Verify that steel UST systems with corrosion protection systems are maintained and operated to continuously provide corrosion protection to the metal</p>

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	<p>components of the UST system that routinely contain a regulated substance and are in contact with the ground to ensure that releases due to corrosion are prevented for the life of the UST system.</p> <p>Verify that testing procedures are done in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection, and the manufacturer's specifications, and include the following:</p> <ul style="list-style-type: none"> <li>- a minimum of 3 voltage readings along the center line for UST systems less than 20,000 gallons and a minimum of 5 voltage readings along the center line for UST systems greater than or equal to 20,000 gallons</li> <li>- a minimum of 1 voltage reading for every 10 feet of piping.</li> </ul> <p>Verify that the testing is done by an individual certified by a nationally recognized industry standard setting organization, and in accordance with Department standards within 6 months of installation and after underground work is performed at or near a site with a sacrificial anode cathodic protection system and at least once every 12 months thereafter.</p> <p>Verify that the sacrificial anode cathodic protection system is repaired or replaced in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection and the requirements of 1.6 if the sacrificial anode cathodic protection system is not operating in accordance with the manufacturer's specifications and the requirements of these regulations.</p> <p>(NOTE: The need for repair and replacement includes but is not limited to failure to register a negative voltage of at least 0.85 volts for each UST.)</p> <p>Verify that an individual certified by a nationally recognized industry standard setting organization determine the cause of the failure and makes the necessary repairs within 60 days of the discovery of the failure of the corrosion protection system.</p> <p>Verify that the Department is notified within 48 hours of the discovery of the failure of a sacrificial anode cathodic protection system.</p> <p>Verify that the Department approves, either verbally or in writing, all cathodic protection repair or replacement plans prior to work commencing.</p> <p>(NOTE: The use of alternate methods of monitoring shall be those described in NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection, and shall only be used with prior written approval from the Department.)</p> <p>Verify that a record of the operation, tests, and inspections of sacrificial anode cathodic protection systems is maintained to demonstrate compliance and the records are retained in a permanent record.</p> <p>Verify that impressed current cathodic protection systems are not utilized as a</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.30.26.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet containment sumps and interstitial sensors requirements USTs (DE 7 1000 1351, Part B 2.26, 2.27, and 2.28) [Added January 2010].</p>	<p>repair, upgrade or replacement after January 11, 2008.</p> <p>Verify that the impressed current source is not de-energized at any time including periods when the facility is closed except during power failures or during service work on the UST systems or the impressed current cathodic protection system.</p> <p>Verify that alternate methods of testing have prior written approval from the Department.</p> <p>Verify that all rectifier readings are recorded at least once every 30 calendar days.</p> <p>Verify that all impressed current cathodic protection systems are inspected once every 12 months by an individual certified by a nationally recognized industry standard setting organization and in accordance with department standards.</p> <p>Verify that inspections, at a minimum, include a check for electrical shorts, ground connections, meter accuracy, and circuit resistance.</p> <p>Verify that the effectiveness of isolating devices, continuity bonds, and insulators are evaluated during the annual surveys.</p> <p>Verify that a record of the operation of impressed current cathodic protection systems is maintained to demonstrate compliance with the performance standards.</p> <p>Verify that these records are retained in a permanent record and at a minimum provide the following information:</p> <ul style="list-style-type: none"> <li>- the results of all tests and inspections of the impressed current cathodic protection system</li> <li>- the required rectifier readings.</li> </ul> <p>Verify that, when a sump sensor is used to comply with the tank or piping release detection requirements, the containment sump is product tight and is tested to ensure it is product tight once every 36 months.</p> <p>Verify that all dispenser, tank to pipe transition and any other containment sump tightness testing methods are in accordance with the manufacturer's specifications or are approved in advance by the Department.</p> <p>Verify that dispenser tanks installed after January 11, 2008 are designed and installed such that regulated substance accumulating within the sump is contained and can be detected or is conveyed to the tank top sump via the piping interstitial space where it is contained and can be detected.</p> <p>Verify that all sump and interstitial sensors used to comply with the release detection requirements are inspected and tested once every 12 months in accordance with the manufacturer's specifications or as directed by the</p>

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<p><b>ST.30.27.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet repair requirements USTs (DE 7 1000 1351, Part B 2.29) [ Added January 2010].</p> <p><b>ST.30.28.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet inspection requirements USTs (DE 7 1000 13 51, Part B 2. 32)</p>	<p>Department to verify proper sensor operation.</p> <p>Verify that all repairs, upgrades, retrofits and replacements to existing UST systems meet the applicable design, installation, maintenance and operational standards in Part B, 1 (requirements for USTs installed after January 11, 2008) or are approved by the Department prior to installation.</p> <p>Verify that documentation of repair completion is submitted to the Department.</p> <p>Verify that all equipment installed after January 11, 2008 is installed, operated and maintained so that manufacturer's warranties are not voided.</p> <p>Verify that owners and operators ensure that repairs will prevent releases due to structural failure or corrosion as long as the UST system is used to store regulated substance.</p> <p>Verify that a cathodic protection system is tested within 6 weeks and once every 12 months thereafter following the repair of any cathodically protected UST system to ensure it is operating properly.</p> <p>Verify that records for each repair are maintained for the operational life of the UST system.</p> <p>Verify that, after any repair to a UST system, the UST system is tested for tightness before the UST system is placed into service.</p> <p>Verify that repairs to fiberglass reinforced plastic tanks are made only by the manufacturer or by its authorized representatives.</p> <p>Verify that piping and fittings are replaced when a release has occurred from them.</p> <p>Verify that replacement piping and fittings meet all applicable piping requirements for USTs installed after January 11, 2008.</p> <p>(NOTE: Loose fittings and joints in piping that have been tightened to eliminate leakage may be put back into service.)</p> <p>Verify that a routine inspection is conducted once every 30 calendar days to monitor the condition of all dispensers, dispenser tanks, containment sumps, access ports and tank tops.</p> <p>Verify that the routine inspection includes, at a minimum, the following:</p> <ul style="list-style-type: none"> <li>- the removal of all dispenser covers and visual inspection for any evidence of</li> </ul>

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<p>[Added January 2010].</p> <p><b>ST.30.29.DE.</b> Regulated substance USTs installed prior to January 11, 2008 must meet internal liner requirements USTs (DE 71000 13 51, Part B 2. 33) [Added January 2010].</p>	<p>a release of a regulated substance and inspection of all fittings, couplings and filters</p> <ul style="list-style-type: none"> <li>- the removal of all containment sump covers and visual inspection of the sump for any evidence of a release of a regulated substance</li> <li>- the inspection of all access ports to make sure that the covers, caps and adaptors are tightly sealed</li> <li>- the removal of all spill containment device covers and inspection to ensure all spill containment devices are empty and free of debris, water or regulated substance.</li> </ul> <p>Verify that a record of all routine inspections is kept on file by owners and operators for a minimum of 3 years and are made available to the Department upon request.</p> <p>Verify that the records, at a minimum, include the results of all inspections including any repairs made.</p> <p>Verify that, at any time during a routine inspection, evidence of a release of regulated substance is discovered owners and operators follow the investigation requirements of Part E (see ST.80).</p> <p>Verify that an internal lining is not added to UST systems to meet corrosion protection requirements after January 11, 2008.</p> <p>Verify that lining was installed in accordance with the following industry standards:</p> <ul style="list-style-type: none"> <li>- API RP 1631, Interior Lining and Periodic Inspection of Underground Storage Tanks</li> <li>- NLP Standard 631, Chapter A, Entry, Cleaning, Interior Inspection, Repair, and Lining of Underground Storage Tanks</li> <li>- NLP Standard 631, Chapter B, Future Internal Inspection Requirements for Lined Tanks.</li> </ul> <p>Verify that a lined tank is tested for tightness and found to be tight before the tank is put back into service.</p> <p>Verify that, within 10 years after lining, and every 5 years thereafter, an internal inspection of the lined tank is conducted in accordance with NLP Standard 631, Chapter A, Entry, Cleaning, Interior Inspection, Repair, and Lining of Underground Storage Tanks and Chapter B, Future Internal Inspection Requirements for Lined Tanks, and API RP 1631, Interior Lining and Periodic Inspection of Underground Storage Tanks.</p> <p>Verify that, at the time of the inspection, the lined tank was structurally sound and complied with the original design specifications.</p>

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	Verify that, if any damage is found, repairs are made in accordance with standard engineering practice, industry standards and the requirements of the tank is replaced in accordance with the requirements for new USTs.



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.32.</b></p> <p><b>HEATING FUEL USTs</b></p> <p><b>ST.32.1.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet general requirements (DE 710001351, Part C 1.1) [Added December 2008].</p> <p><b>ST.32.2.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet general installation requirements (DE 710001351, Part C 1.2 and 1.12) [Added December 2008].</p>	<p>Verify that owners/operators ensure that all USTs with a capacity of greater than 1,100 gallons storing heating fuel are designed, constructed, installed and operated in accordance with manufacturer's specifications, and accepted engineering practices and procedures; and in a manner which will prevent releases of heating fuel to the ground waters, surface waters or soils of the State due to corrosion, structural failure, spills and overfills for the operational life of the UST system.</p> <p>Verify that the material used in the construction and lining of the UST system is compatible with the substances to be stored in the UST system.</p> <p>Verify that components of the UST system are approved by Underwriters Laboratories or equivalent third party certified.</p> <p>Verify that all UST systems installed after January 11, 2008, with a storage capacity of greater than 1,100 gallons is designed and installed in accordance with the secondary containment requirements, except where specifically exempted.</p> <p>Verify that steel UST systems or steel UST systems coated with asphalt are not used.</p> <p>Verify that owners and operators install, operate and maintain all equipment so that manufacturer's warranties are not voided.</p> <p>Verify that, prior to the installation of any heating fuel UST system with a storage capacity of greater than 1,100 gallons a site survey is initiated by the facility owner and operator.</p> <p>(NOTE: The pre-installation site survey is conducted to determine the locations of nearby buildings, underground utilities and sewer lines. Private/public drinking water wells, rivers, streams, lakes, canals, and other environmentally sensitive locations will be recorded and incorporated into the design of the UST system facility.)</p> <p>Verify that, if a UST system is installed in or near a previous UST system facility, owners and operators provide a means of release detection that will, at a minimum, detect any future release from any portion of the UST system.</p> <p>Verify that UST system owners and operators notify the Department at least 30 days prior to installation of all heating fuel USTs greater than 1,100 gallons.</p> <p>(NOTE: Notice must include a site plan, the scale of which is one inch to ten feet</p>

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<p><b>ST.32.3.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet design requirements (DE 7 1000 13 51, Part C 1. 3) [Added December 2008].</p>	<p>or less (1 inch 10ft.), and which will at a minimum include the following:</p> <ul style="list-style-type: none"> <li>- information determined from the pre-installation site survey</li> <li>- size and location of tanks including tank dimensions, depth of cover, empty tank weight, tank manufacturer and tank type</li> <li>- the tank installation location, streets, roads, other properties bordering the construction site</li> <li>- piping dimensions and layout</li> <li>- dimensions and locations of vents</li> <li>- type of regulated substance to be stored</li> <li>- location of overfill device, spill prevention system and monitoring devices including dimensions of spill containment devices and sumps when applicable</li> <li>- location of burner unit(s), as appropriate</li> <li>- materials of construction for tank(s), lines and associated appurtenances, including manufacturer name, model numbers and any manufacturers catalog information requested by the Department</li> <li>- location of and access to check valves, antisiphon valves, automatic line leak detectors, and flexible connectors</li> <li>- location of cathodic protection components and test stations</li> <li>- location of utilities (both aboveground and underground)</li> <li>- location of electrical service components</li> <li>- details and dimensions of anchoring method including hold down pads, cover pads or deadmen and electrical isolation methods associated with the anchoring system if applicable. indicate on plan if area is subject to vehicle traffic</li> <li>- location of nearby private/public drinking water wells and surface water bodies.)</li> </ul> <p>Verify that one of the following acceptable designs for heating fuel UST system construction is used:</p> <ul style="list-style-type: none"> <li>- cathodically protected steel</li> <li>- fiberglass reinforced plastic</li> <li>- steel with non-metallic or coated outer shell</li> <li>- other equivalent design approved by the Department.</li> </ul> <p>Verify that heating fuel UST systems are installed in accordance with 1351, the manufacturer's specifications, accepted engineering practices and the following industry standards:</p> <ul style="list-style-type: none"> <li>- PEI R P 1 00, Recommended Practices for Installation of Liquid Storage Systems.</li> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 30A, Motor Fuel Dispensing Facilities and Repair Garages</li> <li>- OSHA, 29 CFR, 1926 Subpart P, Excavations.</li> </ul> <p>Verify that all tanks are equipped with a strike plate located beneath all tank</p>

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<p><b>ST.32.4.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet secondary containment design requirements (DE 7 1000 1351, Part C 1. 4) [Added December 2008].</p> <p><b>ST.32.5.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet double-walled design requirements (DE 7 1000 1351, Part C 1. 5) [Added December 2008].</p>	<p>openings.</p> <p>(NOTE: The Department reserves the right to require secondary containment or equivalent protection on any portion of the UST system where aquifers underlying the UST facility are determined to need such protection, or where groundwater below the UST facility is within a well head protection area, or where groundwater is susceptible to contamination in order to protect the safety, health, welfare and/or environment of the State.)</p> <p>Verify that secondary containment systems are designed, constructed and installed to:</p> <ul style="list-style-type: none"> <li>- contain the heating fuels released from the UST system until it is detected and removed</li> <li>- prevent the release of heating fuel to the environment at any time during the operational life of the UST system</li> <li>- be checked for evidence of a release at least once every 30 calendar days.</li> </ul> <p>Verify that secondary containment systems include the following:</p> <ul style="list-style-type: none"> <li>- double-walled tank</li> <li>- double-walled regulated substance and heating fuel return piping and, where required, vent piping</li> <li>- containment sumps at the tank top</li> <li>- tanks and piping shall have interstitial monitoring that shall be checked for evidence of a release at a minimum of once every thirty (30) calendar days</li> <li>- other equivalent technology approved by the Department.</li> </ul> <p>Verify that secondary containment systems are constructed in accordance with acceptable engineering practice and industry standards and have a release detection system in accordance with 1.9 of Part C.</p> <p>(NOTE: A double-walled tank that is designed and manufactured to satisfy the requirements for secondary containment in 1.4 of Part C and the requirements for release detection set forth in 1.9 of Part C.)</p> <p>Verify that the interstitial space of the double-walled tank can be monitored for Releases.</p> <p>Verify that the outer jackets made of steel is coated with a suitable dielectric material in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection.</p> <p>Verify that there are no penetrations of any kind through the jacket to the tank</p>

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<p><b>ST.32.6.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet design requirements for cathodic protection (DE 71000-1351, Part C 1.6) [Added December 2008].</p> <p><b>ST.32.7.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet design requirements for fiberglass reinforced plastic</p>	<p>except top entry manholes and fittings.</p> <p>Verify that the outer jacket covers the entire circumference of the tank.</p> <p>Verify that the jacket is able to contain a liquid or be able to contain a vacuum from the time of manufacture completion until the time of installation.</p> <p>Verify that cathodically protected steel UST systems are designed, constructed, installed and tested in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection, and the applicable industry standards, including but not limited to the following:</p> <ul style="list-style-type: none"> <li>- UL 58, Standard for Steel Underground Tanks for Flammable and Combustible Liquids</li> <li>- UL 1746, Standard for Safety: External Corrosion Protection Systems for Steel Underground Storage Tanks</li> <li>- STI P3, Specification for STI P3® System for External Corrosion Protection of Underground Steel Storage Tanks</li> <li>- STI F-841, Standard for Dual Wall Underground Steel Storage Tanks</li> <li>- STI R-972, Recommended Practice for the Addition of Supplemental Anodes to sti-P3® USTs.</li> </ul> <p>Verify that the tank is coated with a suitable dielectric material in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection.</p> <p>Verify that field-installed cathodic protection systems are designed, constructed, installed and tested in accordance with manufacturer's specifications, accepted engineering practice and the requirements listed in this Section.</p> <p>Verify that each cathodic protection system includes sufficient monitoring stations to enable owners and operators to check on the adequacy of the cathodic protection system.</p> <p>Verify that USTs protected by sacrificial anodes are electrically insulated from the piping system with dielectric fittings, bushings, washers, sleeves or gaskets which are chemically stable when exposed to petroleum, additives, corrosive oils or groundwater.</p> <p>Verify that fiberglass reinforced plastic UST systems are designed, constructed, installed and tested in accordance with UL 1316, Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols and Alcohol-Gasoline Mixtures.</p> <p>Verify that fiberglass reinforced plastic UST systems are of sufficient structural</p>

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<p>(DE 7 1000 1 351, Part C 1.7) [Added December 2008].</p> <p><b>ST.32.8.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet design requirements for steel with non-metallic or coated outer shell USTs (DE 7 1000 13 51, Part C 1. 8) [Added December 2008].</p> <p><b>ST.32.9.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet release detection requirements ( DE 7 1000 1351, Part C 1. 9) [ Added</p>	<p>strength to withstand normal handling and underground use and are compatible with the regulated substance and additives stored, corrosive soils and groundwater.</p> <p>Verify that UST construction materials are of sufficient density and strength to form a hard impermeable shell which will not crack, wear, or separate under normal service conditions.</p> <p>Verify that fiberglass reinforced plastic tanks are tested for deflection in accordance with the manufacturer's requirements at the time of installation.</p> <p>Verify that steel with non-metallic or coated outer shell UST systems are designed, constructed, installed and tested in accordance with the following industry standards, as applicable:</p> <ul style="list-style-type: none"> <li>- UL 1746, Standard for Safety: External Corrosion Protection Systems for Steel Underground Storage Tanks</li> <li>- UL 58; Standard for Steel Underground Tanks for Flammable and Combustible Liquids</li> <li>- STI F-922, Specification for Permatank®</li> <li>- STI F-894, ACT-100® Specification for External Corrosion Protection of FRP Composite Steel Underground Storage Tanks</li> <li>- STI F-961, ACT-100U® Specification for External Corrosion Protection of Composite Steel Underground Storage Tanks</li> <li>- STI F-841, Standard for Dual Wall Underground Steel Storage Tanks.</li> </ul> <p>Verify that the coating will not corrode under adverse underground electrolytic conditions and is compatible with the regulated substances and additives stored.</p> <p>Verify that the coating was factory inspected for air pockets, cracks, blisters pinholes and electrically tested by a ten thousand ( 10,000) volts holiday test performed over 100 percent of the surface for coating short circuits or coating faults or in accordance with the manufacturer's specifications.</p> <p>Verify that any defects are repaired in accordance with standard engineering practice and the manufacturer's requirements.</p> <p>Verify that owner and operators provide a method, or combination of methods of release detection on all heating fuel UST systems with a storage capacity greater than 1,100 gallons that meets the following requirements:</p> <ul style="list-style-type: none"> <li>- can detect a release from any portion of the tank and the connected underground piping that routinely contain heating fuel</li> <li>- is installed, calibrated, operated, and maintained in accordance with the manufacturer's specifications, including routine maintenance and service</li> </ul>

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December 2008].	<p>checks for operability or running condition</p> <ul style="list-style-type: none"> <li>- meets the performance standards for release detection in this section, with any performance claims and their manner of determination described in writing by the equipment manufacturer or installer</li> <li>- the method is capable of detecting the leak rate or quantity specified for precision tank testing, automatic tank gauging, line leak detectors, and line tightness testing methods with a probability of detection of at least 0.95 and a probability of false alarm no greater than 0.05.</li> </ul> <p>Verify that owners and operators implement the indicated release investigation procedures in Part E ( see S T.80) of these regulations if the release detection equipment or method shows indication of a release.</p> <p>(NOTE: Failure by owners and operators to maintain records of required release detection monitoring and inspection may be cause for the Department to require tank tightness test(s) and inspection(s) of the UST facility and a release investigation in accordance with Part E ( see S T.80) of these regulations at the expense of owners and operators.)</p> <p>Verify that owners and operators monitor heating fuel USTs for releases through the use of at least one of the following release detection methods:</p> <ul style="list-style-type: none"> <li>- continuous interstitial monitoring</li> <li>- automatic tank gauge performing monthly tank tightness testing</li> <li>- underground storage tanks used solely for the storage of heating fuel may utilize annual tank tightness testing as a method of release detection for the life of the UST provided the tank tightness testing is performed in accordance with the tank tightness test requirements</li> <li>- department approved alternative method.</li> </ul> <p>Verify that all interstitial monitoring devices are designed, constructed, installed and maintained to continuously detect a leak from any portion of the tank that routinely contains heating fuel.</p> <p>Verify that, at a minimum of once every 30 calendar days, owners and operators inspect all interstitial monitoring devices utilized for release detection for evidence of a release from the UST system and record the results.</p> <p>Verify that records of the monthly interstitial release monitoring inspections are kept for the life of the UST system.</p> <p>Verify that all interstitial monitoring equipment inspected by a certified technician once every 12 months as part of a preventive maintenance program to minimize in-service failures.</p> <p>Verify that any equipment malfunctions identified as a result of the inspection are rectified immediately.</p>

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Verify that the inspection at a minimum includes the following:

- inspection of the console for printer operation if so equipped
- verification of the system setup values and battery backup
- verification of the test programming
- verification of the operability of all warning and alarm indicator lights and audible alarms
- inspection and testing of all interstitial sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper sensor operation
- inspection of all cables that are visible during normal operating conditions for any cracking or swelling
- correction of any problems found as a result of the required inspection.

Verify that records of the annual inspections of the interstitial monitoring equipment and any repairs performed as a result of the inspection are kept for the life of the UST system.

Verify that monthly tank tightness testing using automatic tank gauge (ATG) equipment meet the following requirements:

- the ATG equipment can detect a 0.1 gallons per hour leak rate from any portion of the tank that routinely contains regulated substance
- the ATG equipment shall be capable of producing a record of the release detection test results
- at a minimum of once ATG equipment shall perform a release detection test for each tank and shall produce a record of such test.

Verify that a record of all release detection tests performed by the ATG equipment is kept for the life of the UST system.

Verify that all ATGs are inspected by a certified technician once every 12 months as part of a preventive maintenance program to minimize in-service failures.

Verify that any equipment malfunctions identified as a result of the inspection is rectified immediately.

Verify that the inspection at a minimum includes the following:

- inspection of the ATG console for printer operation if so equipped
- verification of the system setup values and battery backup
- verification of the test programming
- verification of the operability of all warning and alarm indicator lights and audible alarms
- inspection and testing of the probes and sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper probe and sensor operation
- inspection of all cables that are visible during normal operating conditions for any cracking or swelling

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<p><b>ST.32.10.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet anchoring and backfill requirements ( DE 7 1000 1351, Part C 1.10 and 1.11) [Added December 2008].</p> <p><b>ST.32.11.DE.</b> Heating fuel USTs with a capacity greater</p>	<p>- correction of any problems found as a result of the required inspection.</p> <p>Verify that records of the annual inspections of the interstitial monitoring equipment and any repairs performed as a result of the inspection are maintained for the life of the UST system.</p> <p>(NOTE: Release detection methods not specified in this section will be considered an alternative by the Department.)</p> <p>Verify that, if an alternative method is approved, the approved conditions are met to ensure the protection of human health, safety or the environment.</p> <p>Verify that support and anchorage are provided for all new installations to avoid tank flotation and are installed in accordance with the PEI RP100, Recommended Practices for Installation of Underground Liquid Storage Systems.</p> <p>Verify that one or more of the following methods of anchorage is utilized:</p> <ul style="list-style-type: none"> <li>- reinforced concrete deadmen anchors</li> <li>- bottom hold-down pad which consists of eight inches of reinforced concrete that extends 18 inches beyond tank sides and 12 inches beyond each end</li> <li>- reinforced concrete slab over tank.</li> </ul> <p>Verify that all exposed metallic components of hold down systems are electrically isolated and cathodically protected when the hold down system is required by the Department.</p> <p>Verify that backfill depth is consistent with the requirements in PEI RP100, Recommended Practices for Installation of Underground Liquid Storage Systems.</p> <p>Verify that backfill material consists of sand, crushed rock or pea gravel.</p> <p>Verify that backfill material is clean, washed, inert, free flowing, homogeneous, well granulated, non corrosive, and free of debris, rock, ice, snow or organic material.</p> <p>Verify that particle length of crushed rock or pea gravel is no less than 1/8" and no more than 3/4" in size.</p> <p>Verify that backfill material complies with the tank manufacturer's specifications.</p> <p>Verify that backfill is not mixed with native soil and/or foreign objects.</p> <p>Verify that, prior to installation tank system materials and equipment is inspected for flaws, surface cracks, holes, large scrapes, blisters, indentations and other</p>



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<p>than 1,100 gallons installed after January 11, 2008 must meet tank and piping installation requirements (DE 71000 1351, Part C 1.13.1 through 1.13.5) [Added December 2008].</p> <p><b>ST.32.12.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet installation documentation requirements</p>	<p>indications of damage.</p> <p>Verify that all defects and repairs to the UST system are recorded and the record submitted with a site completion report to the Department.</p> <p>Verify that the UST is pressure tested according to the manufacturer's specifications prior to installation of the UST into the excavation.</p> <p>(NOTE: The installer shall soap the exterior, particularly its seams and fittings, and pressure test the UST(s) using the manufacturer's specifications to locate and correct defects. Tank and interstitial space testing shall be conducted according to the manufacturer's recommendations and accepted engineering practices.)</p> <p>Verify that, after installation of all piping, including all interstitial spaces, are pressure tested according to the manufacturer's specifications prior to backfilling the excavation.</p> <p>Verify that, after installation of the tank and integral piping is complete and prior to the initial use of the UST system, the entire system is tested in accordance with current industry standards and practices and in the following manner to ensure the system is tight:</p> <p>Verify that all testing of UST systems is accomplished by the precision test method described in NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases or other test approved by the Department which is of equivalent or superior accuracy.</p> <p>Verify that, all testing of UST systems is able to account for the effects of thermal expansion or contraction of the heating fuels, vapor pockets, tank deformation, evaporation or condensation, temperature stratification in the UST and the location of the water table.</p> <p>Verify that the required precision tests is conducted by a person trained and certified in the correct use of the necessary equipment, and is performed in accordance with the testing procedures and requirements established by the test system manufacturer and current industry standards and practices.</p> <p>(NOTE: The Department reserves the right to request confirmatory system tightness tests to verify any test results submitted by a n owner, operator, or contractor.)</p> <p>Verify that, during the installation of all new UST systems, every stage of the construction is documented with photographs to demonstrate that the UST system was installed in compliance with the requirements for new UST systems.</p> <p>Verify that, upon completion of the installation, copies of the photographs, as built plan, and required certification(s) are submitted to the Department within 30 days</p>

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<p>(DE 7 100 0 135 1, Part C 1.13.6) [ Added December 2008].</p> <p><b>ST.32.13.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet piping release detection requirements ( DE 7 1000 1351, Part C 1.18) [ Added December 2008].</p> <p><b>ST.32.14.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet release detection requirements for underground piping (DE 7 1000 1351, Part C 1.19 and 1.20) [ Added December 2008].</p>	<p>of the completion of the UST system installation.</p> <p>Verify that the facility owner/operator keeps copies of all documents and photographs on file for the life of the UST facility.</p> <p>Verify that all underground piping that routinely contains heating fuel is equipped with a method, or combination of methods of release detection that can detect a release from any portion underground piping that routinely contains regulated substance.</p> <p>Verify that UST piping in interstitial and sump monitoring systems are designed, constructed, installed, and maintained to detect a leak from any portion of the piping that routinely contains heating fuel.</p> <p>(NOTE: Release detection methods not specified here will be considered an alternative by the Department. A written request detailing the method or combination of methods proposed shall be submitted to the Department prior to installation for approval.)</p> <p>Verify that owners and operators implement the indicated release investigation procedure if the piping release detection equipment or method shows indication of a release.</p> <p>Verify that underground piping that conveys heating fuel under pressure is equipped with an automatic line leak detector.</p> <p>Verify that the automatic line leak detector alerts the owner and operator to the presence of a leak by restricting or shutting off the flow of the heating fuel.</p> <p>Verify that mechanical and electronic automatic line leak detectors are capable of reacting to leaks of 3 gallons per hour at 10 pounds per square inch line pressure within 1 hour.</p> <p>Verify that an annual test of the operation of the automatic line leak detector is conducted in accordance with the manufacturer's test protocols.</p> <p>Verify that all mechanical and electronic automatic line leak detectors are tested once every 12 months pass a function test at 3 gallons per hour (gph) at 10 pounds per square inch line pressure 1 hour.</p> <p>Verify that an annual tightness test of the entire pressurized underground piping system, including the primary and secondary piping, is conducted in accordance with NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.</p>

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<p><b>ST.32.15.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet requirements for spill protection (DE 71000 1351, Part C 1.21) [Added December 2008].</p>	<p>Verify that underground pressurized piping systems are tested with a piping tightness test method designed to detect a release from any portion of the underground piping system that routinely contains heating fuels.</p> <p>Verify that underground pressurized piping systems constructed of double wall design utilizing interstitial monitoring systems meet the following requirements:</p> <ul style="list-style-type: none"> <li>- all interstitial monitoring devices are designed, constructed, installed and maintained to continuously detect a release from any portion of the piping that routinely contains heating fuel</li> <li>- the system is designed and maintained to ensure that the delivery system will automatically shut off if a release is detected</li> <li>- at a minimum of once every 30 calendar days proof tests are provided via the automatic tank gauging record that the interstitial monitoring device is functioning in accordance with the manufacturer's specifications</li> <li>- records of the monthly interstitial release detection ATG records are maintained for the life of the UST system</li> <li>- all sump and interstitial sensors comply with the testing and monitoring requirements</li> <li>- all tank top containment sumps containing the interstitial monitoring device are tested once every 12 calendar months.</li> </ul> <p>(NOTE: Release detection is not required for suction piping that is designed and constructed to meet the requirements of 1.17.1.1 of Part b. Suction Piping designed and constructed with only 1 check valve included in each suction line must have release detection in accordance with 1.18. of Part B.)</p> <p>Verify that to prevent spilling associated with transfer to the UST system, the system complies with the requirements of one of the following industry standards:</p> <ul style="list-style-type: none"> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 385, Standard for Tank Vehicles for Flammable and Combustible Liquids</li> <li>- API RP 1621, Bulk Liquid Stock Control at Retail Outlets.</li> </ul> <p>Verify that all heating fuel UST systems are equipped with impervious spill containment devices that form a liquid tight seal around the fill pipe connections.</p> <p>Verify that all spill containment devices around the fill pipe have a minimum containment capacity of 15 gallons or be of a design that provides equivalent environmental protection.</p> <p>Verify that water, heating fuel, or debris that accumulates in the spill containment device is immediately removed.</p> <p>Verify that spill containment devices are maintained as to be capable of containing</p>

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<p><b>ST.32.16.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet requirements for overflow protection (DE 710001351, Part C 1.22) [Added December 2008].</p>	<p>a spill of the containment design capacity at all times.</p> <p>Verify that all precautions are taken to prevent tank overfilling, spilling and dripping.</p> <p>Verify that spill containment devices are tested once every 12 months for tightness, or in accordance with the manufacturer's specifications, or when deemed necessary by the Department to determine if a threat to human health, safety or environment exists.</p> <p>(NOTE: Spill containment devices of double wall design with continuous monitoring of the interstitial space are exempt from the testing requirements. Owners and operators must maintain records of the continuous interstitial monitoring of the spill containment device.)</p> <p>Verify that owners and operators report, investigate, and clean up any spills and overfills in accordance with Part E (see ST.80).</p> <p>Verify that any UST facility has a reliable means of ensuring that releases due to overfilling do not occur.</p> <p>Verify that the person in charge of the transfer of heating fuel to the UST adheres to proper safety precautions and procedures for transfers such as those found in NFPA 385, Standard for Tank Vehicles for Flammable and Combustible Liquids and API RP 1621, Bulk Liquid Stock Control at Retail Outlets and complies with the following:</p> <ul style="list-style-type: none"> <li>- the person in charge of the transfer operation first checks the UST to ensure that the volume available in the UST is greater than the volume of heating fuel to be transferred to the UST before the transfer is made</li> <li>- during the transfer, the person in charge continuously monitors the transfer operation to prevent an overflow release</li> <li>- at the conclusion of the transfer, the person in charge collects any heating fuel that remains in the transfer hose and ensures that it is properly managed and does not reach the environment</li> <li>- the person in charge takes all reasonable precautions to prevent spilling and dripping.</li> </ul> <p>Verify that overflow protection equipment meets one of the following requirements:</p> <ul style="list-style-type: none"> <li>- automatically shuts off the flow into the UST when the UST is no more than 95 percent full</li> <li>- alerts the transfer operator when the UST is no more than 90 percent full by restricting the flow into the UST or triggering a high-level alarm</li> <li>- restricts flow 30 minutes prior to overflowing, alerts the operator with a high level alarm one minute before overflowing, or automatically shuts off flow into the UST so that none of the fittings located on top of the tank are</li> </ul>

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<p><b>ST.32.17.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet requirements for fill line protection (DE 71000 1351, Part C 1.23) [Added December 2008].</p> <p><b>ST.32.18.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet requirements for corrosion protection operation and maintenance (DE 71000 1351, Part C 1.24) [Added</p>	<p>exposed to heating fuel due to overfilling</p> <ul style="list-style-type: none"> <li>- an automatic partial flow shut off float vent or vapor valve installed inside the UST set to restrict flow when the UST is no more than 90 percent full.</li> </ul> <p>(NOTE: Vent or vapor restriction devices shall not be installed in UST systems that are equipped with suction pumps, remote fill lines, remote vapor lines or receive pressurized deliveries.)</p> <p>Verify that systems that receive pressurized deliveries have a high level alarm that is triggered at no more than 90 percent full for overfill protection or automatic flow shut-off valve designed for pressurized deliveries.</p> <p>Verify that the owners and operators reports, investigates, and cleans up any spills and overfills in accordance with Part E (see ST.80).</p> <p>Verify that all fill lines for UST systems are clearly marked to indicate the size of the tank and the type of fuel stored.</p> <p>Verify that the markings meet the following requirements:</p> <ul style="list-style-type: none"> <li>- a label or permanent tag at the fill connection that states the size of the UST system and the specific type of fuel stored</li> <li>- a color symbol system implemented according to the following requirements: <ul style="list-style-type: none"> <li>- all fill covers are marked consistent with API RP 1637, Using the API color-symbol system to mark equipment and vehicles for product identification at service stations and distribution terminals</li> <li>- a different color symbol is used for each type of regulated substance or grade of substance being stored at the facility.</li> </ul> </li> </ul> <p>Verify that pipes and other openings not used for transfer of heating fuel at the UST facility are not painted any color that would be associated with the color symbol designated for marking the heating fuel stored at the facility.</p> <p>(NOTE: It is particularly important that openings with access to soil and ground water, such as monitor wells, not be confused with regulated substance fill lines.)</p> <p>Verify that steel UST systems with corrosion protection systems are operated and maintained in accordance with the following industry standards:</p> <ul style="list-style-type: none"> <li>- NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection</li> <li>- NACE TM0101, Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Tank Systems</li> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 30A, Motor Fuel Dispensing Facilities and Repair Garages.</li> </ul>

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December 2008].	<p>Verify that steel UST systems with corrosion protection systems are maintained and operated to continuously provide corrosion protection to the metal components of the UST system that routinely contain a heating fuel and are in contact with the ground to ensure that releases due to corrosion are prevented for the life of the UST system.</p> <p>Verify that cathodic protection systems are designed and installed to allow determination of the current operating status.</p> <p>Verify that all UST systems equipped with sacrificial anode cathodic protection systems are tested for proper operation using standard corrosion engineering practices.</p> <p>Verify that testing procedures are done in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection and the manufacturer's specifications, and include the following:</p> <ul style="list-style-type: none"> <li>- minimum of 3 voltage readings along the center line for UST systems less than 20,000 gallons and a minimum of 5 voltage readings along the center line for UST systems greater than or equal to 20,000 gallons</li> <li>- a minimum of 1 voltage reading for every 10 feet of piping.</li> </ul> <p>Verify that all sacrificial anode cathodic protection systems that protect underground facility components are tested by an individual certified by a nationally recognized industry standard setting organization, and in accordance with Department standards, within 6 months of installation and when underground work is performed at or near the site and at least once every 12 months thereafter.</p> <p>Verify that sacrificial anode cathodic protection system are replaced or repaired in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection and the requirements of 16 if it is not operating in accordance with the manufacturer's specifications and the requirements.</p> <p>(NOTE: The above includes but is not limited to failure to register a negative voltage of at least 0.85 volts for each UST. An individual certified by a nationally recognized industry standard setting organization must determine the cause of the failure and make the necessary repairs within 60 days of the discovery of the failure of the corrosion protection system.)</p> <p>Verify that the Department is notified within 48 hours of the discovery of the failure of a sacrificial anode cathodic protection system.</p> <p>Verify that the Department approves, either verbally or in writing, all cathodic protection repair or replacement plans prior to work commencing.</p> <p>(NOTE: Impressed current cathodic protection systems must not be utilized as a</p>

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<p><b>ST.32.19.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet requirements for all containment sumps (DE 7 1000 13 51, Part C 1. 25) [Added December 2008].</p> <p><b>ST.32.20.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet requirements testing and monitoring sensors ( DE 7 1000 13 51, Part C 1. 26) [Added December 2008].</p> <p><b>ST.32.21.DE.</b> Heating fuel</p>	<p>repair, upgrade or replacement after January 11, 2008.)</p> <p>(NOTE: The use of alternate methods of monitoring shall be those described in NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection and shall only be used with prior written approval from the Department.)</p> <p>Verify that records of the operation of sacrificial anode cathodic protection systems are maintained to demonstrate compliance.</p> <p>Verify that operating records are retained in a permanent record and at a minimum provide the results of all tests and inspections of the sacrificial anode cathodic protection system.</p> <p>Verify that all dispenser, tank top, transition and any other containment sumps are product tight and are tested for tightness once every 36 months, or in accordance with the manufacturers' specifications, or when deemed necessary by the department to determine if a threat to human health, safety or the environment exists.</p> <p>(NOTE: All dispensers, tank tops, transitions and any other containment sumps of double wall design with continuous monitoring of the interstitial space are exempt from the testing requirements.)</p> <p>Verify that all access manholes associated with containment sumps are sized so that the manhole skirt is sufficiently larger than the containment sump lid to allow adequate access to the sump and to allow for surface water drainage.</p> <p>Verify that all dispenser containment sumps are installed and maintained as to be capable of being visually inspected at all times for evidence of a release and are not filled with any material such as pea gravel or native soil, or the dispenser containment sump is continuously monitored for releases.</p> <p>Verify that all sump and interstitial sensors are equipped with a automatic audible and visual alert system that shuts down the UST system in the event of an alarm.</p> <p>Verify that all sensors are inspected and tested sensors at a minimum of once every 12 months in accordance with the manufacturer's specifications or as directed by the Department to verify proper sensor operation.</p> <p>Verify that all repairs, upgrades, retrofits and replacements to UST systems meet</p>

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<p><b>ST.32.23.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after January 11, 2008 must meet requirements for internal tank linings (DE 7 1000 1351, Part C 1.29) [Added December 2008].</p> <p><b>ST.32.24.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet general requirements (DE 7 1000 1351, Part C 2.1) [Added December 2008].</p> <p><b>ST.32.25.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet requirements for</p>	<p>years and is made available to the Department upon request.</p> <p>Verify that the records include, at a minimum, the results of all inspections including any repairs made.</p> <p>Verify that, if at any time during a routine inspection evidence of a release of heating fuel is discovered, the owners and operators follow the investigation requirements of Part E (see ST.80).</p> <p>Verify that an internal lining is not utilized to meet corrosion protection requirements after January 11, 2008.</p> <p>Verify that all UST systems installed for the storage of heating fuel with a capacity of greater than 1,100 gallons are designed, constructed, installed and operated in accordance with manufacturer's specifications, and accepted engineering practices and procedures; and in a manner which will prevent releases of heating fuels to the ground waters, surface waters or soils of the State due to corrosion, structural failure, spills and overfills for the operational life of the tank.</p> <p>Verify that the material used in the construction and lining of the tank is compatible with the substances to be stored in the UST system.</p> <p>Verify that all UST systems installed prior to January 11, 2008 meet the following requirements:</p> <ul style="list-style-type: none"> <li>- bare steel UST systems or steel UST systems coated with asphalt are prohibited</li> <li>- all double elbow swing joints with flexible connectors are replaced in accordance with Part C, 1.14 of these Regulations not later than January 1, 2011.</li> </ul> <p>(NOTE: The Department reserves the right to require secondary containment or equivalent protection on any portion of the UST system where aquifers underlying the UST facility are determined to need such protection, or where groundwater below the UST facility is within a well head protection area, or where groundwater is susceptible to contamination in order to protect the safety, health,</p>

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<p>secondary containment (DE 7 1000 1351, Part C 2. 4) [Added December 2008].</p>	<p>welfare and/or environment of the State.)</p> <p>Verify that secondary containment systems are designed, constructed and installed to:</p> <ul style="list-style-type: none"> <li>- contain the heating fuels released from the UST system until they are detected and removed</li> <li>- prevent the release of heating fuel to the environment at any time during the operational life of the UST system</li> <li>- checked for evidence of a release at least once every 30 calendar days.</li> </ul> <p>Verify that secondary containment systems consist of one of the following:</p> <ul style="list-style-type: none"> <li>- a cathodically protected double walled steel tank and double walled piping</li> <li>- a double walled fiberglass reinforced plastic tank and double walled piping a double walled fiberglass reinforced plastic composite tank and double walled piping</li> <li>- a single wall tank placed within a cut-off wall, an excavation liner or trough liner made of material impervious to the heating fuel stored</li> <li>- a vault constructed to meet the following requirements: <ul style="list-style-type: none"> <li>- the vault is water tight, impervious to leakage of heating fuel and able to withstand chemical deterioration and structural stresses from internal and external causes</li> <li>- the vault is a continuous structure with a chemically resistant water stop used at any joint</li> <li>- there is no drain connections or other entries through the vault other than top entry manholes and other top openings for filling and for emptying the tank, venting and for monitoring and pumping of petroleum which may leak into the vault</li> <li>- the tank or tanks within the vault are encased or embedded in a manner consistent with acceptable engineering practices</li> </ul> </li> <li>- a cut off wall constructed to meet the following: <ul style="list-style-type: none"> <li>- cut off wall may be used where groundwater levels are above the bottom of the Tank excavation</li> <li>- a cut off wall consist of an impermeable barrier that has a permeability rate with respect to water equal to or less than <math>1 \times 10^{-7}</math> cm/sec and does not deteriorate in an underground environment or in the presence of petroleum</li> <li>- a cut off wall extends around the perimeter of the excavation and to an elevation above the mean high groundwater level</li> <li>- if a synthetic membrane is used for a cut-off wall, any seams, punctures or tears in the membrane are Repaired and made leak tight prior to backfilling</li> <li>- no penetrations of the cut-off wall are permitted</li> </ul> </li> <li>- other equivalent technology approved by the Department.</li> </ul> <p>Verify that, if the secondary containment system consists of a double walled tank, the tank is constructed in accordance with acceptable engineering practice and industry standards and has a release detection system in accordance with 1.9 of</p>

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<p><b>ST.32.26.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet requirements for double walled tanks (DE 7100 1351, Part C 2.5) [ Added December 2008].</p> <p><b>ST.32.27.DE.</b> Cathodically protected steel heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet specific requirements (DE 71000 1351, Part C 2.6) [Added December 2008].</p>	<p>this Part.</p> <p>(NOTE: Any of the acceptable UST systems designs in 2.3 Part C may be fabricated in double walled construction in accordance with accepted engineering practice and industry standards.)</p> <p>Verify that double walled tanks are designed and manufactured in accordance with the following requirements to satisfy the requirements for secondary containment and the requirements for release detection:</p> <ul style="list-style-type: none"> <li>- interstitial space of the double walled tank can be monitored for releases</li> <li>- outer jackets made of steel is coated with a suitable dielectric material in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection</li> <li>- there are no penetrations of any kind through the jacket to the tank except top entry manholes and fittings</li> <li>- the outer jacket shall, at a minimum, cover the bottom 80 percent of the UST</li> <li>- the jacket is able to contain a liquid or is able to contain a vacuum from the time of manufacture completion until the time of installation</li> <li>- all tanks are equipped with a strike plate located beneath all tank openings.</li> </ul> <p>Verify that cathodically protected steel UST systems are designed, constructed, installed and tested in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection, and the applicable industry standards, including but not limited to the following:</p> <ul style="list-style-type: none"> <li>- API RP 1632, Cathodic Protection of Underground Petroleum Storage Tanks</li> <li>- NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection</li> <li>- UL 58, Standard for Steel Underground Tanks for Flammable and Combustible Liquids</li> <li>- UL 1746, Standard for Safety: External Corrosion Protection Systems for Steel Underground Storage Tanks</li> <li>- STI- P3, Specification for STI P3® System for External Corrosion Protection of Underground Steel Storage Tanks</li> </ul> <p>Verify that the tank is coated with a suitable dielectric material in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection.</p> <p>Verify that field-installed cathodic protection systems are designed and installed in accordance with manufacturer's specifications, accepted engineering practice and the requirements listed here.</p> <p>Verify that each cathodic protection system includes sufficient monitoring stations</p>

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<p><b>ST.32.28.DE.</b> Fiberglass reinforced plastic and steel reinforced plastic heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet specific design requirements ( DE 7 1000 1351, Part C 2. 7 a nd 2. 8) [Added December 2008].</p>	<p>to check on the adequacy of the cathodic protection system.</p> <p>Verify that UST systems that are protected by sacrificial anodes (sti-P3 Tanks) are electrically insulated from the piping system with dielectric fittings, bushings, washers, sleeves or gaskets which are chemically stable when exposed to heating fuel, additives, corrosive soils or groundwater.</p> <p>Verify that UST systems not protected by sacrificial anodes are factory coated with a material which will provide equivalent protection and corrosion resistance.</p> <p>(NOTE: The minimum finished coating thickness shall be consistent with applicable UL standards.)</p> <p>Verify that any defects and inadequacies in the coating are repaired in accordance with the manufacturer's instructions and standard engineering practice.</p> <p>Verify that fiberglass reinforced plastic UST systems are designed, constructed, installed and tested in accordance with the following industry standard:</p> <ul style="list-style-type: none"> <li>- UL 1316, Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols and Alcohol Gasoline Mixtures</li> <li>- of sufficient structural strength to withstand normal handling and underground use and compatible with the regulated substance and additives stored, corrosive soils and groundwater</li> <li>- construction materials of sufficient density and strength to form a hard impermeable shell that will not crack, wick, wear, soften or separate under normal service conditions</li> <li>- tested for deflection in accordance with the manufacturer's requirements at the time of installation.</li> </ul> <p>Verify that steel fiberglass reinforced plastic UST systems are designed, constructed, installed and tested in accordance with the following industry standards, as applicable:</p> <ul style="list-style-type: none"> <li>- UL 1746, Standard for Safety: External Corrosion Protection Systems for Steel Underground Storage Tanks</li> <li>- UL 58, Standard for Steel Underground Tanks for Flammable and Combustible Liquids</li> <li>- STI F-922, Specification for Permatank®</li> <li>- STI F-894, ACT-100® Specification for External Corrosion Protection of FRP Composite Steel Underground Storage Tanks</li> <li>- STI F-961, ACT-100U® Specification for External Corrosion Protection of Composite Steel Underground Storage Tanks</li> <li>- STI F-841, Standard for Dual Wall Underground Steel Storage Tanks.</li> </ul> <p>Verify that the coating do not corrode under adverse underground electrolytic conditions and shall be compatible with the regulated substances and additives</p>

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<p><b>ST.32.29.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet release detection requirements ( DE 7 1000 1351, Part C 2.9.1 and 2.9.2) [Added December 2008].</p>	<p>stored.</p> <p>Verify that the coating was factory inspected for air pockets, cracks, blisters pinholes and electrically tested by a 10,000 volts holiday test performed over 100 percent of the surface for coating short circuits or coating faults or in accordance with the manufacturer's specifications.</p> <p>Verify that any defects are repaired in accordance with standard engineering practice and manufacturer's requirements to assure compliance with industry standards.</p> <p>Verify that UST systems have a method, or combination of methods of release detection that meets the following requirements:</p> <ul style="list-style-type: none"> <li>- detects a release from any portion of the tank and the connected underground piping that routinely contain heating fuel</li> <li>- installed, calibrated, operated, and maintained in accordance with the manufacturer's specifications, including routine maintenance and service checks for operability or running condition</li> <li>- meets the performance standards for release detection, with any performance claims and their manner of determination described in writing by the equipment manufacturer or installer</li> <li>- is capable of detecting the leak rate or quantity specified for precision tank testing, automatic tank gauging, line leak detectors, and line tightness testing methods specified in these regulations with a probability of detection of at least 0.95 and a probability of false alarm no greater than 0.05.</li> </ul> <p>Verify that the release investigation procedure in Part E ( see S T.80) is implemented if the release detection equipment or method shows indication of a release.</p> <p>(NOTE: Failure by owners and operators to maintain records of required release detection monitoring and inspection may be cause for the Department to require tank tightness test(s) and inspection(s) of the UST facility and a release investigation in accordance with Part E (see ST.80) at the expense of owners and operators.)</p> <p>Verify that heating fuel UST systems are monitored for releases through the use of at least one of the following Release detection methods:</p> <ul style="list-style-type: none"> <li>- interstitial monitoring</li> <li>- automatic tank gauging</li> <li>- observation tubes</li> <li>- tank tightness test</li> <li>- monitoring wells</li> <li>- department approved alternative method.</li> </ul>

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**ST.32.30.DE.** Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet specific requirements for interstitial monitoring (DE 7 1000 1 351, Part C 2. 9.3) [Added December 2008].

Verify that interstitial monitoring between the UST system and a secondary barrier immediately around or beneath it is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains heating fuel.

Verify that interstitial monitoring meets the following requirements:

- for double walled UST systems, the sampling or testing method can detect a release through the inner wall in any portion of the tank that routinely contains heating fuel
- for UST systems with a secondary barrier within the excavation zone, the sampling or testing method can detect a release between the UST system and the secondary barrier
- the secondary barrier around or beneath the UST system consists of artificially constructed material that is sufficiently impermeable (at least 1 x 10<sup>-7</sup> cm/sec for the heating fuel stored) to direct a release to the monitoring point and permit its detection
- the barrier is compatible with the heating fuel stored so that a release from the UST system will not cause deterioration of the barrier allowing a release to pass through undetected
- for cathodically protected tanks, the secondary barrier is installed so that it does not interfere with the proper operation of the cathodic protection system
- ground water, soil moisture, or rainfall will not render the testing or sampling method used inoperative so that a release can go undetected for more than 30 days
- the site is assessed to ensure that the secondary barrier is always above the ground water and not in a 25 year flood plain, unless the barrier and monitoring are designed for use under such conditions
- for tanks with an internally fitted liner, an automated device is used to detect a release between the inner wall of the tank and the liner, and the liner is compatible with the substance stored.

Verify that, at a minimum once every 30 calendar days, all interstitial monitoring devices are inspected for evidence of a release from the UST system.

Verify that records of the monthly interstitial release monitoring inspections are maintained for the life of the UST system.

Verify that all interstitial monitoring equipment is inspected by a certified technician once every 12 months as part of a preventive maintenance program to minimize in-service failures.

Verify that the inspection includes the following, at a minimum:

- inspection of the console for printer operation if so equipped
- verification of the system setup values and battery backup
- verification of the test programming
- verification of the operability of all warning and alarm indicator lights and

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<p><b>ST.32.31.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet requirements for automatic tank gauging (ATG) release detection (DE 7 1000 1 351, Part C 2. 9.4) [Added December 2008].</p>	<p>audible alarms</p> <ul style="list-style-type: none"> <li>- inspection and testing of all interstitial sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper sensor operation</li> <li>- inspection of all cables that are visible during normal operating conditions for any cracking or swelling</li> <li>- correction of any problems found as a result of the required inspection.</li> </ul> <p>Verify that the ATG equipment can detect a 0.2 gallon per hour leak rate from any portion of the tank that routinely contains heating fuel.</p> <p>Verify that the ATG equipment is capable of producing a record of release detection test results.</p> <p>Verify that, at a minimum of once every 30 calendar days the ATG equipment performs a release detection test for each tank and produces a record of each test.</p> <p>Verify that all ATG equipment is inspected by a certified technician once every 12 months as part of a preventive maintenance program to minimize in-service failures.</p> <p>Verify that the inspection includes the following, at a minimum:</p> <ul style="list-style-type: none"> <li>- inspection of the ATG console for printer operation if so equipped</li> <li>- verification of the system setup values and battery backup</li> <li>- verification of the test programming</li> <li>- verification of the operability of all warning and alarm indicator lights and audible alarms</li> <li>- inspection and testing of the magnetostrictive probes and sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper probe and sensor operation</li> <li>- inspection of all cables that are visible during normal operating conditions for any cracking or swelling</li> <li>- correction of any problems found as a result of the required inspection</li> </ul> <p>Verify that a record of all release detection tests performed by the ATG equipment is maintained for the life of the UST system.</p>
<p><b>ST.32.32.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet requirements for observation tube release</p>	<p>Verify that observation tubes are designed, constructed, installed and maintained to detect a release from any portion of the tank that routinely contains heating fuel.</p> <p>Verify that observation tubes are not used to comply with the release detection requirements after January 1, 2013.</p>

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<p>detection (DE 7 1000 1351, Part C 2. 9.5) [ Added December 2008].</p>	<p>(NOTE: A network of observation tubes shall be placed within the excavation of the tank field without the use of conventional well drilling methods during the installation of an UST and without the need for the installer to obtain a water well contractor's license, pay a monitoring well permit fee, obtain a monitoring well permit, or submit a well completion report to the Department as required in the Delaware Regulations Governing the Construction and Use of Wells. The Observation Tube however, shall meet the remaining standards set forth in the Department's Regulations Governing the Construction and Use of Wells including the requirement for installation of the tube to a depth of at least 5 feet below the water table. This exception from the standard monitoring well construction criteria pertains only to observation tubes placed within the UST excavation pit.)</p> <p>Verify that the minimum number of observation tubes within a UST system excavation pit is:</p> <ul style="list-style-type: none"> <li>- four observation tubes installed for one UST</li> <li>- six observation tubes installed for two to three USTs</li> <li>- eight observation tubes installed for four to five USTs</li> <li>- ten or more observation tubes installed for six or more USTs.</li> </ul> <p>Verify that observation tubes are clearly marked and secured to avoid unauthorized access and tampering.</p> <p>Verify that observation are used only if the following conditions are met:</p> <ul style="list-style-type: none"> <li>- the heating fuel stored is immiscible in water and has a specific gravity of less than one</li> <li>- ground water is never more than 20 feet from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the observation tubes is not less than <math>1 \times 10^{-2}</math> cm/sec (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials)</li> <li>- the continuous monitoring devices or manual methods used can detect the presence of at least one eighth of an inch of free product on the top of the ground water on the observation tubes</li> <li>- the level of background contamination will not interfere with the method used to detect releases from the UST system.</li> </ul> <p>Verify that all observation tubes are tested for evidence of a release from the UST system by:</p> <ul style="list-style-type: none"> <li>- monitoring with a continuously functioning release detection device</li> <li>- testing at least once during each calendar month with a portable device inserted into the tube</li> <li>- sampling at least once every 30 calendar days with the removal of at least 8 ounces of fluid from the tube, using a bailer or a sampler of similar design.</li> </ul> <p>Verify that the fluid is taken from the surface of the water table unless otherwise directed by the Department and is tested on site for the presence of heating fuel</p>



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<p><b>ST.32.33.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet requirements for tank tightness for release detection (DE 7100 01351, Part C 2.9.6) [ Added December 2008].</p>	<p>using portable devices; or sent to an independent certified laboratory and analyzed for the presence of the heating fuel(s) stored at the facility.</p> <p>Verify that results of the required testing are maintained for the life of the UST system.</p> <p>Verify that a separate tightness test is conducted for each UST system at least once every 12 months.</p> <p>Verify that all testing of UST systems is conducted in accordance with the precision test methods and procedures specified in NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases, or other test approved by the Department which is of equivalent or superior accuracy.</p> <p>Verify that testing of UST systems utilizes a method capable of detecting a release of a heating fuel at a rate of 0.1 gallons per hour with a probability of detection of 0.95 and a probability of false alarm of 0.05 from any part of the tank that routinely contains heating fuel.</p> <p>(NOTE: These testing methods are limited to those tests that account for the following, if applicable:</p> <ul style="list-style-type: none"> <li>- the presence of vapor pockets</li> <li>- the expansion or contraction of the heating fuel, which include any density considerations</li> <li>- temperature stratification in the tank</li> <li>- evaporation</li> <li>- pressure variations in the tank</li> <li>- deflection of the tank ends</li> <li>- the location of the water table.)</li> </ul> <p>Verify that tests are conducted by a person trained and certified in the correct use of the necessary equipment, and are performed in accordance with the testing procedures and requirements established by the test system manufacturer.</p> <p>Verify that a copy of the results of the tank tightness tests are maintained for the life of the UST system.</p> <p>Verify that, if the UST system fails NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases, criteria, the tank test failure is reported to the Department within 24 hours and a paper copy of the test results are submitted to the Department within 7 days of the test failure.</p> <p>Verify that test results include, at a minimum, the following information:</p> <ul style="list-style-type: none"> <li>- the procedures used including any deviations from those recommended by</li> </ul>

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<p><b>ST.32.34.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet monitoring well release detection requirements (DE 7 1000 1 351, Part C 2. 9.7) [Added December 2008].</p>	<p>the developer of the test procedure for the release detection method</p> <ul style="list-style-type: none"> <li>- the name of the company performing the test</li> <li>- the method used</li> <li>- the results of the test.</li> </ul> <p>Verify that monitoring wells are designed, constructed, installed and maintained to detect a release from any portion of the tank that routinely contains heating fuel.</p> <p>Verify that monitoring wells are not used to comply with the release detection requirements after January 1, 2013.</p> <p>Verify that monitoring wells are designed, constructed and installed in accordance with the Delaware Regulations Governing the Construction and Use of Wells.</p> <p>Verify that a network of a minimum of 4 monitoring wells are placed immediately outside of the excavation around the Tank.</p> <p>Verify that monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.</p> <p>Verify that monitoring wells are used only if the following conditions are met:</p> <ul style="list-style-type: none"> <li>- the heating fuel stored is immiscible in water and has a specific gravity of less than one</li> <li>- ground water is never more than 20 feet from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the monitoring wells or devices is not less than <math>1 \times 10^{-2}</math> cm/sec (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials)</li> <li>- the continuous monitoring devices or manual methods used can detect the presence of at least one eighth of an inch of free product on the top of the ground water in the monitoring wells</li> <li>- the level of background contamination will not interfere with the method used to detect releases from the tank system.</li> </ul> <p>Verify that all monitor wells are tested for evidence of a release from the UST system by one of the following:</p> <ul style="list-style-type: none"> <li>- monitoring with a continuously functioning release detection device</li> <li>- tested at a minimum of once every 30 calendar days with a portable device inserted into the monitor well</li> <li>- sampled at least once every 30 calendar days with the removal of at least 8 ounces of fluid from the well, using a bailer or a sampler of similar design.</li> </ul> <p>Verify that the fluid is taken from the surface of the water table unless otherwise directed by the Department and is tested on site for the presence of heating fuel using portable devices; or sent to an independent certified laboratory and analyzed</p>

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<p><b>ST.32.35.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet requirements of alternative release detection methods (DE 7 1000 1351, Part C 2. 9.8) [ Added December 2008].</p> <p><b>ST.32.36.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet anchoring and backfill requirements ( DE 7 1000 1351, Part C 2. 10 and 2 .11) [Added December 2008].</p>	<p>for the presence of the heating fuel(s) stored at the facility.</p> <p>Verify that the results of monthly testing and are maintained for the life of the UST system.</p> <p>(NOTE: The Department may approve other types of release detection method, or a combination of methods or devices not specified in this Section if, it can detect a 0.2 gallon per hour leak rate or a Release of 150 gallons within a month with a probability of detection of 0.95 or greater and a probability of false alarm of 0.05 or less; or, if owners and operators can demonstrate that the method or a combination of methods or devices can detect a release as effectively as any of the methods allowed in 2.9. of Part C.)</p> <p>Verify that, if a method or a combination of methods or devices is approved, owners and operators comply with any conditions imposed by the Department on its use to ensure the protection of human health, safety or the environment.</p> <p>Verify that support and anchorage is provided for all new installations to a void flotation.</p> <p>Verify that one of the following anchoring methods is used and is completed in accordance with the PEIR P100, Recommended Practices for Installation of Underground Liquid Storage systems:</p> <ul style="list-style-type: none"> <li>- reinforced concrete deadmen anchors</li> <li>- bottom hold-down pad which consists of 8 inches of reinforced concrete that extends 18 inches beyond tank sides and 12 inches beyond each end</li> <li>- reinforced concrete slab over tank.</li> </ul> <p>Verify that all exposed metallic components of hold down systems are electrically isolated and cathodically protected when required by the Department.</p> <p>Verify that an adequate bed of backfill is provided between the tank and concrete.</p> <p>Verify that backfill material consists of sand, crushed rock or pea gravel.</p> <p>Verify that the backfill material is clean, washed, inert, free flowing, homogeneous, well granulated, non corrosive, and free of debris, rock, ice, snow or organic material.</p> <p>Verify that particle length of crushed rock or pea gravel is no more than one-eighth (1/8") to three-fourths (3/4") in size.</p> <p>Verify that backfill material complies with the manufacturer's specifications.</p>

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<p><b>ST.32.37.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet tank and piping inspection and testing requirements ( DE 7 1000 1351, Part C 2. 13) [ Added December 2008].</p>	<p>Verify that backfill is not fixed with native soil or foreign objects.</p> <p>Verify that, once on site all UST systems materials and equipment was inspected for flaws, surface cracks, holes, large scrapes, blisters, indentations and other indications of damage.</p> <p>Verify that all defects and repairs to the UST system are recorded and submitted together with a site completion report to the Department.</p> <p>Verify that, after installation of the tank and integral piping is completed, the entire UST system was tested in accordance with current industry standards and practices and in the following manner to prove tightness prior to the initial use of the UST system:</p> <ul style="list-style-type: none"> <li>- all testing of UST systems is accomplished by the precision test method described in NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases or other test approved by the Department which is of equivalent or superior accuracy</li> <li>- all testing of UST systems is able to account for the effects of thermal expansion or contraction of the heating fuels, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table</li> <li>- these tests are conducted by a person trained and certified in the correct use of the necessary equipment, and are performed in accordance with the testing procedures and requirements established by the test system manufacturer and with current industry standards and practices.</li> </ul>
<p><b>ST.32.38.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet piping installation requirements ( DE 7 1000 1351, Part C 2. 14) [ Added December 2008].</p>	<p>Verify that the piping layout is designed to minimize crossed lines and interference with conduit and other UST system components.</p> <p>Verify that, if crossing of lines is unavoidable, adequate clearance was provided to prevent contact.</p> <p>Verify that double elbow swing joints are replaced by flexible connectors by January 1, 2011.</p> <p>Verify that all heating fuel, vent and return piping slopes back to the tank with a minimum slope of 1/8 inch per foot.</p> <p>Verify that the pipe joints are cut accurately and deburred to provide liquid tight seals.</p> <p>Verify that all underground metal pipe, fittings, flexible connectors, joints, and pipes are coated or wrapped and shall have cathodic protection.</p>

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<p><b>ST.32.39.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet piping design requirements ( DE 7 1000 1351, Part C 2.15) [ Added December 2008].</p>	<p>Verify that underground Piping is protected from corrosion in accordance with accepted corrosion engineering practices and shall be designed, constructed, installed and tested in accordance with the following industry standards, as applicable:</p> <ul style="list-style-type: none"> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 30A, Motor Fuel Dispensing Facilities and Repair Garages</li> <li>- NFPA 329, Recommended Practices for Handling Releases of Flammable and Combustible Liquids and Gases</li> <li>- API RP 1632, Cathodic Protection of Underground Petroleum Storage Tanks.</li> <li>- NACE R P 0169, Control of External Corrosion on Underground or Submerged Metallic Piping Systems</li> <li>- UL 971, Standard for Nonmetallic Underground Piping for Flammable Liquids</li> <li>- UL 567, Standard for Emergency Breakaway Fittings, Swivel Connectors and Pipe-Connection Fittings for Petroleum Products and LP-Gas</li> <li>- PEI RP 100, Recommended Practices for Installation of Underground Liquid Storage Systems.</li> </ul> <p>Verify that all integral piping systems were designed, constructed, and installed in a manner that permits periodic tightness testing of the entire piping system without the need for extensive excavation.</p> <p>(NOTE: Acceptable designs for underground piping construction include metallic, fiberglass reinforced plastic and flexible plastic piping. Use of metal piping without either sacrificial anodes or impressed current cathodic protection is prohibited.)</p>
<p><b>ST.32.40.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet design requirements for metal piping ( DE 7 10 00 1351, Part C 2. 16) [ Added December 2008].</p>	<p>Verify that metal piping is coated or wrapped, and cathodically protected in the following manner:</p> <ul style="list-style-type: none"> <li>- the piping is coated with a suitable dielectric material</li> <li>- field installed cathodic protection systems are designed and installed in accordance with accepted engineering practice and standards</li> <li>- piping systems protected by sacrificial anodes are designed and installed to permit measurement of structure to soil potential 6 months after installation and at least once every 12 months thereafter</li> <li>- if inadequate cathodic protection is indicated, the cause is determined, and necessary repairs made in accordance with accepted engineering practices and one of the standards within 30 days of the test.</li> </ul> <p>Verify that impressed current systems are designed to allow determination of current operating status.</p> <p>Verify that the impressed current source cannot be de-energized at any time including periods when the facility is closed ( except during power failures or during service work on the storage systems or the impressed current cathodic</p>

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<p><b>ST.32.41.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet design requirements for fiberglass reinforced plastic and flexible plastic piping (DE 7100 0135 1, Part C 2.17) [ Added December 2008].</p> <p><b>ST.32.42.DE.</b> Heating fuel USTs with a capacity greater</p>	<p>protection system), and it is equipped with a continuously operating meter to show that the system is working.</p> <p>Verify that, when a sacrificial anode or impressed current system is used, a monitor station to check on the adequacy of the cathodic protection system is installed and kept in proper working condition.</p> <p>Verify that, if at any time the monitor station shows that the electrical current necessary to prevent corrosion is not being maintained the cathodic protection system is restored, and the piping is tested for tightness in accordance with NFPA 329, Recommended Practices for Handling Releases of Flammable and Combustible Liquids and Gases.</p> <p>Verify that, except where cathodic protection is provided by impressed current, underground piping systems have dielectric bushings, washers, sleeves or gaskets installed to electrically isolate the piping system from the tank and the dispenser.</p> <p>Verify that dielectric connectors are chemically compatible with heating fuel, additives, corrosive soils and groundwater.</p> <p>Verify that fiberglass reinforced plastic and flexible plastic piping is designed, constructed, installed and tested in accordance with the manufacturer's specifications and the following industry standards, as applicable:</p> <ul style="list-style-type: none"> <li>- UL 971, Standard for Nonmetallic Underground Piping for Flammable Liquids</li> <li>- UL 567, Standard for Emergency Breakaway Fittings, Swivel Connectors and Pipe-Connection Fittings for Petroleum Products and LP-Gas</li> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 30A, Motor Fuel Dispensing Facilities and Repair Garages</li> <li>- NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases</li> <li>- PEI RP 100, Recommended Practices for Installation of Underground Liquid Storage Systems.</li> </ul> <p>Verify that construction materials, joints, and joint adhesives of all fiberglass reinforced plastic and flexible plastic pipes are compatible with the heating fuel any additives stored, soil, and groundwater.</p> <p>Verify that pipes, fittings, and adhesives are designed, fabricated, and factory tested in accordance with generally accepted structural, material, and performance standards for underground piping systems.</p> <p>Verify that suction piping systems are designed and constructed in</p>

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<p>than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet design and release detection requirements for suction piping (DE 7100 1351, Part C 2.18 and 2.21) [Added December 2008].</p> <p><b>ST.32.43.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet general release detection requirements for UST piping (DE 7100 1351, Part C 2.19) [ Added December 2008].</p>	<p>accordance with the following requirements:</p> <ul style="list-style-type: none"> <li>- the below grade piping is constructed so that if suction is released the contents of the pipe will drain back into the tank</li> <li>- only 1 check valve is included in each suction line</li> <li>- the check valve is located directly below and as close as practical to the suction pump or</li> <li>- suction piping systems with a foot valve ( U.S. suction) is designed and constructed in accordance with the following requirements: <ul style="list-style-type: none"> <li>- the below grade piping is constructed so that the piping slopes back to the tank</li> <li>- a foot valve is installed at the tank.</li> </ul> </li> </ul> <p>(NOTE: Release detection is not required for suction piping that is designed and constructed to meet these requirements.)</p> <p>Verify that a line tightness test is conducted a minimum of once every 3 years in accordance with NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.</p> <p>Verify that all underground piping is equipped with a method, or combination of methods of release detection that can detect a release from any portion of the underground piping that routinely contains heating fuel.</p> <p>Verify that UST piping interstitial or sump monitoring systems is designed, constructed installed and maintained to detect a leak from any portion of the piping that routinely contains heating fuel.</p> <p>(NOTE: Release detection methods not specified in this section will be considered an alternative by the Department. A written request detailing the method or combination of methods proposed shall be submitted to the Department prior to installation for approval. Alternative methods shall meet the following requirements:</p> <ul style="list-style-type: none"> <li>- the method can detect a 0.1 gallon per hour leak rate or a release of 7.5 gallons within a month with a probability of detection of 0.95 or greater and a probability of false alarm of 0.05 or less</li> <li>- the method or a combination of methods or devices can detect a release as effectively as any of the release detection methods allowed in 2.20.)</li> </ul> <p>Verify that, if an alternative method or a combination of methods or devices is approved, the owner/operator complies with any conditions imposed by the Department on its use to ensure the protection of human health, safety or the environment.</p> <p>Verify that owners and operators implement the indicated release investigation procedure in Part E ( see S T.80) if the piping release detection equipment or</p>

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<p><b>ST.32.44.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet underground pressurized piping release detection requirements for UST piping (DE 7100 0135 1, Part C 2.20) [ Added December 2008].</p> <p><b>ST.32.45.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must</p>	<p>method shows indication of a Release.</p> <p>Verify that underground piping that conveys heating fuels under pressure is equipped with an automatic line leak detector.</p> <p>Verify that the automatic line leak detector alerts owners and operators to the presence of a release by restricting or shutting off the flow of the heating fuel through the piping or triggering an audible or visual alarm.</p> <p>Verify that mechanical and electronic automatic line leak detectors are capable of reacting to leaks of 3 gallons per hour at 10 pounds per square inch line pressure within 1 hour.</p> <p>Verify that an annual test of the operation of the automatic line leak detector is conducted in accordance with the manufacturer's test protocols.</p> <p>Verify that all mechanical and electronic automatic line leak detectors pass a function test at 3 gallons per hour (gph) at 10 pounds per square inch line pressure within 1 hour at least once every 12 months.</p> <p>Verify that an annual tightness test of the entire pressurized underground piping system, including primary and secondary piping, is conducted in accordance with NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.</p> <p>Verify that a line tightness test method is designed to detect a release from any portion of the underground piping system that routinely contains heating fuels.</p> <p>Verify that, if pressurized piping systems are constructed of double wall design utilize interstitial monitoring systems to comply with the piping tightness test requirements, the following requirements are met:</p> <ul style="list-style-type: none"> <li>- all interstitial monitoring devices are designed, constructed, installed and maintained to continuously detect a release from any portion of the piping that routinely contains heating fuel</li> <li>- at a minimum of once every 30 calendar days, owners and operators provide proof via the automatic tank gauge record that the interstitial monitoring device is functioning in accordance with the manufacturer's specifications</li> <li>- records of the monthly interstitial release detection ATG are maintained for the life of the UST system.</li> </ul> <p>Verify that to prevent spilling associated with heating fuel transfer to the UST system with the requirements of one of the following industry standards is met:</p> <ul style="list-style-type: none"> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 385, Standard for Tank Vehicles for Flammable and Combustible</li> </ul>



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<p>meet spill protection requirements ( DE 7 1000 1351, Part C 2. 22) [ Added December 2008].</p> <p><b>ST.32.46.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet overfill protection requirements ( DE 7 1000 1351, Part C 2. 23) [ Added December 2008].</p>	<p>Liquids - API RP 1621, Bulk Liquid Stock Control at Retail Outlets.</p> <p>Verify that the heating fuel UST system is equipped with an impervious spill containment device that forms a liquid tight seal around the fill pipe.</p> <p>Verify that the spill containment device consists of one of the following:</p> <ul style="list-style-type: none"> <li>- impervious materials that forms a seal around the UST fill pipe with an optional drain leading to an overfill collection device</li> <li>- an impervious container surrounding the fill pipe that collects any overfill or spill and allows the heating fuel to drain back into the UST when there is sufficient ullage space.</li> </ul> <p>Verify that water, heating fuel or debris that accumulates in the spill containment is immediately removed.</p> <p>Verify that spill containment devices are maintained to be capable of containing a spill of the containment design capacity at all times.</p> <p>Verify that all reasonable precautions are taken to prevent UST overfilling, spilling or dripping.</p> <p>Verify that spill containment devices are tested once every 12 months for tightness, or in accordance with the manufacturer's specifications, or when deemed necessary by the Department to determine if a threat to human health, safety or the environment exists.</p> <p>(NOTE: Spill containment devices of double wall design with continuous monitoring of the interstitial space are exempt from the testing requirements.)</p> <p>Verify that records of the continuous interstitial monitoring of the spill containment device are maintained.</p> <p>Verify that owners and operators report, investigate and clean up any spills in accordance with Part E (see ST.80).</p> <p>Verify that the person in charge of the transfer of heating fuel to the tank adheres to proper safety precautions and procedures for transfers such as those found in NFPA 385, Standard for Tank Vehicles for Flammable and Combustible Liquids or API RP 1621, Bulk Liquid Stock Control at Retail Outlets and complies with the following:</p> <ul style="list-style-type: none"> <li>- the person in charge of transfer operations first checks the UST to ensure that the volume available in the UST is greater than the volume of heating fuel to be transferred to the UST before the transfer is made</li> <li>- during the transfer, the person in charge continuously monitors the entire</li> </ul>

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- transfer operation to prevent an overfill release
- at the conclusion of the transfer, the person in charge collects any heating fuel that remains in the transfer hose and ensures it is properly managed and does not reach the environment
- the person in charge takes all precautions to prevent spilling and dripping.

Verify that overfill protection equipment that complies with one of the following is installed and maintained:

- for UST systems with a 2 inch fill overfill protection may consist of a delivery truck that is equipped with a deep fill nozzle that incorporates a whistle that is set deep enough in the deep fill such that when the whistling stops the level of heating fuel in the UST is no more than 90 percent of the capacity of the UST
- automatically shuts off the flow into the UST when the UST is no more than 95 percent fuel
- alerts the transfer operator when the UST is no more than 90 percent full by restricting the flow into the UST or triggering a high level alarm
- restricts flow 30 minutes prior to overfilling, alerting the person in charge of the transfer operation with a high level alarm one minute before overfilling, or automatically shuts off flow into the UST so that none of the fittings on top of the tank are exposed to heating fuel due to overfilling
- an automatic partial flow shut off float vent or vapor valve is installed inside the UST set to restrict flow when the UST is no more than 90 percent full
- UST systems that receive pressurized deliveries require a high level alarm that is triggered at no more than 90 percent full for overfill protection or an automatic flow shut-off valve designed for pressurized deliveries.

(NOTE: Vent or vapor restriction devices shall not be installed in storage systems that are equipped with suction pumps, remote fill lines, remote vapor lines or receive pressurized deliveries.)

Verify that owners and operators and persons in charge of transfer operations comply with the following for gravity deliveries:

- the person in charge of the transfer operation first checks the UST to ensure that the volume available in the UST is greater than the volume of heating fuel to be transferred to the UST before the transfer is made
- during the transfer, the person in charge constantly monitor the entire transfer operation to prevent overfilling and shall stand by the shut-off valve during the entire transfer operation
- in the case of remote fills, the tank volume is checked through a gauging port
- at the conclusion of the transfer, the person in charge collect any heating fuel that remains in the transfer hose and ensures it is properly managed and does not reach the environment
- overfill protection consists of overfill protection equipment that will automatically shut off the flow into the UST when the UST is no more than 95 percent full, or alert the transfer operator when the UST is no more than 90 percent full by restricting the flow into the UST, or triggering a high level

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<p><b>ST.32.47.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet fill line marking requirements ( DE 7 1000 1351, Part C 2. 24) [ Added December 2008].</p> <p><b>ST.32.48.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 with corrosion protection must meet specific requirements (DE 7 1000 1351, Part C 2.25) [ Added December 2008].</p>	<p>alarm.</p> <p>Verify that owners and operators report, investigate, and clean up any spills and overfills in accordance with Part E (see ST.80).</p> <p>Verify that all fill lines for UST systems are clearly marked to indicate the size of the tank and the type of heating fuel stored.</p> <p>Verify that fill line markings meet the following requirements:</p> <ul style="list-style-type: none"> <li>- a label or permanent tag at the fill connection that states the size of the UST system and the specific type of heating fuel stored</li> <li>- a color symbol system is implemented according to the following requirements: <ul style="list-style-type: none"> <li>- all fill covers are marked consistent with API RP 1637, Using the API Color-Symbol System to Mark Equipment and Vehicles for Product Identification at Service Stations and Distribution Terminals</li> <li>- a different color symbol is used for each type of heating fuel or grade of heating fuel being stored at the Facility.</li> </ul> </li> </ul> <p>Verify that pipes and other openings not used for transfer of heating fuel at the UST facility are not painted any color that would be associated with the color symbol designated for marking the heating fuel stored at the facility.</p> <p>(NOTE: It is particularly important that openings with access to soil and ground water, such as monitor wells, release detection tubes, vadose zone vapor detection tubes and u tubes, not be confused with regulated substance fill lines.)</p> <p>Verify that steel UST systems with corrosion protection systems install, operate and maintain the system in accordance with the following industry standards:</p> <ul style="list-style-type: none"> <li>- NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection</li> <li>- NACE TM0101, Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Tank Systems</li> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 30A, Motor Fuel Dispensing Facilities and Repair Garages.</li> </ul> <p>Verify that steel UST systems with corrosion protection systems are maintained and operated to continuously provide corrosion protection to the metal components of the UST system that routinely contain a regulated substance and are in contact with the ground to ensure that releases due to corrosion are prevented for the life of the UST system.</p> <p>Verify that testing procedures are done in accordance with NACE RP 0285,</p>

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	<p>Corrosion Control of Underground Storage Tank Systems by Cathodic Protection, and the manufacturer's specifications, and include the following:</p> <ul style="list-style-type: none"> <li>- a minimum of 3 voltage readings along the center line for UST systems less than 20,000 gallons and a minimum of 5 voltage readings along the center line for UST systems greater than or equal to 20,000 gallons</li> <li>- a minimum of 1 voltage reading for every 10 feet of piping.</li> </ul> <p>Verify that the tested is done by an individual certified by a nationally recognized industry standard setting or organization, and in accordance with Department standards within 6 months of installation and after underground work is performed at or near a site with a Sacrificial anode cathodic protection system and at least once every 12 months thereafter.</p> <p>Verify that the sacrificial anode cathodic protection system is repaired or replaced in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection and the requirements of 1.6 if the sacrificial anode cathodic protection system is not operating in accordance with the manufacturer's specifications and the requirements of these regulations.</p> <p>(NOTE: The need for repair and replacement includes but is not limited to failure to register a negative voltage of at least 0.85 volts for each UST.)</p> <p>Verify that an individual certified by a nationally recognized industry standard setting organization determine the cause of the failure and makes the necessary repairs within 60 days of the discovery of the failure of the corrosion protection system.</p> <p>Verify that the Department is notified within 48 hours of the discovery of the failure of a sacrificial anode cathodic protection system.</p> <p>Verify that the Department approves, either verbally or in writing, all cathodic protection repair or replacement plans prior to work commencing.</p> <p>(NOTE: The use of alternate methods of monitoring shall be those described in NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection, and shall only be used with prior written approval from the Department.)</p> <p>Verify that a record of the operation, tests, and inspections of sacrificial anode cathodic protection systems is maintained to demonstrate compliance and the records are retained in a permanent record.</p> <p>Verify that impressed current cathodic protection systems are not utilized as a repair, upgrade or replacement after January 11, 2008.</p> <p>Verify that all UST systems equipped with impressed current cathodic protection testing procedures are done in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection, and the</p>

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	<p>manufacturer's specifications and include the following:</p> <ul style="list-style-type: none"> <li>- a minimum of 3 instant off voltage readings along the center line for UST systems less than twenty 20,000 gallons and a minimum of 5 instant off voltage readings along the center line for UST systems greater than or equal to 20,000 gallons</li> <li>- a minimum of 1 instant off voltage reading for every 10 feet of piping.</li> </ul> <p>Verify that all impressed current cathodic protection systems are tested by an individual certified by a nationally recognized industry standard setting organization, and in accordance with Department standards within 6 months of installation and after underground work is performed at or near a site with an impressed current cathodic protection system and at least once every 12 months thereafter.</p> <p>Verify that the Department is notified within 48 hours of the discovery of the failure of an impressed current cathodic protection system.</p> <p>Verify that the impressed current source is not de-energized at any time including periods when the facility is closed except during power failures or during service work on the UST systems or the impressed current cathodic protection system.</p> <p>Verify that alternate methods of testing have prior written approval from the Department.</p> <p>Verify that all rectifier readings are recorded at least once every 30 calendar days.</p> <p>Verify that all impressed current cathodic protection systems are inspected once every 12 months by an individual certified by a nationally recognized industry standard setting organization and in accordance with Department standards.</p> <p>Verify that inspections, at a minimum, include a check for electrical shorts, ground connections, meter accuracy, and circuit resistance.</p> <p>Verify that the effectiveness of isolating devices, continuity bonds, and insulators are evaluated during the annual surveys.</p> <p>Verify that a record of the operation of impressed current cathodic protection systems is maintained to demonstrate compliance with the performance standards.</p> <p>Verify that these records are retained in a permanent record and at a minimum provide the following information:</p> <ul style="list-style-type: none"> <li>- the results of all tests and inspections of the impressed current cathodic protection system</li> <li>- the required rectifier readings.</li> </ul>

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<p><b>ST.32.49.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet containment sump requirements (DE 7 1000 1351, Part C 2. 26) [ Added December 2008].</p>	<p>Verify that, when a sump sensor is used to comply with the tank or piping release detection requirements, the containment sump is product tight and is tested to ensure it is product tight once every 36 months.</p> <p>Verify that all dispenser, tank top, transition and any other containment sump tightness testing methods utilized are in accordance with the manufacturer's specifications or approved in advance by the Department.</p>
<p><b>ST.32.50.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet testing and monitoring requirements for sump and interstitial sensors (DE 7 1000 1351, Part C 2. 27) [ Added December 2008].</p>	<p>Verify that all sump and interstitial sensors used to comply with the release detection requirements are tested and inspected once every 12 months in accordance with the manufacturer's specifications or as directed by the Department to verify proper sensor operation.</p>
<p><b>ST.32.51.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet repair requirements (DE 7 1000 1351, Part C 2.28) [Added December 2008].</p>	<p>Verify that all repairs, upgrades, retrofits and replacements to existing heating fuel UST systems meet the applicable design, installation, maintenance and operational standards in paragraph c or as approved by the Department prior to installation.</p> <p>Verify that documentation of repair completion is submitted to the Department.</p> <p>Verify that all equipment installed after January 11, 2008 is installed, operated and maintained so that manufacturer's warranties are not voided.</p> <p>Verify that repairs will prevent releases due to structural failure or corrosion as long as the UST system is used to store heating fuel.</p> <p>Verify that the cathodic protection system is tested within 6 weeks and once every 12 months following the repair of any cathodically protected UST system to ensure it is operating properly.</p> <p>Verify that records for each repair is maintained for the operational life of the UST system.</p> <p>Verify that, after any repairs to a UST system, the UST system is tested for tightness before the UST system is placed into service.</p> <p>Verify that repairs to fiberglass reinforced plastic tanks is made only by the</p>

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<p><b>ST.32.52.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet routine inspection requirements ( DE 7 1000 1351, Part C 2. 29) [ Added December 2008].</p> <p><b>ST.32.53.DE.</b> Heating fuel USTs with a capacity greater than 1,100 gallons installed after May 14, 1993 and prior to January 11, 2008 must meet internal lining requirements ( DE 7 1000 1351, Part C 2. 31) [ Added December 2008].</p>	<p>manufacturer or by its authorized representatives.</p> <p>Verify that holes in piping and fittings are not repaired, but are replaced when a release has occurred.</p> <p>Verify that replacement piping and fittings meet all applicable piping requirements.</p> <p>(NOTE: Loose fittings and joints in piping that have been tightened to eliminate leakage may be put back into service.)</p> <p>Verify that inspections are conducted once every 30 calendar days to monitor the condition of all sumps, containment sumps, tank tops and access ports.</p> <p>Verify that the routine inspection include at a minimum the following:</p> <ul style="list-style-type: none"> <li>- removal of all containment sump covers and visual inspection of the sump for any evidence of a release of heating fuel</li> <li>- inspection of all access ports to make sure that the covers, caps and adaptors are tightly sealed</li> <li>- removal of all spill containment device covers and inspection to ensure all spill containment devices are empty and free of debris, water or heating fuel.</li> </ul> <p>Verify that a record of all routine inspections is kept on file by owners and operators for a minimum of 3 years and are made available to the Department upon request.</p> <p>Verify that these records, at a minimum, include the results of all inspections including any repairs made.</p> <p>Verify that, if at any time during a routine inspection evidence of a release of heating fuel is discovered, owners and operators follow the investigation requirements of Part E (see ST.80).</p> <p>Verify that an internal lining is not added to UST systems to meet corrosion protection requirements after January 11, 2008.</p> <p>Verify that internal lining is installed in accordance with the following industry standards:</p> <ul style="list-style-type: none"> <li>- API RP 16 31, Interior Lining and Periodic Inspection of Underground Storage Tanks</li> <li>- NLPA Standard 631, Chapter A, Entry, Cleaning, Interior Inspection, Repair, and Lining of Underground Storage Tanks</li> <li>- NLPA Standard 631, Chapter B, Future Internal Inspection Requirements for</li> </ul>

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<p><b>ST.32.54.DE.</b> Heating fuel USTs with a capacity greater than 2,000 gallons installed prior to May 14, 1993 must meet specific requirements (DE 7100 0135 I, Part C 2.32) [ Added December 2008].</p> <p><b>ST.32.55.DE.</b> Existing heating fuel USTs with a capacity greater than 2,000 gallons and less than or equal to 8,000 gallons must meet compliance requirements (DE 71000 1351, Part C 2.30)</p>	<p>Lined Tanks.</p> <p>Verify that the lined tank is tested for tightness and found to be tight before the tank is put back into service.</p> <p>Verify that, within 10 years after lining, and every 5 years thereafter, an internal inspection of the lined tank is conducted in accordance with NLP Standard 631, Chapter A, Entry, Cleaning, Interior Inspection, Repair, and Lining of Underground Storage Tanks and Chapter B, Future Internal Inspection Requirements for Lined Tanks and API RP 1631, Interior Lining and Periodic Inspection of Underground Storage Tanks.</p> <p>Verify that, at the time of the inspection, the lined tank is structurally sound and comply with the original design specifications.</p> <p>Verify that, if any damage is found, repairs are made in accordance with standard engineering practice, industry standards and the requirements of these regulations or the tank is replaced in accordance with the requirements in 1 of this part.</p> <p>Verify that heating fuel UST system with a capacity of greater than 2,000 gallons installed prior to May 14, 1993 is in compliance with one of the following:</p> <ul style="list-style-type: none"> <li>- the requirements of the following:</li> <li>- the tank release detection requirements</li> <li>- the piping release detection requirements</li> <li>- the spill protection requirements</li> <li>- the overfill protection requirements</li> <li>- the fill line protection requirements</li> <li>- UST system design requirements</li> <li>- UST system cathodic protection requirements</li> <li>- UST system cathodic protection requirements and UST system internal lining requirements</li> <li>- the permanent removal or closure in place of the UST system in accordance with the requirements of Part C, 4 of these regulations and the applicable hydrogeologic investigation and remedial action requirements of Part E (see ST.80).</li> </ul> <p>(NOTE: No heating fuel UST system will be granted an exemption from compliance with the requirements of 2.32 of this Part after December 31, 2010.)</p> <p>Verify that owners and operators of heating fuel UST systems installed prior to May 14, 1993 with a storage capacity of greater than 2,000 gallons and less than or equal to 8,000 gallons submit a written application to the Department requesting a deferral from compliance with 2.32.</p>



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<p>[Added December 2008].</p> <p><b>ST.32.56.DE.</b> Heating fuel USTs must meet change in service requirements (D E 7 1000 1 351, P art C 3. 1, 3 .2, 3.3, and 3. 4) [ Added December 2008].</p>	<p>Verify that manual tank gauging ( MTG) is performed for heating fuel USTs granted an exemption by the Department that meets the following requirements:</p> <ul style="list-style-type: none"> <li>- the UST system is tested at least twice in a 12month period over a static period of at least 120 hours in which no heating fuel may be added to or removed from the UST system</li> <li>- at the beginning and at the end of the test period the liquid level in the UST is measured to the nearest one-eighth ( 1/8) inch and the measurements recorded</li> <li>- the MTG records are maintained for the lifetime of the UST system</li> <li>- a leak rate of 0.2 gallons per hour ( 0.2 gph) or more is indication of a Release.</li> <li>- the Department is notified of a suspected release within twenty-four ( 24) hours of the end of the test period and the requirements of Part E are followed.</li> </ul> <p>Verify that approval documentation is posted or displayed at the individual facility for which the exemption was granted.</p> <p>Verify that the Department is notified of all changes in service.</p> <p>Verify that owners and operators continue operation and maintenance of corrosion protection.</p> <p>Verify that owners and operators continue operation and maintenance of release detection in accordance with the applicable release detection requirements for tanks and piping.</p> <p>(NOTE: Release detection is not required if the UST has been rendered empty. The UST system is empty when all heating fuels have been removed using commonly employed practices so that no more than one inch or 2.5 centimeters of residue, or 0.3 percent by weight of the total capacity of the UST system, remains in the system.)</p> <p>Verify that, when a heating fuel UST system is out of service for 3 months or more, the following requirements are met:</p> <ul style="list-style-type: none"> <li>- leave vent lines open and functioning</li> <li>- cap and secure all other lines, pumps, manways, and ancillary equipment.</li> </ul> <p>Verify that, when a heating fuel UST system has been out of service for 12 months, the following requirements are met:</p> <ul style="list-style-type: none"> <li>- permanently remove or replace the heating fuel UST system in accordance with the applicable requirements</li> <li>- render the heating fuel UST system empty in accordance with the definition above and complete a Site assessment including any required hydrogeologic</li> </ul>

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<p><b>ST.32.57.DE.</b> Heating fuel USTs must meet change in service record keeping requirements ( DE 7 1000 1351, Part C 3. 5) [ Added December 2008].</p> <p><b>ST.32.58.DE.</b> Heating fuel USTs must meet requirements for removal or closure in place (DE 7 100 0 1351, Part C 4 .0) [ Added December</p>	<p>investigation and remedial action in accordance with Part E (see ST.80).</p> <p>Verify that, prior to a change in status of a heating fuel UST system from out of service to in service, owners and operators ensure that the heating fuel UST system meets the following requirements prior to being placed in service:</p> <ul style="list-style-type: none"> <li>- the heating fuel UST system meets the requirements for new USTs</li> <li>- the heating fuel UST system is tested for tightness</li> <li>- all cathodically protected heating fuel UST systems are tested and all necessary Repairs made.</li> </ul> <p>Verify that, within 30 days of rendering the UST system empty, owners and operators complete a site assessment designed to measure for the presence of a release where contamination is most likely to be present.</p> <p>(NOTE: The Site assessment is not restricted to the property containing the UST system. In selecting sample types, sample locations and measurement methods, owners and operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a release.)</p> <p>Verify that the site assessment plan is approved by the Department prior to implementation.</p> <p>Verify that, if contaminated soils, contaminated groundwater, or free product as a liquid or a vapor is discovered as a result of the site assessment, or by any other manner, owner and operators begins a hydrogeologic investigation and remedial action in accordance with the requirements of Part E (see ST.80).</p> <p>Verify that the following documents are submitted to the Department within 30 days of the completion of the site assessment:</p> <ul style="list-style-type: none"> <li>- a site plan detailing the UST(s) location and surrounding area</li> <li>- the approved site assessment plan with sampling points clearly marked</li> <li>- chain of custody for all samples submitted for laboratory analysis</li> <li>- results of any on-site screening performed</li> <li>- laboratory test results for all samples submitted for laboratory analysis</li> <li>- documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the change in service of the heating fuel UST system, including manifests and receipts for soil, water, and heating fuel.</li> </ul> <p>Verify that the Department is notified of all removals or closures in place.</p> <p>Verify that removal and closure in place procedures comply with one of the following industry standards:</p>

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2008].	<ul style="list-style-type: none"> <li>- API RP 1604, Closure of Underground Petroleum Storage Tanks</li> <li>- API 2015, Safe Entry and Cleaning of Petroleum Storage Tanks</li> <li>- OSHA, 29 CFR, 1910.146, Permit Required Confined Spaces.</li> </ul> <p>Verify that, at the time of removal or closure in place of a heating fuel UST system, owners and operators perform a site assessment to measure for the presence of a release where contamination is most likely to be present at the UST site.</p> <p>Verify that the site assessment is approved by the Department prior to implementation.</p> <p>(NOTE: In selecting sample types, sample locations and measurement methods, owners and operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a release.)</p> <p>Verify that the site assessment is completed within 10 days of the removal of the heating fuel UST system.</p> <p>Verify that, if contaminated soils, contaminated groundwater, or free product as a liquid or a vapor is discovered as a result of the site assessment, or by any other manner, owner and operators begin a hydrogeologic investigation and remedial action in accordance with the requirements of Part E (see ST.80).</p> <p>Verify that the following documents are submitted to the Department within 60 days of the removal or closure in place of a heating fuel UST system:</p> <ul style="list-style-type: none"> <li>- a site plan detailing the UST(s) location and surrounding area</li> <li>- a site map with sampling points clearly marked</li> <li>- results of any on-site screening performed</li> <li>- chain of custody for all samples submitted for laboratory analysis</li> <li>- laboratory test results for all samples submitted for laboratory analysis</li> <li>- documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the removal of the UST system, including manifests and receipts for soil, water, and regulated substances and the UST system disposal</li> <li>- documentation of Tank cleaning prior to UST system closure in place.</li> </ul> <p>Verify that, when a release is suspected from a previously removed, closed in place or abandoned heating fuel UST system, the owner, operator and responsible party complies with the requirements of Part.</p> <p>Verify that, if a release is confirmed, the heating fuel UST system is removed or closed in accordance with all applicable requirements.</p>

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<p><b>ST.32.59.DE.</b> Heating fuel USTs must meet specific requirements when there is a change in the stored substance (DE 7 1000 1 351, Part C 5.0) [Added December 2008].</p>	<p>Verify that the Department is notified of all changes in substance stored.</p> <p>Verify that, before the change in substance stored, the heating fuel UST system is emptied and cleaned by removing all liquids and accumulated sludge in accordance with the following industry standards:</p> <ul style="list-style-type: none"> <li>- API RP 1604, Closure of Underground Petroleum Storage Tanks</li> <li>- API RP 2015, Safe Entry and Cleaning of Petroleum Storage Tanks</li> <li>- OSHA, 29 CFR 1910.146, Permit Required Confined Spaces.</li> </ul> <p>Verify that, within 30 days of the completion of the cleaning of the heating fuel UST system, a Site Assessment designed to measure for the presence of a release is conducted where contamination is most likely to be present at the heating fuel UST site.</p> <p>Verify that the site assessment is approved by the Department prior to implementation.</p> <p>(NOTE: In selecting sample types, sample locations and measurement methods, owners and operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a release.)</p> <p>Verify that, if contaminated soils, contaminated groundwater, or free product as a liquid or vapor is discovered as a result of the site, or by any other manner, owner and operators begin a hydrogeologic investigation and remedial action in accordance with the requirements of Part E (see ST.80).</p> <p>Verify that the following documents are submitted to the Department within 30 days of the Change In Substance Stored in an UST system:</p> <ul style="list-style-type: none"> <li>- a site plan detailing the UST(s) location and surrounding area</li> <li>- the approved Site Assessment plan with sampling points clearly marked</li> <li>- chain of custody for all samples submitted for laboratory analysis</li> <li>- results of any on-site screening performed</li> <li>- laboratory test results for all samples submitted for laboratory analysis</li> <li>- documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the change in substance stored of the UST system, including manifests and receipts for soil, water, and regulated substances.</li> </ul>

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<p><b>ST.35.</b></p> <p><b>NEW OR UPGRADED USTS</b></p> <p><b>ST.35.1.DE.</b> Approval from the Department must be obtained prior to the installation of new UST systems (DE 7 1000 1351 Part A 4.6) [Revised December 2008].</p> <p><b>ST.35.2.DE.</b> Owners/operators that retrofit/upgrade a UST system must meet notification standards (DE 7 10 00 1351 Part A 4.7) [Revised December 2008].</p>	<p>Verify that UST system used for storing regulated substances have prior written approval from the Department.</p> <p>Verify that the Department is notified of the planned installation of all UST systems used for storing regulated substances, at least 30 days prior to installation.</p> <p>Verify that a formal letter of approval has been issued by the Department.</p> <p>Verify that the owner/operator complies with all requirements stated by the Department in the installation approval letter.</p> <p>Verify that, during construction, an owner/operator does not cause or allow a design change which is not in accordance with the approved plans and all terms and conditions of the Department's approval.</p> <p>(NOTE: Department approval for installation of a new UST system shall not eliminate the need to obtain applicable approvals and permits from the authority(ies) enforcing the State Fire Prevention Regulations, local building codes or other State or Federal or Local rules or regulations.)</p> <p>Verify that, at the completion of the UST system installation, operation of the tank does not commence without written approval from the Department.</p> <p>Verify that the Department is notified of all scheduled Retrofits or Upgrades of UST systems, on a form provided by the Department, at least 10 days prior to the proposed date of construction.</p> <p>Verify that the Department approved the Retrofit or Upgrade construction plans.</p> <p>Verify that the Department is notified within 48 hours of the commencement of Retrofit or Upgrade construction work after receipt of the Department's approval of the Retrofit or Upgrade construction plans.</p> <p>(NOTE: If the retrofit or upgrade construction work has not begun within 60 days of receipt of the Department's approval, a new notification form must be submitted to the Department.)</p>

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<p><b>ST.35.3.DE.</b> Regulated substance UST systems installed after January 11, 2008 must meet general design and construction requirements (DE 7 1000 1351 Part B , 1 .0) [Revised December 2008].</p>	<p>Verify that new petroleum UST systems are designed, constructed and installed:</p> <ul style="list-style-type: none"> <li>- in accordance with the manufacturer's specifications, and accepted engineering practices and procedures</li> <li>- prevents releases of regulated substances to the groundwaters, surface waters, or soils of the state due to corrosion, structural failure, spills, and overfills for the operational life of the UST.</li> </ul> <p>Verify that the material used in the construction and/or lining of the tank is compatible with the substance stored.</p> <p>Verify that components of the UST system are approved by Underwriters Laboratories or equivalent third party certification.</p> <p>Verify that bare steel UST systems or steel UST systems coated with asphalt are prohibited.</p> <p>Verify that equipment is installed, operated, and maintained so that manufacturer's warranties are not voided.</p> <p>Verify that dispenser hoses are a maximum of 18 feet in length unless otherwise approved by the Department.</p> <p>Verify that, when not in use, hoses are reeled, racked or otherwise protected from damage.</p>
<p><b>ST.35.4.DE.</b> Regulated substance UST systems installed after January 11, 2008 must meet design requirements for double-walled tanks (DE 7 1000 1351 Part B 1.5) [Revised December 2008].</p>	<p>Verify that double-walled USTs meet the following design standards:</p> <ul style="list-style-type: none"> <li>- the interstitial space of the double-walled tank can be monitored for tightness</li> <li>- outer jackets are made of steel with a minimum thickness of 10 gauge</li> <li>- coated either meets coating requirements for steel USTs or steel-fiberglass-reinforced-plastic composite USTs</li> <li>- there are no penetrations of any kind through the jacket to the tank except top entry manholes and fittings required for filling the tank, venting the tank, or monitoring the interstitial space</li> <li>- the outer jacket covers the entire circumference of the tank</li> <li>- jacket is able to contain a liquid or be able to contain a vacuum from the time of manufacture completion until the time of installation.</li> </ul> <p>(NOTE: Double-walled tanks that meet their specific design standards also satisfy the requirements for secondary containment.)</p>
<p><b>ST.35.5.DE.</b> Regulated substance UST systems installed after January 11,</p>	<p>Verify that, prior to installation tank system materials and equipment are inspected for flaws, surface cracks, holes, large scrapes, blisters, indentations and other</p>

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<p>2008 must meet installation requirements for tanks and piping (DE 7 1000 13 51 Part B 1.13) [Revised December 2008].</p>	<p>indications of damage.</p> <p>Verify that all defects and repairs to the UST system are recorded and the record submitted with a site completion report to the Department.</p> <p>Verify that UST(s) are pressure tested according to the manufacturer's specifications prior to installation of the UST(s) into the excavation.</p> <p>(NOTE: The installer shall soap the exterior, particularly its seams and fittings, and pressure test the UST(s) using the manufacturer's specifications to locate and correct defects. Tank and interstitial space testing shall be conducted according to the manufacturer's recommendations and accepted engineering practices.)</p> <p>Verify that, after installation, all piping, including all interstitial spaces, are pressure tested according to the manufacturer's specifications prior to backfilling the excavation.</p> <p>Verify that, after installation of the tank and integral piping is complete and prior to the initial use of the UST system, the entire system is tested in accordance with current industry standards and practices and in the following manner to ensure the system is tight.</p> <p>Verify that all testing of UST systems is accomplished by the precision test method described in NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases, or other test approved by the Department which is of equivalent or superior accuracy.</p> <p>(NOTE: All testing of UST systems shall be able to account for the effects of thermal expansion or contraction of the regulated substances, vapor pockets, tank deformation, evaporation or condensation, temperature stratification in the UST and the location of the water table.)</p> <p>Verify that the required precision tests is conducted by a person trained and certified in the correct use of the necessary equipment, and is performed in accordance with the testing procedures and requirements established by the test system manufacturer and current industry standards and practices.</p> <p>(NOTE: The Department reserves the right to request confirmatory system tightness tests to verify any test results submitted by an owner, operator, or contractor. Owners and operators shall permit periodic inspection of the UST system installation by the Department.)</p> <p>Verify that, during the installation of all new USTs, every stage of the construction is documented with photographs to demonstrate that the UST system was installed in compliance with the requirements for new UST systems.</p> <p>Verify that, upon completion of the installation, copies of the photographs, as built plan, and required certification(s) are submitted to the Department within 30 days</p>

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<p><b>ST.35.6.DE.</b> Regulated substance UST systems installed after January 11, 2008 must meet piping design and installation requirements (DE 7 1000 1351 Part B 1.14, 1.15, 1.16, and 1.17) [Revised December 2008].</p>	<p>of the completion of the installation.</p> <p>Verify that copies of all documents and photographs are kept on file for the life of the UST facility.</p> <p>Verify that piping is installed in accordance with the manufacturer's specifications.</p> <p>Verify that the piping layout is designed to minimize crossed lines and interference with conduit and other UST system components.</p> <p>Verify that, if crossing of lines is unavoidable, clearance is provided to prevent contact of the pipes.</p> <p>Verify that all regulated substance, vent and vapor return piping slope back to the tank with a minimum slope of one-eighth (1/8") inch per foot.</p> <p>Verify that the pipe joints are cut and deburred according to manufacturer's specifications to provide liquid tight seals.</p> <p>Verify that, when rigid piping is used, flexible connector(s) are installed at the tank end of each regulated substance line, vent line and vapor recovery line as well as at the base of each dispenser and vent riser on all new installations.</p> <p>Verify that double elbow swing joints are not used.</p> <p>Verify that all underground metal fittings, flexible connectors, joints, and pipes are isolated from contact with the soil.</p> <p>Verify that underground piping is protected from corrosion in accordance with accepted corrosion engineering practices and is designed, constructed, installed and tested in accordance with industry standards.</p> <p>Verify that all integral piping systems are designed, constructed, and installed in a manner which will permit periodic tightness testing of the entire piping system without the need for excavation.</p> <p>(NOTE: Acceptable designs for underground piping construction include fiberglass reinforced plastic and flexible plastic piping.)</p> <p>Verify that fiberglass reinforced plastic and flexible plastic piping are designed, constructed, installed and tested in accordance with the manufacturer's specifications.</p> <p>Verify that suction Piping systems are designed and constructed in accordance with the following requirements:</p>



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<p><b>ST.35.7.DE.</b> Regulated substance UST systems installed after January 11, 2008 must secondary containment requirements (DE 7 1000 1351 Part B 1.4) [Revised December 2008].</p> <p><b>ST.35.8.DE.</b> Regulated substance UST systems installed after January 11,</p>	<ul style="list-style-type: none"> <li>- below grade piping is constructed so that if suction is released the contents of the pipe will drain back into the tank</li> <li>- only 1 check valve shall be included in each suction line</li> <li>- the check valve is located directly below and as close as practical to the suction pump.</li> </ul> <p>Verify that suction piping systems with a foot valve (U.S. Suction) are designed and constructed in accordance with the following requirements:</p> <ul style="list-style-type: none"> <li>- the below grade piping is constructed so that the piping slopes back to the tank</li> <li>- a foot valve is installed at the storage tank.</li> </ul> <p>(NOTE: The Department reserves the right to require secondary containment or equivalent protection on any portion of the UST system where aquifers underlying the UST facility are determined to need such protection, or where groundwater below the UST facility is within a well head protection area, or where groundwater is susceptible to contamination in order to protect the safety, health, welfare and/or environment of the State.)</p> <p>Verify that secondary containment systems are designed, constructed and installed to:</p> <ul style="list-style-type: none"> <li>- contain the regulated substances released from the UST system until they are detected and removed</li> <li>- prevent the release of regulated substance to the environment at any time during the operational life of the UST system</li> <li>- checked for evidence of a release at least once every 30 calendar days.</li> </ul> <p>Verify that secondary containment systems include the following:</p> <ul style="list-style-type: none"> <li>- double-walled tank</li> <li>- double-walled regulated substance and vapor return piping and, where required, vent piping</li> <li>- containment sumps at the tank top and under each dispenser</li> <li>- tanks and piping have interstitial monitoring that is checked for evidence of a Release at a minimum of once every 30 calendar days</li> <li>- other equivalent technology approved by the Department.</li> </ul> <p>Verify that secondary containment systems are constructed in accordance with acceptable engineering practice and industry standards and have release detection.</p> <p>Verify that support and anchorage is provided for all new installations to a void Tank flotation and is installed in accordance with the PEI RP 100, Recommended</p>

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<p>2008 must meet requirements for anchoring and backfill material ( DE 7 1000 1351 Part B 1. 10 a nd 1. 11) [Revised December 2008].</p> <p><b>ST.35.9.DE.</b> Regulated substance UST systems installed after January 11, 2008 must meet containment and dispenser sump requirements ( DE 7 1000 1351 P art B 1.25 and 1 .26) [Revised December 2008].</p>	<p>Practices for Installation of Underground Liquid Storage Systems.</p> <p>Verify that one or more of the following methods of anchorage is utilized:</p> <ul style="list-style-type: none"> <li>- reinforced concrete deadmen anchors</li> <li>- bottom hold-down pad which consists of 8 inches of reinforced concrete that extends 18 inches beyond the tank sides and 12 inches beyond each end</li> <li>- reinforced concrete slab over the Tank.</li> </ul> <p>Verify that all exposed metallic components of hold down systems are electrically isolated and cathodically protected when the hold down system is required by the Department.</p> <p>Verify that the backfill depth is consistent with the requirements in PEI RP100, Recommended Practices for Installation of Underground Liquid Storage Systems.</p> <p>Verify that backfill material consists of sand, crushed rock or pea gravel.</p> <p>Verify that the material is clean, washed, inert, free flowing, homogeneous, well granulated, non corrosive, and free of debris, rock, ice, snow or organic material.</p> <p>Verify that particle length of crushed rock or pea gravel is no less than 1/8 inch and no more than 3/4inch in size.</p> <p>Verify that the backfill material complies with the tank manufacturer's specifications.</p> <p>Verify that the mixing of backfill with native soil and/or foreign objects is prohibited.</p> <p>Verify that the backfill depth is consistent with the requirements in PEI RP100, Recommended Practices for Installation of Underground Liquid Storage Systems.</p> <p>Verify that all dispenser, tank top, transition and any other containment sumps of single wall design are product tight and are tested for product tightness once every 36 months, or in accordance with the manufacturers' specifications, or when deemed necessary by the Department to determine if a threat to human health, safety or the environment exists.</p> <p>(NOTE: All dispenser, tank top, transition and any other containment sumps of double wall design with continuous monitoring of the interstitial space are exempt from these testing requirements.)</p> <p>Verify that all dispenser, tank top, transition and any other containment sumps tightness testing methods utilized are in accordance with the manufacturer's specifications or approved by the Department.</p>

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<p><b>ST.35.10.DE.</b> Regulated substance UST systems installed after January 11, 2008 must meet testing and monitoring requirements for sump and interstitial sensors (DE 7 1000 1351 Part B 1.27) [Added December 2008].</p> <p><b>ST.35.11.DE.</b> Regulated substance UST systems installed after January 11, 2008 must meet inspection requirements ( DE 7 1000 1351 P art B 1. 31) [Added December 2008].</p>	<p>Verify that all access manholes associated with containment sumps are sized such that the manhole skirt is sufficiently larger than the containment Sump lid to allow adequate access to the sump and allow for surface water drainage.</p> <p>Verify that all dispenser containment sumps are installed and maintained as to be capable of being visually inspected at all times for evidence of a Release and are not filled with any material such as pea gravel or native soil.</p> <p>Verify that, if the sumps can not be visually inspected at all times, the dispenser containment sump is continuously monitored for Releases.</p> <p>Verify that dispenser sumps are designed and installed so that any regulated substance accumulating within the sump is contained and conveyed to the tank top sump via the Piping interstitial space where it can be monitored and detected.</p> <p>Verify that, if dispenser sump is equipped with a sensor, the sensor is equipped with an automatic audible or visual release detection alarm system.</p> <p>Verify that all sensors are equipped with an automatic audible and visual alert system and the UST system shuts down in the event of an alarm.</p> <p>Verify that all sensors are inspected and tested at a minimum of once every 12 months in accordance with the manufacturer's specifications or as directed by the Department to verify proper sensor operation.</p> <p>Verify that an inspection is conducted once during each calendar month to monitor the condition of all dispensers, dispenser sumps, access ports and containment sumps.</p> <p>Verify that the routine inspection includes at a minimum the following:</p> <ul style="list-style-type: none"> <li>- removal of all dispenser covers and visual inspection for any evidence of a Release of regulated substance and inspection of all fittings, couplings and filters</li> <li>- removal of all containment sump covers and visual inspection of the sump for any evidence of a release of regulated substance</li> <li>- inspection of all access ports to make sure that the covers, caps and adaptors are tightly sealed</li> <li>- removal of all spill containment device covers and inspection to ensure all spill containment devices are empty and free of debris, water or regulated substance.</li> </ul> <p>Verify that a record of all routine inspections is kept on file for a minimum of 3</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.35.12.DE.</b> Hazardous substance UST systems must meet general construction and notification requirements (DE 7 1000 13 51 Part D, 1.1, 1.2 and 1.30) [ Added December 2008].</p> <p><b>ST.35.13.DE.</b> Hazardous substance UST systems must meet design and installation requirements ( DE 7 1000 1351 Part D , 1. 3) [ Added December 2008].</p>	<p>years and made available to the Department upon request.</p> <p>Verify that the records, at a minimum, include the results of all inspections including any repairs made.</p> <p>Verify that, at any time during a routine inspection evidence of a release of regulated substance is discovered, owners and operators follow the investigation requirements of Part E (see ST.80).</p> <p>Verify that the material used in the construction and/or lining of the tank is compatible with the substance stored.</p> <p>Verify that components of the UST system are approved by underwriters laboratories or equivalent third party certification.</p> <p>Verify that bare steel UST systems or steel UST systems coated with asphalt are prohibited.</p> <p>Verify that equipment is installed, operated, and maintained so that manufacturer's warranties are not voided.</p> <p>Verify that all UST systems storing hazardous substance are designed and installed in accordance with the secondary containment requirements in accordance with 1.4 of this Part.</p> <p>Verify that all existing double elbow swing joints are replaced with flexible connectors not later than January 1, 2011.</p> <p>Verify that the Department is notified at least 30 days prior to installation of all UST systems.</p> <p>Verify that the notice includes a site plan.</p> <p>Verify that an internal lining is not utilized to meet corrosion protection requirements after January 11, 2008.</p> <p>Verify that the hazardous substance UST system construction meets one of the following:</p> <ul style="list-style-type: none"> <li>- secondarily contained cathodically protected steel</li> <li>- secondarily contained fiberglass reinforced plastic</li> <li>- secondarily contained steel with non-metallic or coated outer shell</li> <li>- other equivalent design approved by the Department.</li> </ul> <p>Verify that UST systems storing hazardous substance are installed in accordance</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.35.14.DE.</b> Hazardous substance USTs meet design requirements for double-walled tanks (DE 7 1000 1351 Part D 1 .5) [ Revised December 2008].</p> <p><b>ST.35.15.DE.</b> Hazardous substance UST systems must meet installation requirements for tanks and piping (DE 7 1000 13 51 Part D 1. 13) [Added December 2008].</p>	<p>with these regulations, the manufacturer's specifications, accepted engineering practices and the following industry standards:</p> <ul style="list-style-type: none"> <li>- PEIR P100, Recommended Practices For Installation Of Liquid Storage Systems</li> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 30A, Motor Fuel Dispensing Facilities and Repair Garages</li> <li>- OSHA, 29 CFR, 1926 Subpart P, Excavations.</li> </ul> <p>Verify that all USTs are equipped with a strike plate located beneath all tank openings.</p> <p>Verify that double-walled USTs meet the following design standards:</p> <ul style="list-style-type: none"> <li>- the interstitial space of the double-walled tank can be monitored for releases</li> <li>- outer jackets are made of steel with a minimum thickness of 10 gauge</li> <li>- coated either meets coating requirements for steel USTs or steel-fiberglass-reinforced-plastic composite USTs</li> <li>- there are no penetrations of any kind through the jacket to the tank except top entry manholes and fittings required for filling the tank, venting the tank, or monitoring the interstitial space</li> <li>- the outer jacket covers the entire circumference of the tank</li> <li>- jacket is able to contain a liquid or be able to contain a vacuum from the time of manufacture completion until the time of installation.</li> </ul> <p>(NOTE: Double-walled tanks that meet their specific design standards also satisfy the requirements for secondary containment.)</p> <p>Verify that, prior to installation tank system materials and equipment are inspected for flaws, surface cracks, holes, large scrapes, blisters, indentations and other indications of damage.</p> <p>Verify that all defects and repairs to the UST system are recorded and the record submitted with a site completion report to the Department.</p> <p>Verify that UST(s) are pressure tested according to the manufacturer's specifications prior to installation of the UST(s) into the excavation.</p> <p>(NOTE: The installer shall soap the exterior, particularly its seams and fittings, and pressure test the UST(s) using the manufacturer's specifications to locate and correct defects. Tank and interstitial space testing shall be conducted according to the manufacturer's recommendations and accepted engineering practices.)</p> <p>Verify that, after installation, all piping, including all interstitial spaces, are pressure tested according to the manufacturer's specifications prior to backfilling</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.35.16.DE.</b> Hazardous substance UST systems must meet piping design and installation requirements (DE 7 10 00 1 351 Part D 1. 14, 1.15, 1. 16, and 1. 17) [ Added December 2008].</p>	<p>the excavation.</p> <p>Verify that, after installation of the tank and integral piping is complete and prior to the initial use of the UST system, the entire system is tested in accordance with current industry standards and practices and in the following manner to ensure the system is tight:</p> <p>Verify that all testing of UST systems is accomplished by the precision test method described in NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases, or other test approved by the Department which is of equivalent or superior accuracy.</p> <p>(NOTE: All testing of UST systems shall be able to account for the effects of thermal expansion or contraction of the Hazardous Substances, vapor pockets, tank deformation, evaporation or condensation, temperature stratification in the UST and the location of the water table.)</p> <p>Verify that the required precision tests is conducted by a person trained and certified in the correct use of the necessary equipment, and is performed in accordance with the testing procedures and requirements established by the test system manufacturer and current industry standards and practices.</p> <p>(NOTE: The Department reserves the right to request confirmatory system tightness tests to verify any test results submitted by an owner, operator, or contractor. Owners and operators shall permit periodic inspection of the UST system installation by the Department.)</p> <p>Verify that, during the installation of all new USTs, every stage of the construction is documented with photographs to demonstrate that the UST system was installed in compliance with the requirements for new UST systems.</p> <p>Verify that, upon completion of the installation, copies of the photographs, as built plan, and required certification(s) are submitted to the Department within 30 days of the completion of the installation.</p> <p>Verify that the facility owner and operator keep copies of all documents and photographs on file for the life of the UST facility.</p> <p>Verify that piping is installed in accordance with the manufacturer's specifications.</p> <p>Verify that the piping layout is designed to minimize crossed lines and interference with conduit and other UST system components.</p> <p>Verify that, if crossing of lines is unavoidable, clearance is provided to prevent contact of the pipes.</p>

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	<p>Verify that all hazardous substance, vent and vapor return piping slope back to the Tank with a minimum slope of one-eighth (1/8") inch per foot.</p> <p>Verify that the pipe joints are cut and deburred according to manufacturer's specifications to provide liquid tight seals.</p> <p>verify that, when rigid piping is used, flexible connector(s) are installed at the tank end of each hazardous substance line, vent line and vapor recovery line as well as at the base of each dispenser and vent riser on all new installations.</p> <p>Verify that double elbow swing joints are replaced with flexible connections by January 1, 2011.</p> <p>Verify that all underground metal fittings, flexible connectors, joints, and pipes are isolated from contact with the soil.</p> <p>Verify that underground piping is protected from corrosion in accordance with accepted corrosion engineering practices and is designed, constructed, installed and tested in accordance with industry standards.</p> <p>Verify that all integral piping systems are designed, constructed, and installed in a manner which will permit periodic tightness testing of the entire piping system without the need for excavation.</p> <p>(NOTE: Acceptable designs for underground piping construction include fiberglass reinforced plastic and flexible plastic piping.)</p> <p>Verify that fiberglass reinforced plastic and flexible plastic piping are designed, constructed, installed and tested in accordance with the manufacturer's specifications.</p> <p>Verify that suction piping systems are designed and constructed in accordance with the following requirements:</p> <ul style="list-style-type: none"> <li>- below grade piping is constructed so that if suction is released the contents of the pipe will drain back into the tank</li> <li>- only 1 check valve is included in each suction line</li> <li>- the check valve is located directly below and as close as practical to the suction pump.</li> </ul> <p>Verify that suction piping systems with a foot valve (U.S. Suction) are designed and constructed in accordance with the following requirements:</p> <ul style="list-style-type: none"> <li>- the below grade piping is constructed so that the piping slopes back to the tank</li> <li>- a foot valve is installed at the storage tank.</li> </ul>

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<p><b>ST.35.17.DE.</b> Hazardous substance UST systems must meet requirements for anchoring and backfill material ( DE 7 1000 1351 Part D 1.10 and 1.11) [Added December 2008].</p>	<p>Verify that support and anchorage is provided for all new installations to a void tank flotation and is installed in accordance with the PEI RP 100, Recommended Practices for Installation of Underground Liquid Storage Systems.</p> <p>Verify that one or more of the following methods of anchorage is utilized:</p> <ul style="list-style-type: none"> <li>- reinforced concrete deadmen anchors</li> <li>- bottom hold-down pad which consists of 8 inches of reinforced concrete that extends 18 inches beyond the tank sides and 12 inches beyond each end</li> <li>- reinforced concrete slab over the tank.</li> </ul> <p>Verify that all exposed metallic components of hold down systems are electrically isolated and cathodically protected when the hold down system is required by the Department.</p> <p>Verify that the backfill depth is consistent with the requirements in PEI RP100, Recommended Practices for Installation of Underground Liquid Storage Systems.</p>



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<p><b>ST.45.</b></p> <p><b>UST FILLING</b></p> <p><b>ST.45.1.DE.</b> All regulated substance UST systems must meet fill line protection requirements (DE 7 1000 1351 Part B 1.23 and 2.24) [Revised December 2008].</p> <p><b>ST.45.2.DE.</b> Regulated substance UST systems installed after January 11, 2008 must meet spill protection requirements (DE 7 1000 1351 Part B 1.21) [Revised December 2008].</p>	<p>Verify that all fill lines for a storage system are clearly marked to indicate the size of the tank and the type of regulated substance stored.</p> <p>Verify that the fill and vapor recovery covers are marked consistent with API RP 1637, Using the API Color-Symbol System to Mark Equipment and Vehicles for Product Identification at Service Stations and Distribution Terminals or API IP 1542, Identification Markings for Dedicated Aviation Fuel Manufacturing and Distribution Facilities, Airport Storage and Mobile Fuel Equipment.</p> <p>Verify that a different color symbol is used for each type of regulated substance or grade of substance being stored at the Facility.</p> <p>Verify that pipes and other openings not used for transfer of regulated substance at the storage Facility are not painted any color that would be associated with the color symbol designated for marking the regulated substance stored at the Facility.</p> <p>(NOTE: It is particularly important that openings with access to soil and ground water, such as monitor wells, release detection tubes, vadose zone vapor detection tubes and U tubes, not be confused with regulated substance fill lines.)</p> <p>Verify that to prevent spilling associated with regulated substance transfer to the UST system, owners and operators comply with the requirements of one of the following industry standards:</p> <ul style="list-style-type: none"> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 385, Standard for Tank Vehicles for Flammable and Combustible Liquids</li> <li>- API RP 1621, Bulk Liquid Stock Control at Retail Outlets.</li> </ul> <p>Verify that all UST systems are equipped with impervious spill containment devices that form a liquid tight seal around the fill pipe connection and the Stage I vapor recovery connections, where applicable.</p> <p>Verify that all spill containment devices around the fill pipe have a minimum containment capacity of 15 gallons or provides equivalent environmental protection.</p> <p>Verify that water, regulated substance or debris that accumulates in any spill containment device is immediately removed.</p> <p>Verify that spill containment devices are maintained to be capable of containing a</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.45.3.DE.</b> Regulated substance UST systems installed after January 11, 2008 must meet overflow protection requirements (DE 71000 135 1 Part B 1.22) [Revised December 2008].</p>	<p>spill of the containment design capacity at all times.</p> <p>Verify that all precautions are taken to prevent tank overflowing, spilling and dripping.</p> <p>Verify that spill containment devices are tested once every 12 calendar months for tightness, or in accordance with the manufacturer's specifications, or when deemed necessary by the Department to determine if a threat to human health, safety or the environment exists.</p> <p>(NOTE: Spill containment devices of double wall design with continuous monitoring of the interstitial space are exempt from the testing requirements. Owners and operators shall maintain records of the continuous interstitial monitoring of the spill containment device.)</p> <p>Verify that owners and operators report, investigate, and clean up any spills and overfills in accordance with Part E (see ST.80).</p> <p>Verify that the person in charge of the transfer of regulated substance to the UST adheres to proper safety precautions and procedures for transfer as found in NFPA 385, Standard for Tank Vehicles for Flammable and Combustible Liquids and API RP 1621, Bulk Liquid Stock Control at Retail Outlets.</p> <p>Verify that the person in charge of the transfer operation first checks the UST to ensure that the volume available in the UST is greater than the volume of regulated substance to be transferred to the UST before the transfer is made.</p> <p>Verify that, during the transfer, the person in charge continuously monitors the transfer operation to prevent an overflow release.</p> <p>Verify that, at the conclusion of the transfer, the person in charge collects any regulated substance that remains in the transfer hose in a container and ensures that it is properly managed and does not reach the environment.</p> <p>Verify that the person in charge takes all reasonable precautions to prevent spilling and dripping.</p> <p>Verify that overflow protection equipment is installed and maintained that meets one of the following requirements:</p> <ul style="list-style-type: none"> <li>- automatically shut off the flow into the UST when the UST is no more than 95 percent full</li> <li>- alert the transfer operator when the UST is no more than 90 percent full by restricting the flow into the UST or triggering a high-level alarm</li> <li>- restrict flow 30 minutes prior to overflowing, alert the operator with a high level alarm one minute before overflowing, or automatically shut off flow into the UST so that none of the fittings located on top of the tank are exposed to</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.45.4.DE.</b> Regulated substance UST systems installed prior to January 11, 2008 must meet spill protection requirements (DE 710001351 Part B 2.22) [Added December 2008].</p>	<p>regulated substance due to overfilling</p> <ul style="list-style-type: none"> <li>- an automatic partial flow shut off float vent or vapor valve installed inside the UST(s) set to restrict flow when the UST is no more than 90 percent full.</li> </ul> <p>Verify that vent or vapor restriction devices are not installed in UST systems that are equipped with suction pumps, remote fill lines, remote vapor lines or receive pressurized deliveries.</p> <p>Verify that UST systems that receive pressurized deliveries have a high level alarm that is triggered at no more than 90 percent full for overfill protection or an automatic flow shut-off valve designed for pressurized deliveries.</p> <p>Verify that owners and operators report, investigate, and clean up any spills and overfills in accordance with Part E (see ST.80).</p> <p>Verify that to prevent spilling associated with regulated substance transfer to the UST system, owners and operators comply with the requirements of one of the following industry standards:</p> <ul style="list-style-type: none"> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 385, Standard for Tank Vehicles for Flammable and Combustible Liquids - API RP 1621, Bulk Liquid Stock Control at Retail Outlets.</li> </ul> <p>Verify that UST systems are equipped with an impervious spill containment device that forms a liquid tight seal around the fill pipe.</p> <p>Verify that the spill containment device consists of one of the following:</p> <ul style="list-style-type: none"> <li>- impervious materials that form a seal around the UST fill pipe with an optional drain leading to an overfill collection device</li> <li>- an impervious container surrounding the fill pipe that will collect any overfill or spill and will allow the regulated substance to drain back into the UST when there is sufficient ullage space.</li> </ul> <p>Verify that water, regulated substance or debris that accumulates in the spill containment device is immediately removed.</p> <p>Verify that spill containment devices are maintained to be capable of containing a spill of the containment design capacity at all times.</p> <p>Verify that all reasonable precautions shall be taken to prevent UST overfilling, spilling or dripping.</p> <p>Verify that spill containment devices are tested once every 12 months for tightness, or in accordance with the manufacturer's specifications, or when deemed necessary by the Department to determine if a threat to human health,</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.45.5.DE.</b> Regulated substance UST systems installed prior to January 11, 2008 must meet overfill protection requirements (DE 7 1000 135 1 Part B 2.23) [Added December 2008].</p>	<p>safety or the environment exists.</p> <p>(NOTE: Spill containment devices of double wall design with continuous monitoring of the interstitial space are exempt from the testing requirement.)</p> <p>Verify that records are maintained of the continuous interstitial monitoring of the spill containment device.</p> <p>Verify that owners and operators report, investigate and clean up any spills in accordance with Part E (see ST.80).</p> <p>Verify that the person in charge of the transfer of regulated substance to the UST adheres to proper safety precautions and procedures for transfer as found in NFPA 385, Standard for Tank Vehicles for Flammable and Combustible Liquids and API RP 1621, Bulk Liquid Stock Control at Retail Outlets.</p> <p>Verify that the person in charge of the transfer operation first checks the UST to ensure that the volume available in the UST is greater than the volume of regulated substance to be transferred to the UST before the transfer is made.</p> <p>Verify that, during the transfer, the person in charge continuously monitors the transfer operation to prevent an overfill release.</p> <p>Verify that, at the conclusion of the transfer, the person in charge collects any regulated substance that remains in the transfer hose in a container and ensures that it is properly managed and does not reach the environment.</p> <p>Verify that the person in charge takes all reasonable precautions to prevent spilling and dripping.</p> <p>Verify that overfill protection equipment is installed and maintained that meets one of the following requirements:</p> <ul style="list-style-type: none"> <li>- automatically shut off the flow into the UST when the UST is no more than 95 percent full</li> <li>- alert the transfer operator when the UST is no more than 90 percent full by restricting the flow into the UST or triggering a high-level alarm</li> <li>- restrict flow 30 minutes prior to overfilling, alert the operator with a high level alarm one minute before overfilling, or automatically shut off flow into the UST so that none of the fittings located on top of the tank are exposed to regulated substance due to overfilling</li> <li>- an automatic partial flow shut off float vent or vapor valve installed inside the UST(s) set to restrict flow when the UST is no more than 90 percent full.</li> </ul> <p>Verify that vent or vapor restriction devices are not installed in UST systems that are equipped with suction pumps, remote fill lines, remote vapor lines or receive</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.45.6.DE.</b> Hazardous substance USTs must meet requirements for fill line protection (DE 71000 1351, Part D 1.23) [Added December 2008].</p> <p><b>ST.45.7.DE.</b> Hazardous substance UST systems must meet overflow protection requirements (DE 71000 1351 Part D 1.22) [Added December 2008].</p>	<p>pressurized deliveries.</p> <p>Verify that UST systems that receive pressurized deliveries have a high level alarm that is triggered at no more than 90 percent full for overflow protection or an automatic flow shut-off valve designed for pressurized deliveries.</p> <p>Verify that owners and operators report, investigate, and clean up any spills and overfills in accordance with Part E (see ST.80).</p> <p>Verify that all fill lines for UST systems are clearly marked to indicate the size of the tank and the type of fuel stored.</p> <p>Verify that the markings meet the following requirements:</p> <ul style="list-style-type: none"> <li>- a label or permanent tag at the fill connection that states the size of the UST system and the specific type of fuel stored</li> <li>- a color symbol system implemented according to the following requirements:</li> <li>- all fill covers are marked consistent with API RP 1637, Using the API Color-Symbol System to Mark Equipment and Vehicles for Product Identification at Service Stations and Distribution Terminals</li> <li>- a different color symbol is used for each type of regulated substance or grade of substance being stored at the facility.</li> </ul> <p>Verify that pipes and other openings not used for transfer of hazardous substance at the UST facility are not painted any color that would be associated with the color symbol designated for marking the hazardous substance stored at the facility.</p> <p>(NOTE: it is particularly important that openings with access to soil and ground water, such as monitor wells, not be confused with regulated substance fill lines.)</p> <p>Verify that to prevent spilling associated with regulated substance transfer to the UST system, owners and operators comply with the requirements of one of the following industry standards:</p> <ul style="list-style-type: none"> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 385, Standard for Tank Vehicles for Flammable and Combustible Liquids</li> <li>- API RP 1621, Bulk Liquid Stock Control at Retail Outlets.</li> </ul> <p>Verify that UST systems are equipped with an impervious spill containment device that forms a liquid tight seal around the fill pipe.</p> <p>Verify that the spill containment device consists of one of the following:</p>

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<p><b>ST.45.8.DE.</b> Hazardous substance USTs must meet requirements for spill protection (DE 710001351, Part D 1.21) [Added December 2008].</p>	<ul style="list-style-type: none"> <li>- impervious materials that form a seal around the UST fill pipe with an optional drain leading to an overflow collection device</li> <li>- an impervious container surrounding the fill pipe that will collect any overflow or spill and will allow the regulated substance to drain back into the UST when there is sufficient ullage space.</li> </ul> <p>Verify that water, regulated substance or debris that accumulates in the spill containment device is immediately removed.</p> <p>Verify that spill containment devices are maintained to be capable of containing a spill of the containment design capacity at all times.</p> <p>Verify that all reasonable precautions are taken to prevent UST overflowing, spilling or dripping.</p> <p>Verify that spill containment devices are tested once every 12 months for tightness, or in accordance with the manufacturer's specifications, or when deemed necessary by the department to determine if a threat to human health, safety or the environment exists.</p> <p>(NOTE: Spill containment devices of double wall design with continuous monitoring of the interstitial space are exempt from the testing requirement.)</p> <p>Verify that records are maintained of the continuous interstitial monitoring of the spill containment device.</p> <p>Verify that owners and operators report, investigate and clean up any spills in accordance with Part E (see ST.80).</p> <p>Verify that to prevent spilling associated with transfer to the UST system, the system complies with the requirements of one of the following industry standards:</p> <ul style="list-style-type: none"> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 385, Standard for Tank Vehicles for Flammable and Combustible Liquids</li> <li>- API RP 1621, Bulk Liquid Stock Control at Retail Outlets.</li> </ul> <p>Verify that all hazardous substance UST systems are equipped with impervious spill containment devices that form a liquid tight seal around the fill pipe connections.</p> <p>Verify that all spill containment devices around the fill pipe have a minimum containment capacity of 15 gallons or be of a design that provides equivalent environmental protection.</p> <p>Verify that water, hazardous substance, or debris that accumulates in the spill containment device is immediately removed.</p>

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	<p>Verify that spill containment devices are maintained as to be capable of containing a spill of the containment design capacity at all times.</p> <p>Verify that all precautions are taken to prevent tank overfilling, spilling and dripping.</p> <p>Verify that spill containment devices are tested once every 12 months for tightness, or in accordance with the manufacturer's specifications, or when deemed necessary by the department to determine if a threat to human health, safety or environment exists.</p> <p>(NOTE: Spill containment devices of double wall design with continuous monitoring of the interstitial space are exempt from the testing requirements. Owners and operators must maintain records of the continuous interstitial monitoring of the spill containment device.)</p> <p>Verify that owners and operators report, investigate, and clean up any spills and overfills in accordance with Part E (see ST.80).</p>

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<p><b>ST.50.</b></p> <p><b>UST CORROSION PROTECTION</b></p> <p><b>ST.50.1.DE.</b> Regulated substance USTs installed after January 11, 2008 must meet corrosion protection requirements (DE 7 1000 1351 Part B 1.24) [Revised December 2008].</p>	<p>Verify that steel UST systems with corrosion protection systems are operated and maintained in accordance with the following industry standards:</p> <ul style="list-style-type: none"> <li>- NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection</li> <li>- NACE TM0101, Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Tank Systems</li> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 30A, Motor Fuel Dispensing Facilities and Repair Garages.</li> </ul> <p>Verify that corrosion protection systems are maintained and operated to continuously provide corrosion protection to the metal components of the UST system that routinely contain a regulated substance and are in contact with the ground.</p> <p>Verify that cathodic protection systems are designed and installed to allow determination of the current operating status.</p> <p>Verify that testing procedures are done in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection and the manufacturer's specifications and includes the following:</p> <ul style="list-style-type: none"> <li>- a minimum of 3 voltage readings along the center line for UST systems less than 20,000 gallons and a minimum of 5 voltage readings along the center line for UST systems greater than or equal to 20,000 gallons</li> <li>- a minimum of 1 voltage reading for every 10 feet of Piping.</li> </ul> <p>Verify that all sacrificial anode cathodic protection systems that protect underground components are tested by an individual certified by a nationally recognized industry setting organization, and in accordance with Department standards, within 6 months of installation or after underground work is performed at or near a site with a sacrificial anode cathodic protection system and at least once every 12 months thereafter.</p> <p>Verify that the sacrificial anode cathodic protection systems are repaired or replaced in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection and the requirements of 1.6, if the Sacrificial Anode Cathodic Protection system is not operating in accordance with the manufacturer's specifications and these requirements including, but is not limited to, failure to register a negative voltage of at least 0.85 volts for each UST.</p> <p>Verify that an individual certified by a nationally recognized industry standard</p>



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<p><b>ST.50.2.DE.</b> Hazardous substance USTs must meet requirements for corrosion protection operation and maintenance ( DE 7 1 000 1351, Part C 1. 24) [ Added December 2008].</p>	<p>setting organization determines the cause of the failure and make the necessary Repairs within 60 days of the discovery of the failure of the corrosion protection system.</p> <p>Verify that the Department is notified within 48 hours of the discovery of the failure of a sacrificial anode cathodic protection system.</p> <p>Verify that the Department approves, either verbally or in writing, all Cathodic Protection Repair or replacement plans prior to work commencing.</p> <p>Verify that impressed current cathodic protection systems are not utilized as a Repair, Upgrade or Replacement after January 11, 2008.</p> <p>Verify that a record of the operation of sacrificial anode cathodic protection systems is maintained to demonstrate compliance.</p> <p>Verify that operation records are retained in a permanent record and provide the results of all tests and inspections of the sacrificial anode cathodic protection system.</p> <p>(NOTE: The Department shall review the released detection and cathodic protection records of the UST system and based upon this information may require that owners and operators determine the current integrity of the UST system if the cathodic protection system is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations prior to making repairs to the corrosion protection system.)</p> <p>(NOTE: The use of alternate methods of monitoring shall be those described in NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection, and shall only be used with prior written approval from the Department.)</p> <p>Verify that steel UST systems with corrosion protection systems are operated and maintained in accordance with the following industry standards:</p> <ul style="list-style-type: none"> <li>- NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection</li> <li>- NACE TM0101, Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Tank Systems</li> <li>- NFPA 30, Flammable and Combustible Liquids Code</li> <li>- NFPA 30A, Motor Fuel Dispensing Facilities and Repair Garages.</li> </ul> <p>Verify that steel UST systems with corrosion protection systems are maintained and operated to continuously provide corrosion protection to the metal components of the UST system that routinely contain a hazardous substance and are in contact with the ground to ensure that Releases due to corrosion are</p>

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	<p>prevented for the life of the UST system.</p> <p>Verify that cathodic protection systems are designed and installed to allow determination of the current operating status.</p> <p>Verify that all UST systems equipped with sacrificial anode cathodic protection systems are tested for proper operation using standard corrosion engineering practices.</p> <p>Verify that testing procedures are done in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection and the manufacturer's specifications, and include the following:</p> <ul style="list-style-type: none"> <li>- minimum of 3 voltage readings along the center line for UST systems less than 20,000 gallons and a minimum of 5 voltage readings along the center line for UST systems greater than or equal to 20,000 gallons</li> <li>- a minimum of 1 voltage reading for every 10 feet of Piping.</li> </ul> <p>Verify that all sacrificial anode cathodic protection systems that protect underground facility components are tested by an individual certified by a nationally recognized industry standard setting organization, and in accordance with Department standards, within 6 months of installation and when underground work is performed at or near the site and at least once every 12 months thereafter.</p> <p>Verify that sacrificial anode cathodic protection systems are replaced or repaired in accordance with NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection and their requirements of 1.6 if it is not operating in accordance with the manufacturer's specifications and the requirements.</p> <p>(NOTE: The above includes but is not limited to failure to register a negative voltage of at least 0.85 volts for each UST. An individual certified by a nationally recognized industry standard setting organization must determine the cause of the failure and make the necessary repairs within 60 days of the discovery of the failure of the corrosion protection system.)</p> <p>Verify that the Department is notified within 48 hours of the discovery of the failure of a sacrificial anode cathodic protection system.</p> <p>Verify that the Department approves, either verbally or in writing, all cathodic protection repair or replacement plans prior to work commencing.</p> <p>(NOTE: Impressed current cathodic protection systems must not be utilized as a repair, upgrade or replacement after January 11, 2008.)</p> <p>(NOTE: The use of alternate methods of monitoring shall be those described in NACE RP 0285, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection and shall only be used with prior written approval from the</p>

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	<p>Department.)</p> <p>Verify that records of the operation of sacrificial anode cathodic protection systems are maintained to demonstrate compliance.</p> <p>Verify that operating records are retained in a permanent record and at a minimum provide the results of all tests and inspections of the sacrificial anode cathodic protection system.</p>

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<p><b>ST.55.</b></p> <p><b>UST REPAIRS</b></p> <p><b>ST.55.1.DE</b> Regulated substance USTs installed after January 11, 2008 must meet specific repair requirements (DE 7 1000 1351 Part B 1.28) [Added December 2008].</p> <p><b>ST.55.2.DE.</b> Hazardous substance USTs must meet repair, upgrade, retrofit, and replacement requirements (DE 7 1000 1351, Part D 1.28) [ Added December 2008].</p>	<p>Verify that documentation of repair completion is submitted to the Department.</p> <p>Verify that all equipment installed after January 11, 2008 are installed, operated and maintained so that manufacturer's warranties are not voided.</p> <p>Verify that owners and operators ensure that repairs will prevent releases due to structural failure or corrosion as long as the UST system is used to store regulated substance.</p> <p>Verify that the cathodic protection system is tested in within 6 weeks and every 12 months thereafter following the repair of any cathodically protected UST system, to ensure it is operating properly.</p> <p>Verify that records for each repair are maintained for the operational life of the UST system.</p> <p>Verify that, after any repair to an UST system, the UST system is tested for tightness before the UST system is placed into service.</p> <p>Verify that repairs to fiberglass reinforced plastic tanks are made only by the manufacturer or by its authorized representatives.</p> <p>Verify that holes in piping and fittings are not repaired.</p> <p>Verify that any piece of piping or fittings from which a release has occurred is replaced.</p> <p>Verify that replacement piping and fittings meet all applicable piping requirements.</p> <p>(NOTE: Loose fittings and joints in piping that have been tightened to eliminate leakage may be put back into service.)</p> <p>Verify that all repairs, upgrades, retrofits and replacements to UST systems meet the applicable design, installation, maintenance and operational standards in Part D, 1 or approved by the Department prior to installation.</p> <p>Verify that documentation of repair completion is submitted to the Department.</p> <p>Verify that all equipment installed after January 11, 2008 are installed, operated</p>

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	<p>and maintained such that manufacturer's warranties are not voided.</p> <p>Verify that owners and operators ensure that repairs will prevent releases due to structural failure or corrosion as long as the UST system is used to store hazardous substance.</p> <p>Verify that a cathodic protection system is tested in accordance with 1.24 of this Part within 6 weeks and once every 12 months thereafter following the repair of any cathodically protected UST system, to ensure it is operating properly.</p> <p>Verify that records are maintained for each repair for the operational life of the UST system.</p> <p>Verify that, after any repair to an UST system, the UST system is tested for tightness before the UST system is placed into service.</p> <p>Verify that repairs to fiberglass reinforced plastic tanks are made only by the manufacturer or by its authorized representatives.</p> <p>Verify that holes in piping and fittings from which a release occurred are not repaired, but are replaced.</p> <p>Verify that replacement piping and fittings meet all applicable piping requirements in 1 of this Part.</p> <p>(NOTE: Loose fittings and joints in piping that have been tightened to eliminate leakage may be put back into service.)</p>

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<p><b>RELEASE DETECTION FOR USTS</b></p> <p><b>ST.60. General</b></p> <p><b>ST.60.1.DE.</b> Notification standards must be met for any UST system that fails a tightness test (DE 7 1000 1351, Part A 4.10) [Revised December 2008].</p> <p><b>ST.60.2.DE.</b> [Deleted December 2008].</p> <p><b>ST.60.3.DE.</b> [Deleted December 2008].</p> <p><b>ST.60.4.DE.</b> All regulated substance USTs may use alternative release detection methods (DE 7 1000 1351, Part B 1 .9.6 and 2 .9.11) [Added December 2008].</p>	<p>Verify that the results of any UST system that fails an UST system tightness test is reported to the Department within 24 hours by the owner and operator and the UST system test contractor.</p> <p>Verify that a paper copy of the test results are sent to the Department within 7 days of the test failure.</p> <p>(NOTE: The Department reserves the right to request confirmatory system tightness tests to verify any test results submitted by a non-owner, operator, or contractor.)</p> <p>(NOTE: Recordkeeping requirements for inventory control are found under the specific kind of tank.)</p> <p>(NOTE: DE 7 1000 1351 revised and updated.)</p> <p>Verify that a written request detailing the method or combination of methods proposed is submitted to the Department prior to installation for approval.</p> <p>Verify that an alternative methods meets the one of the following requirements:</p> <ul style="list-style-type: none"> <li>- the method can detect a 0.1 gallon per hour leak rate or a release of 75 gallons within a month with a probability of detection of 0.95 or greater and a probability of false alarm of 0.05 or less</li> <li>- method or a combination of methods or devices can detect a release as effectively as any of the release detection methods allowed in 1.9.2.</li> </ul> <p>Verify that, if the method or a combination of methods or devices is approved, owners and operators comply with any conditions imposed by the Department.</p>

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<p><b>RELEASE DETECTION FOR USTs</b></p> <p><b>ST.65. Petroleum USTs</b></p> <p><b>ST.65.1.DE.</b> Regulated substance USTs installed in an existing UST field must have a method to detect future releases (DE 7 1000 1351 Part B 1.12.1 and 2.12.1) [Revised December 2008].</p> <p><b>ST.65.2.DE.</b> Regulated substance UST systems installed after January 11, 2008 must meet release detection standards ( DE 7 1000 135 1 Part B 1 .9.1 and 1.9.2) [Revised December 2008].</p>	<p>Verify that, when a new UST is installed in or near an old tank field, a means of leak detection is provided that will, at a minimum, detect any future releases from the UST system.</p> <p>(NOTE: If the soil is already contaminated, an observation tube, a U-Tube, or a vadose zone vapor detection tube may not be permitted as a release detection option.)</p> <p>Verify that new UST systems are provided with a method of release detection at the time of installation which:</p> <ul style="list-style-type: none"> <li>- can detect a release from any portion of the tank and the connected underground piping that routinely contain regulated substance</li> <li>- is installed, calibrated, operated, and maintained in accordance with the manufacturer's instructions, including routine maintenance and service checks for operability or running condition</li> <li>- meets the performance standards for release detection with any performance claims and their manner of determination described in writing by the equipment manufacturer or installer</li> <li>- is capable of detecting the leak rate or quantity specified for precision tank testing, automatic tank gauging, line leak detectors, and line tightness testing methods with a probability of detection of at least 0.95 and a probability of false alarm no greater than 0.05.</li> </ul> <p>Verify that owners/ operators implement the indicated release investigation procedures in Part E if the release detection equipment or method shows indication of a release.</p> <p>(NOTE: Failure by owners and operators to maintain records of required release detection monitoring and inspection may be cause for the Department to require tank tightness test(s) and inspection(s) of the UST facility and a release investigation in accordance with Part E of these regulations at the expense of owners and operators.)</p> <p>Verify that the monitoring system consists of at least one of the following:</p> <ul style="list-style-type: none"> <li>- continuous interstitial monitoring</li> <li>- automatic tank gauging performing monthly tank tightness testing</li> <li>- alternative Department-approved method.</li> </ul>

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<p><b>ST.65.3.DE.</b> Regulated substance UST systems installed after January 11, 2008 using interstitial monitoring for release detection must meet specific requirements (DE 7 1000 1351 Part B 1. 9.4) [Revised December 2008].</p> <p><b>ST.65.4.DE.</b> Regulated substance UST systems installed after January 11, 2008 using automatic tank gauging for release detection must meet specific release detection requirements (DE 7 1000 13 51 Part B 1. 9.5)</p>	<p>Verify that all interstitial monitoring devices are designed, constructed, installed and maintained to continuously detect a leak from any portion of the tank that routinely contains regulated substance.</p> <p>Verify that, at a minimum of once during each calendar month, all interstitial monitoring devices utilized for release detection are inspected for evidence of a release from the UST system and shall record the results.</p> <p>Verify that records of the monthly interstitial release monitoring inspections are maintained for the life of the UST system.</p> <p>Verify that all interstitial monitoring equipment is inspected by a certified technician once every 12 months as part of a preventive maintenance program to minimize in-service failures.</p> <p>Verify that any equipment malfunctions identified as a result of the inspection are rectified immediately.</p> <p>Verify that the inspection at a minimum includes the following:</p> <ul style="list-style-type: none"> <li>- inspection of the console for printer operation if so equipped</li> <li>- verification of the system setup values and battery backup</li> <li>- verification of the test programming</li> <li>- verification of the operability of all warning and alarm indicator lights and audible alarms</li> <li>- inspection and testing of all interstitial sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper sensor operation</li> <li>- inspection of all cables that are visible during normal operating conditions for any cracking or swelling</li> <li>- correction of any problems found as a result of the required inspection.</li> </ul> <p>Verify that records of the annual inspections of the interstitial monitoring equipment and any repairs performed as a result of the inspection are maintained for the life of the UST system.</p> <p>Verify that monthly tank tightness testing using automatic tank gauging (ATG) equipment meets the following requirements:</p> <ul style="list-style-type: none"> <li>- the ATG equipment can detect a 0.1 gallons per hour leak rate from any portion of the Tank that routinely contains regulated substance</li> <li>- the ATG equipment is capable of producing a record of release detection test results</li> <li>- at a minimum of once during each calendar month, the ATG equipment performs a release detection test for each Tank and shall produce a record of</li> </ul>



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<p>[Revised December 2008].</p> <p><b>ST.65.5.DE.</b> Regulated substance UST systems installed after January 11, 2008 must meet specific requirements for inventory control (DE 7 1000 1351 Part B 1 .9.3) [Revised December 2008].</p>	<p>such test</p> <ul style="list-style-type: none"> <li>- if used for inventory control, the ATG equipment is capable of conducting inventory control.</li> </ul> <p>Verify that a record of all release detection tests performed by the ATG equipment is maintained for the life of the UST system.</p> <p>Verify that all ATGs is inspected by a certified technician once every 12 months as part of a preventive maintenance program to minimize in-service failures.</p> <p>Verify that any equipment malfunctions identified as a result of the inspection is rectified immediately.</p> <p>Verify that the inspection at a minimum includes the following:</p> <ul style="list-style-type: none"> <li>- inspection of the ATG console for printer operation if so equipped</li> <li>- verification of the system setup values and battery backup</li> <li>- verification of the test programming</li> <li>- verification of the operability of all warning and alarm indicator lights and audible alarms</li> <li>- inspection and testing of the probes and sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper probe and sensor operation</li> <li>- inspection of all cables that are visible during normal operating conditions for any cracking or swelling</li> <li>- correction of any problem noted as a result of the required inspection.</li> </ul> <p>Verify that records of the annual inspections of the ATG and any repairs performed as a result of the inspection are maintained for the life of the UST system.</p> <p>Verify that inventory control records are maintained for each tank containing a regulated substance.</p> <p>(NOTE: Records shall be kept for each tank, or cluster of tanks if they are interconnected.)</p> <p>Verify that records include measurements of bottom water levels, sales, use, deliveries, inventory on hand and losses or gains.</p> <p>Verify that reconciliation of records is kept current, accounts for all variables that could affect an apparent loss or gain and are in accordance with generally accepted practices.</p> <p>Verify that inventory data is accumulated for each day a tank has regulated substance added or withdrawn (but not less frequently than once a week) and</p>

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	<p>includes and the following:</p> <ul style="list-style-type: none"> <li>- a description and amount of regulated substances</li> <li>- all measurement of water level in the bottom of a tank is made to the nearest one eighth (1/8 ") of an inch.</li> <li>- equipment used is capable of measuring the level of regulated substance over the full range of the tank's height to the nearest one eighth (1/8") of an inch with inches are converted to gallons</li> <li>- inputs and outputs of regulated substance recorded daily in gallons.</li> </ul> <p>Verify that all deliveries and measurements are made through a drop tube that extends to within 5.9 inches of the tank bottom.</p> <p>Verify that regulated substance dispensing equipment is metered and recorded within the local standards for meter calibration or an accuracy of 6 cubic inches for every 5 gallons of regulated substance withdrawn.</p> <p>Verify that weekly assessment of the amount of water in UST systems storing non-ethanol regulated substance (excluding heating fuel or hazardous substance or other UST systems with prior Department approval) meets the following requirements:</p> <ul style="list-style-type: none"> <li>- measurement of water level in the bottom of the tank is made to the nearest one eighth (1/8 ") of an inch</li> <li>- if the measurement is 2 inches or more of water, the water is removed from the tank within 7 days and properly disposed in accordance with all local, state and federal requirements.</li> </ul> <p>Verify that, for daily assessment of the amount of water in UST systems storing ethanol blended regulated substance, the measurement of water level in the bottom of the tank is made to the nearest one eighth (1/8") of an inch.</p> <p>Verify that, if the measurement is 1 inch or more of water for UST systems of 8,000 gallons or less, the water is removed from the tank within 7 days and the water is properly disposed in accordance with all local, state and federal requirements.</p> <p>Verify that, if the measurement is 2 inches or more of water for UST systems greater than 8,000 gallons, the water is removed from the tank within 7 days and the water is properly disposed in accordance with all local, state and federal requirements.</p> <p>(NOTE: Recommended procedures for tank inventory and reconciliation procedures are detailed in API RP 1621, Bulk Liquid Stock Control at Retail Outlets.)</p> <p>Verify that losses or gains from each day's inventory are reconciled once during each calendar month.</p>

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<p><b>ST.65.6.DE.</b> Regulated substance UST systems installed after January 11, 2008 must meet release detection requirements for UST piping (DE 7 1000 13 51 Part B 1.8) [Revised December 2008].</p>	<p>Verify that, for any day in which there is a loss of 5 percent or more of the regulated substance, or for any month in which there is a significant loss or gain of regulated substance that meets or exceeds 1 percent of the total monthly throughput plus 130 gallons, or any month in which there is an unexplainable consistent negative trend, the release investigation procedure in Part E (see ST.80) are followed.</p> <p>(NOTE: Tanks equipped with automatic inventory control systems or continuously operating automatic in tank gauging systems may use these devices to perform inventory reconciliation procedures.)</p> <p>(NOTE: The Department may, at its discretion, approve other types of inventory control methods or a combination of methods or devices not specified in this section upon a determination that the proposed method or combination of methods is no less protective of human health, safety or the environment than the above requirements. Failure to maintain and reconcile inventory control records may be cause for the Department to require tank tightness test(s) and inspection(s) of the UST facility at the expense of owners and operators.)</p> <p>Verify that all underground piping that routinely contains regulated substances is equipped with a method, or combination of methods of release detection that can detect a release from any portion of the underground piping that routinely contains regulated substance.</p> <p>Verify that UST piping in interstitial and sump monitoring systems are designed, constructed installed and maintained to detect a release from any portion of the piping that routinely contains regulated substance.</p> <p>(NOTE: Release detection methods not specified in this section will be considered an alternative by the Department. A written request detailing the method or combination of methods proposed shall be submitted to the Department prior to installation for approval.)</p> <p>Verify that any methods meet one of the following requirements:</p> <ul style="list-style-type: none"> <li>- the method can detect a 0.1 gallon per hour leak rate or a release of 75 gallons within a month with a probability of detection of 0.95 or greater and a probability of false alarm of 0.05 or less</li> <li>- the method or a combination of methods or devices can detect a release as effectively as the above standard.</li> </ul> <p>Verify that, if the method or a combination of methods or devices is approved, owners and operators comply with any conditions imposed by the Department.</p> <p>Verify that owners and operators implement the indicated release investigation procedure in Part E ( see S T.80) if the piping release detection equipment or</p>

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<p><b>ST.65.7.DE.</b> Regulated substance UST systems installed after January 11, 2008 must meet piping tightness test requirements (DE 7 1000 1351 Part B 1.9) [Revised December 2008].</p>	<p>method shows indication of a release.</p> <p>Verify that automatic line leak detector alert the owner and operator to the presence of a release by restricting or shutting off the flow of the regulated substance.</p> <p>Verify that mechanical and electronic automatic line leak detectors are capable of reacting to leaks of 3 gallons per hour at 10 pounds per square inch line pressure within 1 hour.</p> <p>Verify that an annual test of the operation of the automatic line leak detector is conducted in accordance with the manufacturer's test protocols.</p> <p>Verify that all mechanical and electronic automatic line leak detectors pass a function test at least once every 12 months at 3 gallons per hour (gph) at 10 pounds per square inch line pressure within 1 hour.</p> <p>Verify that an annual tightness test of the entire pressurized underground piping system, including the primary and secondary piping, is conducted in accordance with NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.</p> <p>Verify that UST systems with underground pressurized piping systems use a piping tightness test method designed to detect a release from any portion of the underground piping system that routinely contains regulated substances.</p> <p>Verify that UST systems with underground pressurized piping systems constructed of double wall design utilizes continuous interstitial monitoring systems to comply with the line leak detector requirements and the piping tightness test requirements meet the following requirements:</p> <ul style="list-style-type: none"> <li>- all interstitial monitoring devices are designed, constructed, installed and maintained to continuously detect a release from any portion of the piping that routinely contains regulated substance</li> <li>- the system is designed and maintained to ensure that the delivery system will automatically shut off if a release is detected</li> <li>- at a minimum of once during each calendar month, proof is provided via the automatic tank gauge record that the interstitial monitoring device is functioning in accordance with the manufacturer's specifications</li> <li>- records of the monthly interstitial release detection ATG records are maintained for the life of the UST system</li> <li>- all sump and interstitial sensors comply with testing and monitoring requirements</li> <li>- all tank top containment sumps containing the interstitial monitoring device shall be tested once every 12 calendar months.</li> </ul>

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<b>ST.65.8.DE.</b> [Deleted December 2008].	(NOTE: Regulations reorganized and revised.)
<b>ST.65.9.DE.</b> [Deleted December 2008].	(NOTE: Regulations reorganized and revised.)
<b>ST.65.10.DE.</b> [Deleted December 2008].	(NOTE: Regulations reorganized and revised.)
<b>ST.65.11.DE.</b> [Deleted December 2008].	(NOTE: Regulations reorganized and revised.)

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<p><b>RELEASE DETECTION FOR USTs</b></p> <p><b>ST.70. Hazardous Substance USTs</b></p> <p><b>ST.70.1.DE.</b> Hazardous substance USTs installed in an existing UST field must have a method to detect future releases (DE 7 1000 1351 Part D 1. 12.) [ Added December 2008].</p> <p><b>ST.70.2.DE.</b> Hazardous substance USTs must meet general release detection requirements USTs) (DE 7 1000 1351, Part D 1.9.1, and 1.9.2) [ Added December 2008].</p> <p><b>ST.70.3.DE.</b> Hazardous</p>	<p>Verify that, when a new UST is installed in or near an old tank field, a means of leak detection is provided that will, at a minimum, detect any future releases from any portion of UST system.</p> <p>Verify that a release can be detected from any portion of the tank and the connected underground piping that routinely contain hazardous substance.</p> <p>Verify that the release detection is installed, calibrated, operated, and maintained in accordance with the manufacturer's specifications, including routine maintenance and service checks for operability or running condition.</p> <p>Verify that release detection is capable of detecting the leak rate or quantity specified for precision tank testing, automatic tank gauging, line leak detectors, and line tightness testing methods specified in these regulations with a probability of detection of at least 0.95 and a probability of false alarm no greater than 0.05.</p> <p>Verify that owners and operators implement the release investigation procedure in Part E ( see S T.80) of these regulations if the release detection equipment or method shows indication of a Release.</p> <p>(NOTE: Failure by owners and operators to maintain records of required release detection monitoring and inspection may be cause for the Department to require tank tightness test(s) and inspection(s) of the UST facility and a release investigation in accordance with Part E of these regulations at the expense of owners and operators.)</p> <p>Verify that the UST systems is monitored for releases through the use of inventory control procedures and at least one of the following release detection methods:</p> <ul style="list-style-type: none"> <li>- continuous interstitial monitoring</li> <li>- automatic tank gauging performing tightness testing</li> <li>- Department Approved Alternative Method.</li> </ul> <p>(NOTE: The Department reserves the right to require secondary containment or</p>

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<p>substance must meet secondary containment requirements (DE 7 1000 1351 Part B 1. 4) [ Added December 2008].</p> <p><b>ST.70.4.DE.</b> Hazardous substance USTs must meet inventory control requirements USTs) (D E 7 1000 1 351, P art D 1. 9.3) [Added December 2008].</p>	<p>equivalent protection on any portion of the UST system where aquifers underlying the UST facility are determined to need such protection, or where groundwater below the UST facility is within a well head protection area, or where groundwater is susceptible to contamination in order to protect the safety, health, welfare and/or environment of the State.)</p> <p>Verify that secondary containment systems are designed, constructed and installed to:</p> <ul style="list-style-type: none"> <li>- contain the hazardous Substances released from the UST system until they are detected and removed</li> <li>- prevent the release of hazardous substance to the environment at any time during the operational life of the UST system</li> <li>- checked for evidence of a release at least once every 30 calendar days.</li> </ul> <p>Verify that secondary containment systems include the following:</p> <ul style="list-style-type: none"> <li>- double-walled tank</li> <li>- double-walled hazardous substance and vapor return piping and, where required, vent piping</li> <li>- containment sumps at the tank top and under each dispenser</li> <li>- tanks and piping have interstitial monitoring that is checked for evidence of a release at a minimum of once every 30 calendar days</li> <li>- other equivalent technology approved by the Department.</li> </ul> <p>Verify that secondary containment systems are constructed in accordance with acceptable engineering practice and industry standards and have release detection.</p> <p>Verify that records are kept for each tank, or cluster of tanks if they are interconnected, and includes measurements of bottom water levels, sales, use, deliveries, inventory on hand and losses or gains.</p> <p>Verify that reconciliation of records is kept current, accounts for all variables which could affect an apparent loss or gain and shall be in accordance with generally accepted practices.</p> <p>Verify that the data is accumulated for each day a tank has hazardous substance added or withdrawn (but not less frequently than once a week), and includes as a minimum:</p> <ul style="list-style-type: none"> <li>- a description and amount of hazardous substances</li> <li>- all measurement of water level in the bottom of a tank is made to the nearest one eighth (1/8 ") of an inch.</li> <li>- equipment used is capable of measuring the level of hazardous substance over the full range of the tank's height to the nearest one eighth (1/8") of an inch with inches are converted to gallons</li> <li>- inputs and outputs of hazardous substance recorded daily in gallons.</li> </ul>

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<p><b>ST.70.5.DE.</b> Hazardous substance USTs must meet interstitial monitoring release</p>	<p>(NOTE: All measurements must be converted from inches to gallons.)</p> <p>Verify that all deliveries and measurements are made through a drop tube that extends to within 6 inches of the tank bottom.</p> <p>Verify that hazardous substance dispensing equipment is metered and recorded within the local standards for meter calibration or an accuracy of 6 cubic inches for every 5 gallons of substance withdrawn.</p> <p>Verify that there is a daily reconciliation of the amount of hazardous substance added to and removed from the tank.</p> <p>(NOTE: Recommended procedures for tank inventory and reconciliation procedures are detailed in API Publication 1621, Bulk Liquid Stock Control at Retail Outlets.) Verify that losses or gains from each day's inventory are reconciled once during each calendar month.</p> <p>Verify that, for any day in which there is a loss of 5 percent or more of the hazardous substance or for any month in which there is a significant loss or gain of hazardous substance that meets or exceeds 1 percent of the total monthly throughput plus 130 gallons, or any month in which there is an unexplainable consistent negative trend, the release investigation procedure in Part E (see ST.80) is followed.</p> <p>(NOTE: Tanks equipped with automatic inventory control systems or continuously operating automatic in tank gauging systems may use these devices to perform inventory reconciliation procedures.</p> <p>Verify that, in instances where the hazardous nature of the hazardous substance will not permit implementation of standard inventory procedures, alternative procedures such as continuously functioning automatic in tank gauging are implemented.</p> <p>(NOTE: The Department may, at its discretion, approve other types of inventory control methods or a combination of methods or devices not specified in this section upon a determination that the proposed method or combination of methods is no less protective of human health, safety or the environment than the above requirements.)</p> <p>(NOTE: Failure to maintain and reconcile inventory control records may be cause for the Department to require tank tightness test(s) and inspection(s) of the UST facility at the expense of owners and operators.)</p> <p>Verify that all interstitial monitoring devices are designed, constructed, installed and maintained to continuously detect a leak from any portion of the tank that</p>



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<p>detection requirements USTs) (DE 7 1000 1351, P art D 1.9.4) [ Added December 2008].</p> <p><b>ST.70.6.DE.</b> Hazardous substance USTs must meet automatic tank gauge release detection requirements USTs) (DE 7 1000 1351, P art D 1.9.5) [ Added December 2008].</p>	<p>routinely contains hazardous substance.</p> <p>Verify that, at a minimum of once every 30 calendar day's owners and operators inspect a ll i nterstitial monitoring d evices u tilized for r elease d etection for evidence of a release from the UST system and shall record the results.</p> <p>Verify that records of the monthly interstitial release monitoring inspections are maintained for the life of the UST system.</p> <p>Verify that all interstitial monitoring equipment is inspected by a certified technician once every 12 months as part of a preventive maintenance program to minimize in-service failures.</p> <p>Verify that any equipment malfunctions identified as a result of the inspection are rectified immediately.</p> <p>Verify that, at a minimum, the inspection includes the following:</p> <ul style="list-style-type: none"> <li>- inspection of the console for printer operation if so equipped</li> <li>- verification of the system setup values and battery backup</li> <li>- verification of the test programming</li> <li>- verification of the operability of all warning and alarm indicator lights and audible alarms</li> <li>- inspection a nd te sting o f a ll i nterstitial s ensors i n a ccordance with th e manufacturer's s pecifications o r a s directed b y t he D epartment t o verify proper sensor operation</li> <li>- inspection of all cables that are visible during normal operating conditions for any cracking or swelling.</li> </ul> <p>Verify that any problems found as a result of the required inspection are corrected.</p> <p>Verify that r ecords of the annual inspections of the interstitial monitoring equipment and any repairs performed as a result of the inspection are maintained for the life of the UST system.</p> <p>Verify that monthly ta nk ti ghtness te sting u sing a utomatic ta nk gauging ( ATG) equipment meets the following requirements:</p> <ul style="list-style-type: none"> <li>- the ATG equipment can d etect a 0 .1 g allons per h our leak r ate from an y portion of the tank that routinely contains Hazardous Substance</li> <li>- the ATG equipment is capable of producing a record of release detection test results</li> <li>- at a minimum o f o nce d uring e ach cal endar month, t he A TG eq uipment performs a release detection test for each tank and produces a record of such test</li> <li>- if used for i nventory c ontrol, the ATG equipment is capable of conducting inventory control.</li> </ul>

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<p><b>ST.70.7.DE.</b> Hazardous substance USTs must meet requirements of alternative release detection methods (DE 7 1000 1351, Part D 1.9.6) [ Added December 2008].</p> <p><b>ST.70.8.DE.</b> Hazardous substance USTs must meet piping release detection requirements ( DE 7 1000 1351, Part D 1.18) [ Added December 2008].</p>	<p>Verify that a record of all release detection tests performed by the ATG equipment is maintained for the life of the UST system.</p> <p>Verify that all ATGs are inspected by a certified technician once every 12 months as part of a preventive maintenance program to minimize in-service failures.</p> <p>Verify that any equipment malfunctions identified by the inspection is rectified immediately.</p> <p>Verify that the inspection at a minimum includes the following:</p> <ul style="list-style-type: none"> <li>- inspection of the ATG console for printer operation if so equipped</li> <li>- verification of the system setup values and battery backup</li> <li>- verification of the test programming</li> <li>- verification of the operability of all warning and alarm indicator lights and audible alarms</li> <li>- inspection and testing of the probes and sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper probe and sensor operation</li> <li>- inspection of all cables that are visible during normal operating conditions for any cracking or swelling</li> <li>- correction of any problem noted as a result of the required inspection.</li> </ul> <p>(NOTE: The Department may approve other types of release detection method, or a combination of methods or devices not specified in this section if, it can detect a 0.1 gallon per hour leak rate or a release of 75 gallons within a month with a probability of detection of 0.95 or greater and a probability of false alarm of 0.05 or less.)</p> <p>Verify that, if a method or a combination of methods or devices is approved, owners and operators comply with any conditions imposed by the Department on its use to ensure the protection of human health, safety or the environment.</p> <p>Verify that all underground piping that routinely contains hazardous substance is equipped with a method, or combination of methods of release detection that can detect a release from any portion underground piping that routinely contains regulated substance.</p> <p>Verify that UST piping in interstitial and sump monitoring systems are designed, constructed, installed, and maintained to detect a leak from any portion of the piping that routinely contains Hazardous substance.</p> <p>(NOTE: Release detection methods not specified here will be considered an alternative by the Department. A written request detailing the method or combination of methods proposed shall be submitted to the Department prior to</p>

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<p><b>ST.70.9.DE.</b> Hazardous substance USTs must meet underground pressurized and suction piping release detection requirements for UST piping (DE 7 1000 1351, Part D 1.19 and 1.20) [Added December 2008].</p>	<p>installation for approval.)</p> <p>Verify that owners and operators implement the indicated release investigation procedure if the piping release detection equipment or method shows indication of a release.</p> <p>Verify that underground piping that conveys hazardous substances under pressure is equipped with an automatic line leak detector.</p> <p>Verify that the automatic line leak detector alerts owners and operators to the presence of a release by restricting or shutting off the flow of the hazardous substance through the piping or triggering an audible or visual alarm.</p> <p>Verify that mechanical and electronic automatic line leak detectors are capable of reacting to leaks of 3 gallons per hour at 10 pounds per square inch line pressure within 1 hour.</p> <p>Verify that an annual test of the operation of the automatic line leak detector is conducted in accordance with the manufacturer's test protocols.</p> <p>Verify that all mechanical and electronic automatic line leak detectors pass a function test at 3 gallons per hour (gph) at 10 pounds per square inch line pressure within 1 hour at least once every 12 months.</p> <p>Verify that an annual tightness test of the entire pressurized underground piping system, including primary and secondary piping, is conducted in accordance with NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.</p> <p>Verify that a line tightness test method is designed to detect a release from any portion of the underground piping system that routinely contains hazardous substances.</p> <p>Verify that, if pressurized piping systems are constructed of double wall design utilize interstitial monitoring systems to comply with the piping tightness test requirements, the following requirements are met:</p> <ul style="list-style-type: none"> <li>- all interstitial monitoring devices are designed, constructed, installed and maintained to continuously detect a release from any portion of the Piping that routinely contains hazardous substance</li> <li>- at a minimum of once each calendar month, owners and operators provide proof via the automatic tank gauge record that the interstitial monitoring device is functioning in accordance with the manufacturer's specifications</li> <li>- records of the monthly interstitial release detection ATG are maintained for the life of the UST system.</li> </ul> <p>Verify that all sump and interstitial sensors for suction piping comply with the</p>

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<p><b>ST.70.10.DE.</b> Hazardous substance USTs must meet requirements for all containment sumps (DE 7 1000 1 351, Part D 1. 25) [Added December 2008].</p> <p><b>ST.70.11.DE.</b> Hazardous substance USTs must meet Testing and Monitoring Procedures for Sump and Interstitial Sensors ( DE 7 1000 1 351, Part D 1. 27) [Added December 2008].</p> <p><b>ST.70.12.DE.</b> Hazardous substance USTs must meet</p>	<p>testing and monitoring requirements of 1.27 (see ST.70.11.DE.)</p> <p>Verify that all tank top containment sumps containing the interstitial monitoring device are tested once every 12 calendar months.</p> <p>Verify that all dispenser, tank top, transition and any other containment sumps are product tight and are tested for tightness once every 36 months, or in accordance with the manufacturers' specifications, or when deemed necessary by the Department to determine if a threat to human health, safety or the environment exists.</p> <p>(NOTE: All dispensers, tank tops, transitions and any other containment sumps of double wall design with continuous monitoring of the interstitial space are exempt from the testing requirements.)</p> <p>Verify that all access manholes associated with containment sumps are sized so that the manhole skirt is sufficiently larger than the containment Sump lid to allow adequate access to the sump and to allow for surface water drainage.</p> <p>Verify that all dispenser containment sumps prior to January 11, 2008 that contains a sump sensor utilized to comply with the tank or piping release detection is product tight and is tested to ensure it is product tight once every 36 months.</p> <p>Verify that all dispenser containment sumps installed after the after January 11, 2008 are installed and maintained as to be capable of being visually inspected at all times for evidence of a release and are not filled with any material such as pea gravel or native soil, or the dispenser containment sump is continuously monitored for releases.</p> <p>Verify that all sensors are equipped with an automatic audible and visual alert system and the UST system shuts down in the event of an alarm.</p> <p>Verify that all sensors installed after January 11, 2008 are inspected and tested, at a minimum, once every 12 months in accordance with the manufacturer's specifications, or as directed by the Department to verify proper sensor operation.</p> <p>Verify that all sensors installed prior to January 11, 2008 and used to comply with release detection requirements are inspected and tested, at a minimum, once every 12 months in accordance with the manufacturer's specifications, or as directed by the Department to verify proper sensor operation.</p> <p>Verify that an inspection is conducted once during each calendar month to monitor the condition of all dispensers, dispenser sumps, access ports and</p>

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<p>routine inspection requirements ( DE 7 1000 1351, P art D 1 .29) [ Added December 2008].</p>	<p>containment sumps.</p> <p>Verify that the routine inspection includes, at a minimum, the following:</p> <ul style="list-style-type: none"> <li>- removal of all dispenser covers and visual inspection for any evidence of a release of hazardous substance and inspection of all fittings, couplings and filters</li> <li>- removal of all containment sump covers and visual inspection of the sump for any evidence of a release of hazardous substance</li> <li>- inspection of all access ports to make sure that the covers, caps and adaptors are tightly sealed</li> <li>- removal of all spill containment device covers and inspection to ensure all spill containment devices are empty and free of debris, water or hazardous substance.</li> </ul> <p>Verify that a record of all routine inspections is kept on file for a minimum of 3 years and are made available to the Department upon request.</p> <p>Verify that the records, at a minimum, include the results of all inspections including any Repairs made.</p> <p>Verify that, if at any time during a routine inspection evidence of a release of hazardous substance is discovered, owners and operators follow the investigation requirements of Part E (see ST.80).</p>

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<p><b>RELEASE DETECTION FOR USTs</b></p> <p><b>ST.75 USTs Connected to Emergency Generators</b></p> <p><b>ST.75.1.DE.</b> USTs installed prior to January 11, 2008 and used solely for the storage of regulated substances to power emergency generators must meet specific requirements (DE 7 1000 1351 Part B 2.31) [Added December 2008].</p> <p><b>ST.75.2.DE.</b> USTs installed after January 11, 2008 used solely for the storage of regulated substances to power emergency generators must meet specific requirements (DE 7 1000 1351 Part B 1.30) [Added December 2008].</p>	<p>(NOTE: UST systems used solely for the storage of regulated substance to power emergency generation equipment are exempt from inventory control requirements.)</p> <p>Verify that, when tank tightness testing is used as a method of release detection for the life of the UST, the tank tightness testing is performed in accordance with the applicable tank tightness test requirements.</p> <p>Verify that the owners/operators of UST systems used solely for the storage of regulated substance to power emergency generation equipment implement the requirements of 2.9, release detection requirements for UST systems storing regulated substance excluding heating fuel or hazardous substance, with the exceptions listed in 2.31.1 and 2.31.2 of Part B, by January 1, 2009.</p> <p>(NOTE: UST systems used solely for the storage of regulated substance to power emergency generation equipment are exempt from the piping release requirements of 2.19., 2.20., and 2.21.)</p> <p>(NOTE: UST systems used solely for the storage of regulated substance to power emergency generation equipment are exempt from inventory control requirements.)</p> <p>Verify that, when tank tightness testing is used as a method of release detection for the life of the UST, the tank tightness testing is performed in accordance with the applicable tank tightness test requirements.</p>

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<p><b>ST.80.</b></p> <p><b>UST RELEASES</b></p> <p><b>ST.80.1.DE.</b> UST owner/operators must meet reporting standards for regulated substance indicated releases or abnormal operating conditions (DE 7 1000 1351 Part E 1.1, 1.2, and 1.3) [Revised December 2008].</p>	<p>Verify that owners and operators do not knowingly allow any release from a UST system to continue.</p> <p>Verify that any indication of a release of a regulated substance that is discovered by any person, including but not limited to environmental consultants, environmental contractors, utility companies, financial institutions, real estate transfer companies, UST owners or operators, or responsible parties is reported within 24 hours to:</p> <ul style="list-style-type: none"> <li>- The Department's 24-hour release hot line by calling 800-662-8802 (in-state) or 302-739-9401 (out-of-state)</li> <li>- The DNREC Tank Management Branch by calling 302-395-2500.</li> </ul> <p>(NOTE: If the phone numbers listed in these regulations are not valid it is the responsibility of the responsible party to take all reasonable steps to ascertain a valid phone number.)</p> <p>(NOTE: The Department may require that the UST system be taken out of service and emptied until the cause of the indication of the Release is determined, if the Department deems such action necessary to protect human health, safety or the environment.)</p> <p>(NOTE: Indicated releases include, but are not limited to, the following:</p> <ul style="list-style-type: none"> <li>- stained soils or soils that emit characteristic odors of regulated substance compounds which are exposed during digging, boring or excavation activities, retrofit of UST systems, removal of a UST system or collection of soil samples around a UST system that is closed in place, or results from a Phase I or Phase II environmental site assessment</li> <li>- water from supply wells, public or private, that exhibit a decrease in water quality, which is shown by subsequent analysis to result from the presence of a regulated substance</li> <li>- the appearance of characteristic odors of a regulated substance in basements or other enclosed spaces</li> <li>- the appearance of a sheen on a surface water body</li> <li>- the appearance of a sheen or measurable LNAPL in a supply well, monitoring well, or observation tube</li> <li>- failure of a tank, line or vapor recovery test</li> <li>- abnormal operating condition</li> <li>- a laboratory report that indicates a sample collected from an UST excavation, soil boring, monitor well or observation tube contains a regulated substance</li> <li>- notification from the State Emergency Prevention and Response Branch or another State or Federal agency of the discovery of uncontained regulated substance compounds.)</li> </ul>

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<p><b>ST.80.2.DE.</b> Owners/operators must meet reporting requirements for UST regulated substance spills and overfills (DE 7 1000 13 51 Part E 1 .4) [ Revised December 2008].</p>	<p>Verify that any abnormal operating conditions are reported to the Tank Management Branch, by calling 302-395-2500, within twenty-four (24) hours of discovery or by the next business day.</p> <p>(NOTE: Abnormal operating conditions include, but are not limited to, the following:</p> <ul style="list-style-type: none"> <li>- the sudden loss of product from any portion of the UST system</li> <li>- inventory control discrepancies</li> <li>- a signal from any release detection device or method that indicates a Release may have occurred</li> <li>- inconclusive statistical inventory reconciliation (SIR) results</li> <li>- irregular behavior of product dispensing equipment</li> <li>- equipment failure or malfunction</li> <li>- the unexplained presence of water in the UST system</li> <li>- evidence of a release of a regulated substance noted during a routine inspection.)</li> </ul> <p>Verify that any release of a regulated substance that is discovered by any person, including but not limited to environmental consultants or contractors, utility companies, financial institutions or real estate transfer companies, shall be reported within 24 hours to:</p> <ul style="list-style-type: none"> <li>-the Department's 24-hour release hot line by calling 800-662-8802 (in-state) or 302-739-9401 (out-of-state)</li> <li>- the DNREC Tank Management Branch by calling 302-395-2500</li> <li>- the National Response Center (800-424-8802) shall be notified immediately of a Release of any quantity of a petroleum substance that produces a visible sheen on surface waters.</li> </ul> <p>Verify that responsible parties immediately contain the release and complete the release response, investigation and remedial action requirements of this part as required.</p> <p>Verify that owners and operators comply with the release notification requirements of any other state, federal, or municipal agency.</p> <p>Verify that any spill or overfill that results in a release to the environment that exceeds 25 gallons is reported to the Department within 24 hours by calling 800-662-8802 (in-state) or 302-739-9401 (out-of-state), and shall contact the Tank Management Branch, 302-395-2500, for further instructions.</p> <p>Verify that owners and operators immediately contain and clean up the spill or overfill and comply with the release investigation, hydrogeologic investigation and remedial action requirements of this part as directed by the Tank Management</p>



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<p><b>ST.80.3.DE.</b> Hazardous substance UST spills and overfills must be reported (DE 7 1000 135 1 Part E 1 .5) [Revised December 2008].</p>	<p>Branch.</p> <p>Verify that owners and operators immediately contain and clean up any spill or overfill that results in a release to the environment that is less than 25 gallons.</p> <p>Verify that, if cleanup cannot be accomplished within 24 hours, owners and operators immediately notify the Tank Management Branch (302-395- 2500).</p> <p>Verify that owners and operators comply with the release investigation, hydrogeologic investigation and remedial action requirements of this part as directed by the Tank Management Branch.</p> <p>Verify that any spill or overfill of a hazardous substance that results in a release that equals or exceeds the reportable quantity under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (40 CFR Part 302) or 7 Del.C. 6028 to the Department within 24 hours by calling 800-662-8802 (in-state) or 302-739-5072 (out of state) is reported.</p> <p>Verify that the Tank Management Branch (302-395-2500) is contacted for further instructions.</p> <p>Verify that owners and operators immediately contain and clean up the spill or overfill and shall comply with the release investigation, hydrogeologic investigation and remedial action requirements of this Part as directed by the Tank Management Branch.</p> <p>Verify that a release of a hazardous substance equal to or in excess of its reportable quantity is also reported immediately to the National Response Center under 42 U.S.C., Chapter 103, Comprehensive Environmental Response, Compensation, and Liability Act ( CERCLA) and to appropriate state and local authorities under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986.</p> <p>Verify that owners and operators of UST systems immediately contains and cleans up any spill or overfill of a hazardous substance in a quantity less than a reportable quantity under CERCLA (40 CFR Part 302) or 7 Del.C. 6028.</p> <p>Verify that, if cleanup cannot be accomplished within 24 hours, owners and operators immediately notify the Tank Management Branch (302-395-2500).</p> <p>Verify that owners and operators comply with the release investigation, hydrogeologic investigation and remedial action requirements of this Part as directed by the Tank Management Branch.</p>
<p><b>ST.80.4.DE.</b> Owner/</p>	<p>Verify that, unless remedial action is immediately initiated, the owners and</p>

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<p>operators must meet UST indicated release investigation and confirmation step requirements (DE 7 1000 1351 part E 2. 1 and 2. 2) [Revised December 2008].</p> <p><b>ST.80.5.DE.</b> Owner/operators must meet requirements for indicated release investigation procedures for UST inventory control discrepancies (DE 7 1000 1 351 Part E 2 .3) [Revised December 2008].</p>	<p>operators investigate and confirm, within 7 days, any indication of a release of a regulated substance including but not limited to those listed as an indicated release in ST.80.1.DE.</p> <p>Verify that, upon discovery of an indication of a release owners and operators meet the following requirements:</p> <ul style="list-style-type: none"> <li>- within 24 hours begin an investigation to determine the cause of an abnormal operating condition</li> <li>- within 24 hours initiate an investigation for completion within 7 days to determine the presence or absence of a release by one of the following: <ul style="list-style-type: none"> <li>- conducting an UST system tightness test in accordance Part B, 1.13</li> <li>- measuring for the presence of a release where contamination is most likely to be present at the UST site</li> <li>- other procedures as directed by the Department.</li> </ul> </li> </ul> <p>Verify that, If the abnormal operating condition is the result of an equipment failure or malfunction, owners and operators repair or replace all faulty equipment in accordance with these Regulations.</p> <p>Verify that, if the release investigation determines that a release has occurred, responsible parties comply with the hydrogeologic investigation and remedial action requirements of this part.</p> <p>Verify that, Within 30 days of completion of any repairs and indicated release investigation responsible parties and UST contractors shall submit documentation to the Tank Management Branch including, but not limited to, the following:</p> <ul style="list-style-type: none"> <li>- repair completion documentation</li> <li>- sampling results</li> <li>- test results as required by the Department.</li> </ul> <p>Verify that owners and operators initiate an investigation procedure within 24 hours of identification of an inventory discrepancy.</p> <p>Verify that the investigation continues until the cause of the discrepancy has been found.</p> <p>Verify that the investigation include:</p> <ul style="list-style-type: none"> <li>- inventory records are checked for mathematical errors</li> <li>- inventory records are checked for error in measurement, substance temperature change, or other variables</li> <li>- if the significant loss or gain is not reconcilable after the steps above are completed, or can not be affirmatively demonstrated to be the result of pilferage, the UST system is checked for damage or leaks</li> </ul>

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<p><b>ST.80.6.DE.</b> Owner/operators must meet UST release response requirements (DE 7 1000 135 1 Part E 3. 1 and 3. 2) [Revised December 2008].</p>	<ul style="list-style-type: none"> <li>- release detection systems is checked for signs of a release</li> <li>- correct calibration of the inventory measuring system and any dispensers are verified.</li> </ul> <p>Verify that, if the source of the inventory discrepancy has not been determined from the above procedures, the Department is notified within 24 hours of completion of the investigation procedures, and owners and operators begin the Release investigation and confirmation steps.</p> <p>Verify that, if a release is confirmed the release notification, response, hydrogeologic investigation and remedial action requirements are completed as required.</p> <p>(NOTE: The Department reserves the right to assume control of a any release situation when it is determined that the responsible parties are not responding promptly or effectively. In such cases a liability, including payment to the Department of response costs, will remain with the responsible parties.)</p> <p>Verify that, in response to a release from an UST system, the responsible parties promptly take the following steps:</p> <ul style="list-style-type: none"> <li>- the cause of the release is promptly identified through UST system tightness testing or other means approved by the Department</li> <li>- if a faulty UST system component is determined to be the cause of a release, the component or, if necessary, the entire UST system, is taken out of service and shall not be returned to service until the UST system is functioning in compliance with all applicable portions of these regulations</li> <li>- the regulated substance contained within the UST system is removed unless otherwise directed by the Department</li> <li>- no responsible parties is put back into service any UST system that has caused a release without prior approval from the Department</li> <li>- an investigation is conducted to determine an estimate of the amount and type of regulated substance released.</li> </ul> <p>Verify that owners and operators and responsible parties implement the following to contain the release:</p> <ul style="list-style-type: none"> <li>- if Light Non-Aqueous Phase Liquid (LNAPL) is present, LNAPL corrective action is immediately initiated</li> <li>- nearby receptors are protected from impacts of regulated substances by preventing free and mobile LNAPL migration through recovery and containment. The Department shall be notified of all activities</li> <li>- all flammable material are properly handled and vapors are mitigated to prevent fires, explosions and impacts to receptors.</li> </ul>

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<p><b>ST.80.7.DE.</b> UST owner/operators with Light Non-Aqueous Phase Liquid (LNAPL) releases must meet specific requirements (DE 7 1000 1 351 Part E 3 .3) [Revised December 2008].</p>	<p>Verify that, at sites where there is a release of LNAPL, the responsible parties remove and remediate the LNAPL to the maximum extent practicable while continuing, as necessary, the release confirmation steps and the investigation required.</p> <p>Verify that the responsible parties formulate a LNAPL Conceptual Site Model (LCSM) to determine the most efficient and environmentally protective remedial approach for addressing the release.</p> <p>Verify that the responsible parties verbally communicate a preliminary LCSM to the Department within 48 hours of the discovery of a release of LNAPL.</p> <p>Verify that LNAPL removal is conducted in a manner that minimizes the spread of contamination, including dissolved and vapour phases, into previously uncontaminated areas by using recovery and disposal techniques appropriate to the hydrogeologic conditions at the site, and that properly treats, discharges or disposes of recovery by-products in accordance with all applicable local, state and federal requirements.</p> <p>Verify that, if LNAPL recovery is not practicable, and does not support site remedial action objectives as determined by the Department, the responsible parties have received approval to discontinue LNAPL recovery from the Department.</p>
<p><b>ST.80.8.DE.</b> Owner/operators with confirmed UST releases must conduct a hydrogeologic investigation (DE 7 100 0 135 1 Part E 4. 1 and 4. 2, 4 .3, and 4 .4) [Revised December 2008].</p>	<p>Verify that, after a release is confirmed, responsible parties conduct a hydrogeologic investigation as the first step in the corrective action process unless directed to do otherwise by the Department.</p> <p>Verify that the responsible parties submit the results of the hydrogeologic investigation to the Department no later than 120 days after a release is confirmed or other Department approved schedule.</p> <p>(NOTE: The results of the hydrogeologic investigation shall be organized in report form and signed by a professional geologist or professional engineer registered in the State of Delaware as required in 24 Del.C. Chapter 36 and the Delaware Board of Registration of Geologists Regulations and 24 Del.C. Chapter 28.)</p> <p>Verify that the Department accepts the conclusions and recommendations of the report or requires the responsible parties to submit additional information or a remedial action work plan (RAWP) to the Department.</p> <p>Verify that the responsible parties develop and implement a site specific Quality Assurance/Quality Control (QA/QC) plan for the activities to be carried out during the hydrogeologic investigation and the QA/QC plan is included in the hydrogeologic investigation work plan submitted to the Department.</p>

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<p><b>ST.80.9.DE.</b> Owner/operators must meet UST remedial action requirements (DE 710001351 Part E 5.1, 5.2, 5.3, and 5.4) [Revised December 2008].</p>	<p>Verify that the responsible parties develop a site specific health and safety plan that is included in the hydrogeologic investigation work plan and covers all hydrogeologic investigation tasks.</p> <p>Verify that the health and safety plan addresses the site worker protection levels, protection of persons living near the site, and site access control during the investigation.</p> <p>(NOTE: The Department may waive the requirement of a hydrogeologic investigation when the responsible parties have taken the appropriate initial response steps to eliminate imminent dangers and to prevent any further release and have chosen to submit a remedial action work plan (RAWP) for remediating contaminated soil, groundwater and/ or surface water.)</p> <p>(NOTE: Responsible parties may, in the interest of minimizing environmental contamination and promoting more effective remediation, begin remediation of soil and groundwater before the remedial action work plan is approved provided that the responsible parties:</p> <ul style="list-style-type: none"> <li>- notify the Department of their intention to begin remediation</li> <li>- comply with any conditions imposed by the Department, including halting remediation or mitigating adverse consequences from cleanup activities</li> <li>- incorporate these self initiated remediation measures in the RAWP that is submitted to the Department for approval</li> <li>- recognize that any actions taken by the responsible parties without prior Department approval is at the risk of the responsible parties and does not absolve the responsible parties of the obligation to comply with the remedial action requirements of this part.)</li> </ul> <p>Verify that the remedial action work plan (RAWP) is submitted to the Department in a timeframe specified by the Department.</p> <p>Verify that the responsible parties modify any RAWP that does not provide for adequate protection of human health, welfare, safety and the environment.</p> <p>Verify that the RAWP propose a remedial action method for the site that will:</p> <ul style="list-style-type: none"> <li>- reduce the contaminant levels at the site to meet the cleanup goals proposed in the remedial action work plan and approved by the Department</li> <li>- reduce the contaminant levels to achieve the cleanup goals established by the Department</li> <li>- monitor the site over time to provide technically based assurance that the site contamination is controlled under natural conditions and that those conditions will not now, or at some future time, adversely impact human health, safety or the environment.</li> </ul> <p>Verify that the responsible parties develops and implements a site specific Quality</p>

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<p><b>ST.80.10.DE.</b> Owner/operators required to have a RAWP must meet implementation and reporting requirements ( DE 7 1000 1351 Part E 5.5, 5.6, and 6.0) [Revised December 2008].</p>	<p>Assurance/Quality Control ( QA/QC) plan for the activities to be carried out during implementation of the RAWP and the QA/QC plan is included in the RAWP plan submitted to the Department.</p> <p>Verify that responsible parties develop a site-specific health and safety plan that is included in the RAWP and covers all remedial action tasks.</p> <p>Verify that the health and safety plan, at a minimum, address site worker protection levels, protection of persons living near the site, and site access control during the remediation.</p> <p>Verify that, upon approval of the RAWP by the Department, the responsible parties implement the RAWP, including any modifications to the RAWP made by the Department, within the timeframe approved by the Department.</p> <p>Verify that the responsible parties monitor, evaluate and report to the Department the results of implementing the remedial action at a minimum of once every 3 calendar months, or within the time schedule approved in the RAWP.</p> <p>Verify that copies of all records documenting the transport and disposal of any free product, contaminated water and soil, or other waste that is generated at the site while investigation and remedial action work is being performed are included in each report.</p> <p>Verify that the responsible parties submit a remedial action progress report to the Department once every 12 calendar months that includes an evaluation of the effectiveness of the remedial action to determine whether additional measures must be implemented to meet the cleanup goals established in the RAWP.</p> <p>Verify that the responsible parties submit recommendations for optimization and improvement as needed to achieve the cleanup goals established in the RAWP, as part of each remedial action progress report.</p> <p>Verify that, upon completion of remedial action activities the responsible parties perform 4 consecutive quarters of groundwater sampling or other sampling schedule as approved by the Department to ensure the contaminant plume is stable and shrinking and that rebounding does not occur.</p> <p>Verify that, after all RAWP goals have been achieved, the responsible parties submit a written request to the Department for site closure.</p> <p>(NOTE: Responsible parties shall submit all documents, permits, certificates, approvals, etc. relating to the transportation of impacted environmental media and materials from the site including USTs, soils, regulated substances, and water that has not been previously submitted to the Department. Documentation shall include tipping fees, waste receipts, bills of lading or any other documentation</p>

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	<p>verifying that all waste has been properly disposed.)</p> <p>Verify that the DNREC Tank Management Branch issues a letter requiring no further action (NFA) and documenting that site cleanup objectives have been met.</p> <p>Verify that any person disturbing any residual contamination at the site by digging, boring, excavating, dewatering, or other means, submits a contaminated material management plan to the Department for approval prior to work commencing.</p>

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<p><b>ST.85.</b></p> <p><b>DEFERRED USTS</b></p> <p><b>ST.85.1.DE.</b> Deferred UST systems must be constructed so that stored substances are not released (DE 7 1000 1351 Part A , 1. 2.2 a nd 1. 3) [Revised December 2008].</p>	<p>Verify that there are any of the following deferred UST systems:</p> <ul style="list-style-type: none"> <li>- UST systems containing radioactive material regulated under the <i>Atomic Energy Act of 1954</i></li> <li>- UST system that is part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission in accordance with 10 CFR Part 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST systems with field constructed tanks.</li> </ul> <p>(NOTE: Deferred UST systems are exempt from UST requirements except for release and corrective action responses requirements for petroleum and hazardous substance UST systems specified in ST.80.3.DE. through ST.80.10.DE.)</p> <p>Verify that no deferred UST system is installed for the purpose of storing a regulated substance unless the UST system ( whether single or double-walled construction) meets the following standards:</p> <ul style="list-style-type: none"> <li>- will prevent a release due to corrosion or structural failure for the operational life of the UST system</li> <li>- is cathodically protected against corrosion, constructed of noncorrodible material, steel clad with a noncorrodible material, or designed in a manner to prevent the release or threatened release of any stored substance</li> <li>- is constructed or lined with material that is compatible with the stored substance.</li> </ul>



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<p><b>ST.90.</b></p> <p><b>UST DOCUMENTATION</b></p> <p><b>ST.90.1.DE.</b> Owner/operators of UST systems must meet registration requirements (DE 7 100 0 13 51 Part A 4 .1. 4. 2 and 4. 3) [Revised December 2008].</p> <p><b>ST.90.2.DE.</b> Owner/operators of UST systems must meet notification requirements (DE 7 1000 13 51 Part A 4.4, 4.5, 4.8, and 4.9) [Revised December 2008].</p>	<p>Verify that UST systems are registered with the Department.</p> <p>(NOTE: owners and operators must provide notification for each UST. owners and operators may provide notice for multiple USTs at a single facility using one notification form. Owners with USTs located at more than one facility must file a separate notification form for each facility.)</p> <p>Verify that registration is renewed on or before February 1 of every year from the date of the last valid registration certificate and until the Department receives a formal notice that the UST facility has been permanently removed or closed in place or that the ownership of the facility has been transferred.</p> <p>Verify that no regulated substance is ordered, accepted, or deposited into a UST system unless the system is registered with the Department.</p> <p>Verify that a current and valid registration certificate is displayed on the premises of a UST facility at all times.</p> <p>(NOTE: Registration applies to UST systems that were in the ground on or after July 12, 1985. Beginning May 14, 1993, all USTs with a storage capacity greater than 1,100 gallons storing heating fuel must register.)</p> <p>Verify that the new owner and operator operates the UST system for no more than 72 hours after assuming ownership without the Department having received the new notification form and a transfer of ownership form with documentation of compliance with the financial responsibility requirements of Part F of these Regulations and a copy of the bill of sale.</p> <p>Verify that, at the time of transfer of ownership, the new owner receives all available documents and information relevant to the UST system.</p> <p>Verify that written notification is provided to the Department when UST systems are to be used for multiple purposes.</p> <p>(NOTE: UST systems storing one regulated substance utilized for multiple purposes including but not limited to petroleum used for heating buildings and fueling emergency generators and diesel fuel used for fueling vehicles and heating buildings, shall meet the more stringent requirements for installation, leak detection, spill and overflow protection, corrosion protection and financial responsibility requirements in Parts A, B, C, D and F of these regulations.)</p>

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<p><b>ST.90.3.DE.</b> Owner/operators must meet recordkeeping standards for UST systems ( DE 7 1000 1351, Part A 5.0) [Citation Revised December 2008].</p>	<p>Verify that UST system owners and operators notify the Department of all scheduled UST system removals, UST system closures in place, or UST system changes in service at least 10 days prior to beginning the Removal, closure in place or change in service of the UST system, unless such action is in response to an imminent threat to human health, safety or the environment.</p> <p>Verify that a copy of all Department approvals and permits are kept at the UST site and are available to Department representatives upon request.</p> <p>Verify that records for UST system facilities are maintained in a non-orderly permanent form.</p> <p>Verify that the following records are maintained throughout the lifetime of the UST facility:</p> <ul style="list-style-type: none"> <li>- dates and details of the UST system installation</li> <li>- documentation of operation and maintenance of corrosion protection equipment</li> <li>- records and dates of retrofitting/upgrading of existing UST systems</li> <li>- dates and results of all tightness tests of UST systems</li> <li>- dates, descriptions, and written documentation of repairs or upgrades of the UST systems and associated ancillary equipment</li> <li>- dates and details of installation of release detection systems and records of monitoring or inspections including the following: <ul style="list-style-type: none"> <li>- all written performance claims by the equipment manufacturer or installer of release detection systems</li> <li>- records and results of any sampling, testing, or monitoring</li> <li>- written documentation of all calibration, maintenance, and repair of release detection equipment located onsite.</li> </ul> </li> </ul> <p>Verify that records relating to the permanent removal or closure in place of a UST system is retained for a minimum of 3 years by the UST owner.</p> <p>Verify that inventory control records are maintained by the owner and operator for a period of not less than 3 years and are made available for Department inspection within 10 days upon request.</p>

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<p><b>ST.95.</b></p> <p><b>CHANGES IN SERVICE OR CLOSURE OF USTS</b></p> <p><b>ST.95.1.DE.</b> Owner/operators that perform UST system closure or changes-in-service must meet notification standards ( DE 7 1000 1 351, Part A 4 .8.1) [Revised December 2008].</p> <p><b>ST.95.2.DE.</b> Owner/operators must meet requirements for change to out-of-service to in-service for regulated substance UST systems (DE 7 1000 1 351 Part B 3. 3) [Revised December 2008].</p> <p><b>ST.95.3.DE.</b> Owner/operators must meet requirements for Change in Status from In Service to Out Of Service of regulated substance UST systems (DE 7 1000 1 351 Part B 3 .2) [Revised December 2008].</p>	<p>Verify that the Department is notified at least 10 days prior to removal/abandonment or making a change-in-service of a UST system unless such action is a response to an imminent threat to human health, safety, or the environment.</p> <p>Verify that UST systems are not removed or abandoned without notification of the Department.</p> <p>Verify that, prior to a change in status of an UST system from out of service to in service, ensure that the UST system meets the following requirements prior to being placed In Service:</p> <ul style="list-style-type: none"> <li>- UST system meets all the applicable requirements for USTs installed after January 11, 2008</li> <li>- UST system are tested for tightness in accordance with the requirements of 2.9.7</li> <li>- all cathodically protected UST systems are tested and all necessary repairs made in accordance with the requirements of 1.24.</li> </ul> <p>Verify that operation and maintenance of corrosion protection is continued in accordance with the applicable requirements when a UST system is out of service.</p> <p>Verify that operation and maintenance of release detection is continued in accordance with the applicable release detection requirements for tanks and piping, when the out of service tank is not empty.</p> <p>(NOTE: Release detection is not required if the UST has been rendered empty. The UST system is empty when all regulated substances have been removed using commonly employed practices so that no more than one inch or 2.5 centimeters of residue, or 0.3 percent by weight of the total capacity of the UST system, remains in the system.)</p> <p>Verify that, when any UST system is out of service for 3 months or more, owners and operators comply with the following requirements:</p> <ul style="list-style-type: none"> <li>- leave vent lines open and functioning</li> <li>- cap and secure all other lines, pumps, manways, and ancillary equipment.</li> </ul>

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<p><b>ST.95.4.DE.</b> Owner/operators must meet requirements for Change In Service Site Assessment of regulated substance UST systems (DE 7 1000 1351 Part B 3 .4 and 3. 5) [ Added December 2008].</p> <p><b>ST.95.5.DE.</b> Owner/operators must meet removal or closure in place requirements for regulated</p>	<p>Verify that, when an UST system is out of service for 12 months owners and operators meet one of the following requirements:</p> <ul style="list-style-type: none"> <li>- permanently remove or close in place the UST system in accordance with the applicable requirements of these regulations</li> <li>- render the UST system empty and complete a site assessment including any required hydrogeologic investigation and remedial action in accordance with Part E (see ST.80).</li> </ul> <p>Verify that, within 30 days of rendering the UST system empty, owners and operators complete a site assessment designed to measure for the presence of a release where contamination is most likely to be present.</p> <p>Verify that the site assessment plan is approved by the Department prior to implementation.</p> <p>Verify that the site assessment is not restricted to the property containing the UST system.</p> <p>(NOTE: In selecting sample types, sample locations and measurement methods, owners and operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a release.)</p> <p>Verify that, if contaminated soils, contaminated groundwater, or free product as a liquid or a vapor is discovered as a result of the site assessment performed in accordance, or by any other manner, owner and operators begin a hydrogeologic investigation and remedial action in accordance with the requirements of Part E (see ST.80).</p> <p>Verify that owners and operators submit the following documents to the Department within 30 days of the completion of the site assessment required:</p> <ul style="list-style-type: none"> <li>- a site plan detailing the UST(s) location and surrounding area</li> <li>- the approved site assessment plan with sampling points clearly marked</li> <li>- chain of custody for all samples submitted for laboratory analysis</li> <li>- results of any on-site screening performed</li> <li>- laboratory test results for all samples submitted for laboratory analysis</li> <li>- documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the change in service of the UST system, including manifests and receipts for soil, water, and regulated substances.</li> </ul> <p>Verify that owners and operators notify the Department of all removals or closures in place in accordance with the requirements of 4.0 of Part A (see ST.95.1.DE.).</p> <p>Verify that removal and closure in place procedures comply with the following</p>

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<p>substance UST systems (DE 7 1000 1351 Part B 4.0) [Added December 2008].</p> <p><b>ST.95.6.DE.</b> Owner/operators must meet</p>	<p>industry standards:</p> <ul style="list-style-type: none"> <li>- API RP 1604, Closure of Underground Petroleum Storage Tanks</li> <li>- API RP 2015, Safe Entry and Cleaning of Petroleum Storage Tanks</li> <li>- OSHA, 29 CFR 1910.146, Permit Required Confined Spaces.</li> </ul> <p>Verify that, at the time of removal of an UST system, owners and operators perform a site assessment to measure for the presence of a release where contamination is most likely to be present at the UST site.</p> <p>(NOTE: In selecting sample types, sample locations and measurement methods, owners and operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a Release.)</p> <p>Verify that the site assessment is completed within 10 days of the UST removal.</p> <p>Verify, at the time of closure in place of an UST system, owners and operators perform a site assessment for the presence of a release where contamination is most likely to be present at the UST site.</p> <p>Verify that a site assessment plan for closure in place is approved by the Department prior to implementation.</p> <p>Verify that all site assessment are completed within 10 days of the UST closure in place or the time of removal.</p> <p>Verify that, if contaminated soils, contaminated groundwater, or free product as a liquid or a vapor is discovered as a result of the site assessment, or by any other manner, the owner and operators begins a hydrogeologic investigation and remedial action in accordance with the requirements of Part E (see ST.80).</p> <p>Verify that owners and operators submit the following documents to the Department within 60 days of the removal or closure in place of an UST system:</p> <ul style="list-style-type: none"> <li>- site plan detailing the UST(s) location and surrounding</li> <li>- site map with sampling points clearly marked</li> <li>- results of any on-site screening performed</li> <li>- chain of custody for all samples submitted for laboratory analysis</li> <li>- laboratory test results for all samples submitted for laboratory analysis</li> <li>- documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the Removal of the UST system, including manifests and receipts for soil, water, and regulated substances and the UST system disposal</li> <li>- documentation of tank cleaning prior to UST system closure in place.</li> </ul> <p>Verify that owners and operators notify the Department of all changes in substance stored in accordance with the requirements of 4.0 of Part A (see</p>

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<p>change in substance stored requirements for regulated substance UST systems (DE 7 1000 1351 Part B 5.0) [Added December 2008].</p> <p><b>ST.95.7.DE.</b> Hazardous substance UST systems must meet requirements for change in service (DE 7 1000 13 51 Part D 2.1 and 2.2) [ Added December 2008].</p>	<p>St.95.1.DE.).</p> <p>Verify that, before the change in substance stored, owners and operators empty and clean the UST system by removing all liquids and accumulated sludge in accordance with the following industry standards:</p> <ul style="list-style-type: none"> <li>- API RP 1604, Closure of Underground Petroleum Storage Tanks</li> <li>- API Standard 2015, Safe Entry and Cleaning of Petroleum Storage Tanks</li> <li>- OSHA, 29 CFR 1910.146, Permit Required Confined Spaces.</li> </ul> <p>Verify that, within 30 days of the completion of the cleaning of the UST system, owners and operators perform a site assessment to measure for the presence of a release where contamination is most likely to be present at the UST site.</p> <p>Verify that the site assessment plan is approved by the Department prior to implementation.</p> <p>(NOTE: In selecting sample types, sample locations and measurement methods, owners and operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a release.)</p> <p>Verify that, if contaminated soils, contaminated groundwater, or free product as a liquid or a vapor is discovered as a result of the site assessment, or by any other manner, owner and operators begin a hydrogeologic investigation and remedial action in accordance with the requirements of Part E (see ST.80).</p> <p>Verify that owners and operators submit the following documents to the Department within 60 days of the change in substance stored in an UST system:</p> <ul style="list-style-type: none"> <li>- site plan detailing the UST(s) location and surrounding area</li> <li>- approved site assessment plan with sampling points clearly marked</li> <li>- chain of custody for all samples submitted for laboratory analysis</li> <li>- results of any on-site screening performed</li> <li>- laboratory test results for all samples submitted for laboratory analysis</li> <li>- documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the change in substance stored of the UST system, including manifests and receipts for soil, water, and regulated substances.</li> </ul> <p>Verify that the Department is notified of all changes in service.</p> <p>Verify that owners and operators continue operation and maintenance of corrosion protection in accordance with the applicable requirements when an UST system is out of service.</p> <p>Verify that owners and operators continue operation and maintenance of release detection in accordance with the applicable release detection requirements for</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.95.8.DE.</b> Hazardous substance UST systems must meet requirements for change in status from out of service to in service (DE 7 1000 13 51 Part D 2.3) [Added December 2008].</p> <p><b>ST.95.9.DE.</b> Hazardous substance UST systems must meet requirements for change in service site assessments (DE 7 1000 1351 Part D 2.4 and 2.5) [ Added December 2008].</p> <p><b>ST.95.10.DE.</b> Hazardous</p>	<p>tanks and piping, when the out of service tank is not empty.</p> <p>(NOTE: release detection is not required if the UST system has been rendered empty. The UST system is empty when all hazardous substances have been removed using commonly employed practices so that no more than one inch or 2.5 centimeters of residue, or 0.3 percent by weight of the total capacity of the UST system, remains in the system.)</p> <p>Verify that, when any UST system is out of service for 3 months or more, the following requirements are met:</p> <ul style="list-style-type: none"> <li>- leave vent lines open and functioning</li> <li>- cap and secure all other lines, pumps, manways, and ancillary equipment.</li> </ul> <p>Verify that, when a UST system is out of service for 12 months, the one of following requirements are met:</p> <ul style="list-style-type: none"> <li>- permanently remove or close in place the UST system in accordance with the applicable requirements of these regulations</li> <li>- render the UST system empty in accordance with the definition above and complete a site assessment including any required hydrogeologic investigation and remedial action in accordance with Part E (see ST.80).</li> </ul> <p>Verify that prior to a change in status of an UST system from out of service to In service, owners and operators shall ensure that the UST system meets the following requirements prior to being placed in service:</p> <ul style="list-style-type: none"> <li>- UST system meet the requirements of 1 of this Part</li> <li>- UST system are tested for tightness</li> <li>- all cathodically protected UST systems are tested and all necessary repairs.</li> </ul> <p>Verify that owners and operators submit the following documents to the Department within 30 days of the completion of the site assessment:</p> <ul style="list-style-type: none"> <li>- site plan detailing the UST(s) location and surrounding area</li> <li>- approved site assessment plan with sampling points clearly marked</li> <li>- chain of custody for all samples submitted for laboratory analysis</li> <li>- results of any on-site screening performed</li> <li>- laboratory test results for all samples submitted for laboratory analysis</li> <li>- documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the change in service of the UST system, including manifests and receipts for soil, water, and hazardous substances.</li> </ul> <p>Verify that owners and operators notify the Department of all removals or closures</p>

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<p>substance UST systems must meet requirements for removal or closure in place (DE 7 1000 1351 Part D 3.1, 3.2, 3.3, 3.4, and 3.6) [Added December 2008].</p>	<p>in place.</p> <p>Verify that the removal and closure in place procedures comply with the following industry standards:</p> <ul style="list-style-type: none"> <li>- API RP 1604, Closure of Underground Petroleum Storage Tanks</li> <li>- API 2015, Safe Entry and Cleaning of Petroleum Storage Tanks</li> <li>- OSHA, 29 CFR, 1910.146, Permit Required Confined Spaces.</li> </ul> <p>Verify that at the time of removal or closure in place of an UST system, owners and operators perform a site assessment to measure for the presence of a release where contamination is most likely to be present at the UST site.</p> <p>(NOTE: In selecting sample types, sample locations and measurement methods, owners and operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a release.)</p> <p>Verify that the site assessment is completed within 10 days of the Removal of the UST system.</p> <p>Verify that, if contaminated soils, contaminated groundwater, or free product as a liquid or a vapor is discovered as a result of the site assessment, or by any other manner, owner and operators begin a hydrogeologic investigation and remedial action in accordance with the requirements of Part E (see ST.80).</p> <p>Verify that owners and operators submit the following documents to the Department within 60 days of the removal or closure in place of an UST system:</p> <ul style="list-style-type: none"> <li>- a site plan detailing the UST(s) location and surrounding area</li> <li>- a site map with sampling points clearly marked</li> <li>- results of any on-site screening performed</li> <li>- chain of custody for all samples submitted for laboratory analysis</li> <li>- laboratory test results for all samples submitted for laboratory analysis</li> <li>- documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the removal of the UST system, including manifests and receipts for soil, water, and regulated substances and the UST system disposal</li> <li>- documentation of tank cleaning prior to UST system closure in place.</li> </ul> <p>Verify that, when a release is suspected from a previously removed, closed in place or abandoned UST system, the owner, operator and responsible party comply with the requirements of Part E (see ST.80).</p> <p>Verify that, if a release is confirmed the owner, operator and responsible party removes or closes in place the UST system in accordance with all applicable requirements.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.95.11.DE.</b> Hazardous substance UST systems must meet requirements for change in stored substance (DE 7 1000 1351 Part D 4.0) [Added December 2008].</p>	<p>Verify that owners and operators notify the Department of all changes in substance stored.</p> <p>Verify that, before the change in substance stored, owners and operators empty and clean the UST system by removing all liquids and accumulated sludge in accordance with the following industry standards:</p> <ul style="list-style-type: none"> <li>- API RP 1604, Closure of Underground Petroleum Storage Tanks</li> <li>- API 2015, Safe Entry and Cleaning of Petroleum Storage Tanks</li> <li>- OSHA, 29 CFR, 1910.146, Permit Required Confined Spaces.</li> </ul> <p>Verify that the site assessment plan is approved by the Department prior to implementation.</p> <p>Verify that, within 30 days of the completion of the cleaning of the UST system, owners and operators perform a site assessment to measure for the presence of a release where contamination is most likely to be present at the UST site.</p> <p>(NOTE: In selecting sample types, sample locations and measurement methods, owners and operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a release.)</p> <p>Verify that, if contaminated soils, contaminated groundwater, or free product as a liquid or a vapor is discovered as a result of the site assessment, or by any other manner, owner and operators begin a hydrogeologic investigation and remedial action.</p> <p>Verify that owners and operators submit the following documents to the Department within 30 days of the completion of the site assessment:</p> <ul style="list-style-type: none"> <li>- site plan detailing the UST(s) location and surrounding area</li> <li>- approved site assessment plan with sampling points clearly marked</li> <li>- chain of custody for all samples submitted for laboratory analysis</li> <li>- results of any on-site screening performed</li> <li>- laboratory test results for all samples submitted for laboratory analysis</li> <li>- documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the change in service of the UST system, including manifests and receipts for soil, water, and hazardous substances.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>HAZARDOUS WASTE STORAGE TANKS</b></p> <p><b>ST.100 Small Quantity Generators</b></p> <p><b>ST.100.1.DE.</b> Small quantity generators who accumulate hazardous waste in tanks must conduct inspections and maintain records of the inspections (DE 7 10 00 1302, Section 265. 201(c)) [ Added December 2004 ; Citation Revised January 2008].</p> <p><b>ST.100.2.DE.</b> Regulated hazardous waste ASTs must meet registration and notification requirements (DE 7 1000 1 352 Part A 1.2.4 and 4.0) [ Added December 2008; Added January 2010].</p>	<p>Verify that generators of between 100 and 1,000 kg/mo. accumulating hazardous waste in tanks inspect, and maintain written documentation of the inspections for a minimum of 3 years, the following where present:</p> <ul style="list-style-type: none"> <li>- discharge control equipment ( e.g., waste feed cut-off systems, by-pass systems, and drainage systems) at least once each operating day, to ensure that it is in good working order</li> <li>- data gathered from monitoring equipment ( e.g., pressure and temperature gauges) at least once each operating day to ensure that the tank is being operated according to its design</li> <li>- the level of waste in the tank at least once each operating day to ensure compliance with 265.201(b)(3)</li> <li>- the construction materials of the tank at least weekly to detect corrosion or leaking of fixtures or seams</li> <li>- the construction materials of, and the area immediately surrounding discharge confinement structures ( e.g., dikes) at least weekly to detect erosion or obvious signs of leakage (e.g., wet spots or dead vegetation).</li> </ul> <p>(NOTE: The owner or operator must remedy any deterioration or malfunction he finds.)</p> <p>(NOTE: Moved from ST.5.37.DE. Repeated in ST.105.2.DE.)</p> <p>Verify that any person that owns or operates an AST registers each AST with the Department on an AST registration form provided by the Department.</p> <p>Verify that registration of ASTs is renewed annually, on or before February 1 of every year and until the Department receives a formal notice that the AST has been removed or permanently closed or undergone a permanent change in contents.</p> <p>(NOTE: Owners and operators may provide notice for multiple USTs at a single facility using one notification form. Owners with USTs located at more than one facility must file a separate notification form for each Facility.)</p> <p>Verify that the owner notifies the Department in writing of any significant change in the information presented on the original registration form at least 10 days prior to the change including:</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.100.3.DE.</b> Regulated hazardous waste ASTs must meet installation, upgrade, inspection, monitoring, testing, recordkeeping, and corrective action requirements ( DE 7 1000 1352 Part A 1. 2.4) [ Added December 2008; Added January 2010].</p>	<ul style="list-style-type: none"> <li>- change of address</li> <li>- change of tank ownership</li> <li>- change in tank status</li> <li>- change in products stored from a regulated substance to an unregulated substance.</li> </ul> <p>Verify that the Department is notified at least 10 days prior to removing, permanently closing in place or making a change in service to an AST unless such action is in response to an imminent threat to human health, safety or the environment.</p> <p>Verify that a new owner and operator operates the AST for no more than 72 hours after assuming ownership without the Department having received the new registration form and a transfer of ownership form.</p> <p>Verify that the new owner receives all available documents and information relevant to the AST.</p> <p>Verify that AST owners and operators notify the Department of all retrofits or upgrades of an AST at least 10 days prior to beginning the retrofit or upgrade work.</p> <p>(NOTE: Moved from ST.5.38.DE. Repeated in ST.105.2.DE.)</p> <p>Verify that the regulated hazardous waste AST meets all applicable requirements found in ST.5.4.ST. through ST.5.24.ST.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>HAZARDOUS WASTE STORAGE TANKS</b></p> <p><b>ST.105 Generators</b></p> <p><b>ST.105.1.DE.</b> Generators who accumulate hazardous waste in tanks must conduct inspections and maintain records of the inspections (DE 710 001 302, Section 265.195) [ Added December 2004; Citation Revised January 2008].</p>	<p>Verify that, where present, the following is inspected at least once each operating day:</p> <ul style="list-style-type: none"> <li>- overfill/spill control equipment ( e.g., waste-feed cut-off systems, bypass systems, and drainage systems) to ensure that it is in good working order</li> <li>- the aboveground portions of the tank system, if any, to detect corrosion or releases of waste</li> <li>- data gathered from monitoring equipment and leak-detection equipment, (e.g., pressure and temperature gauges, monitoring wells) to ensure that the tank system is being operated according to its design</li> <li>- the construction materials and the area immediately surrounding the externally accessible portion of the tank system including secondary containment structures (e.g., dikes) to detect erosion or signs of releases of hazardous waste (e.g., wet spots, dead vegetation).</li> </ul> <p>(NOTE: 265.15(c) requires the owner or operator to remedy any deterioration or malfunction he finds. Section 265.196 requires the owner or operator to notify the Secretary upon confirming a release. Also, 40 CFR Part 302 may require the owner or operator to notify the National Response Center of a release.)</p> <p>Verify that the cathodic protection systems, if present, is inspected according to, at a minimum, the following schedule to ensure that they are functioning properly:</p> <ul style="list-style-type: none"> <li>- the proper operation of the cathodic protection system must be confirmed within 6 months after initial installation, and annually thereafter</li> <li>- all sources of impressed current must be inspected and/or tested, as appropriate, at least bimonthly (i.e., every other month).</li> </ul> <p>(NOTE: The practices described in the National Association of Corrosion Engineers ( NACE) standard, " Recommended Practice ( RP-02-85) Control of External Corrosion on Metallic Buried, Partially Buried or Submerged Liquid Storage Systems," and the American Petroleum Institute (API) Publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems," may be used, where applicable, as guidelines in maintaining and inspecting cathodic protection systems.)</p> <p>Verify that generators maintain a written record of the inspections onsite for a minimum of 3 years.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.105.2.DE.</b> Regulated hazardous waste ASTs must meet registration and notification requirements (DE 7 1000 1352 Part A 1.2.4 and 4.0) [ Added December 2008; Added January 2010].</p>	<p>(NOTE: Moved from ST.5.37.DE. Repeated in ST.100.2.DE.)</p> <p>Verify that any person that owns or operates an AST registers each AST with the Department on an AST registration form provided by the Department.</p> <p>Verify that registration of ASTs is renewed annually, on or before February 1 of every year and until the Department receives a formal notice that the AST has been removed or permanently closed or undergone a permanent change in contents.</p> <p>(NOTE: Owners and operators may provide notice for multiple USTs at a single facility using one notification form. Owners with USTs located at more than one facility must file a separate notification form for each Facility.)</p> <p>Verify that the owner notifies the Department in writing of any significant change in the information presented on the original registration form at least 10 days prior to the change including:</p> <ul style="list-style-type: none"> <li>- change of address</li> <li>- change of tank ownership</li> <li>- change in tank status</li> <li>- change in products stored from a regulated substance to an unregulated substance.</li> </ul> <p>Verify that the Department is notified at least 10 days prior to removing, permanently closing in place or making a change in service to an AST unless such action is in response to an imminent threat to human health, safety or the environment.</p> <p>Verify that a new owner and operator operates the AST for no more than 72 hours after assuming ownership without the Department having received the new registration form and a transfer of ownership form.</p> <p>Verify that the new owner receives all available documents and information relevant to the AST.</p> <p>Verify that AST owners and operators notify the Department of all retrofits or upgrades of an AST at least 10 days prior to beginning the retrofit or upgrade work.</p>
<p><b>ST.105.3.DE.</b> Regulated hazardous waste ASTs must meet installation, upgrade, inspection, monitoring, testing, recordkeeping, and corrective action requirements ( DE 7 1000</p>	<p>(NOTE: Moved from ST.5.38.DE. Repeated in ST.100.3.DE.)</p> <p>Verify that the regulated hazardous waste AST meets all applicable requirements found in ST.5.4.ST. through ST.5.24.ST.</p>

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**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
January 2010**

1352 Part A 1.2.4) [ Added  
December 2008 ; A dded  
January 2010].

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.139</b></p> <p><b>USED OIL STORAGE TANKS</b></p> <p><b>ST.139.1.DE.</b> Used oil USTs must meet requirements for release detection (DE 7 1000 1351, Part B 1.29.2, 1.29.3, and 1.29.4) [Added December 2008].</p>	<p>Verify that all used oil UST systems are monitored for releases through the use of inventory control procedures (1.9.3) and at least one of the following release detection methods:</p> <ul style="list-style-type: none"> <li>- continuous interstitial monitoring (1.9)</li> <li>- automatic tank gauge performing monthly tank tightness testing (1.9)</li> <li>- manual tank gauging (1.29.4)</li> <li>- department approved alternative method.</li> </ul> <p>(NOTE: UST systems with a storage capacity less than or equal to 2,000 gallons, used solely for the storage of used oil, may utilize manual tank gauging to comply with inventory control requirements.)</p> <p>(NOTE: owners and operators of UST systems with a storage capacity of 1,000 gallons or less, used solely for the storage of used oil, may utilize manual tank gauging to comply with release detection requirements when used in conjunction with inventory control.)</p> <p>Verify that UST systems, used solely for the storage of used oil, do not utilize manual tank gauging to simultaneously comply with both release detection and inventory control requirements.</p> <p>Verify that manual tank gauging test procedures meet the following requirements:</p> <ul style="list-style-type: none"> <li>- once every 7 days the used oil UST system are tested</li> <li>- no regulated substance are added to or removed from the used oil UST during the prescribed test period</li> <li>- at the beginning and at the end of the test period the liquid level in the used oil UST is measured to the nearest one-eighth ( 1/8) inch and the measurements recorded</li> <li>- at the end of each test period the change in tank volume is calculated and compared to the weekly test standard in Appendix 10-5</li> <li>- at a minimum of once every calendar month the monthly cumulative change in tank volume is compared to the monthly test standard in Appendix 1-5.</li> </ul> <p>Verify that, if at any time the weekly or monthly change in tank volume exceeds the test standard in Appendix 1-5, the Department is notified of an indicated release within 24 hours of the end of the test period.</p> <p>Verify that all manual tank gauging records utilized to comply with inventory control requirements are kept on file for a minimum of 3 years and are made</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>ST.139.2.DE.</b> Used oil USTs must meet requirements for overfill and spill protection (DE 7 100 0 135 1, Part B 1.29.5 and 1. 29.6) [ Added December 2008].</p>	<p>available to the Department upon request.</p> <p>Verify that all manual tank gauging records utilized to comply with release detection requirements are kept on file for the life of the UST system and are made available to the Department within 10 days of the Department's request.</p> <p>Verify that owners/operators comply with the overfill requirements or have a written standard operating procedure that includes the following minimum requirements:</p> <ul style="list-style-type: none"> <li>- determine and record the maximum gallons allowable such that the UST shall not be more than 90 percent full</li> <li>- the level of used oil is measured each day an UST has used oil added to or withdrawn from the UST to determine the current amount of ullage space available</li> <li>- the amount of used oil added or removed from the UST is recorded</li> <li>- receipts for used oil removal is maintained and made available to the Department upon request to ensure that the UST is not filled beyond 90 capacity.</li> </ul> <p>Verify that all used oil UST systems are equipped with an impervious spill containment device that forms a liquid tight seal around any pump out location.</p> <p>Verify that all spill containment devices have a minimum containment capacity of 15 gallons or be of a design that provides equivalent environmental protection.</p> <p>Verify that water, used oil or debris that accumulates in the spill containment device is immediately removed.</p> <p>Verify that spill containment devices are capable of containing a spill of the containment design capacity at all times.</p> <p>Verify that all precautions are taken to prevent tank overfilling, spilling and dripping.</p> <p>Verify that spill containment devices are tested once every 12 months for tightness in accordance with the manufacturer's specifications or as directed by the Department to determine if a threat to human health, safety or the environment exists.</p> <p>Verify that owners and operators report, investigate and clean up any spills and overfills in accordance with Part E (see ST.80).</p>



**Appendix 10-1**

**Alternative Compliance Upgrade Requirements for Existing Heating Fuel UST systems**  
[Deleted December 2008]

**Appendix 10-2**

**Aboveground Storage Tank Secondary containment Options**  
[Deleted December 2008]

## Appendix 10-3

### Aboveground Storage Tank New Underground Piping Requirements

(Source: DE 7 1000 1352,, Part B, Section 6.0) [Added January 2006; Citation Revised January 2008].

#### 6.1 New Underground Piping -- General Requirements

- 6.1.1 All underground piping installed after the effective date of these Regulations shall comply with the requirements of this section.
- 6.1.2 All underground piping, fittings and connections that are either in contact with the regulated substance or completely buried shall:
  - 6.1.2.1 Be constructed of fiberglass reinforced epoxy, carbon steel, thermoplastic material extrusions, stainless steel, or galvanized steel; or
  - 6.1.2.2 Be constructed of other materials as approved by the Department.
- 6.1.3 All underground piping and piping secondary containment materials shall be compatible with the regulated substance that is to be stored in the AST.
- 6.1.4 The underground piping layout shall be designed to minimize crossed lines and interference with conduit and other AST components. If crossing of lines is unavoidable, adequate clearance must be provided to prevent contact.
- 6.1.5 All fill pipes leading to a pump-filled AST shall be equipped with a properly functioning check valve or equivalent device which provides automatic protection against backflow whenever the piping arrangement of the fill pipe is such that backflow from the AST is possible.
- 6.1.6 Each AST connection through which a regulated substance can normally flow shall be equipped with an operating isolation valve to control flow unless the AST connection is located at a point higher than the highest liquid level in the AST, such as at the top of a horizontal AST. The valve shall be located on a nozzle welded to the shell of the AST.
- 6.1.7 Pipe joints must be cut accurately and deburred to provide liquid-tight seals. No threaded or flanged connections shall be in contact with the soil.
- 6.1.8 New underground piping systems shall be designed, constructed, and installed with access and isolation points to permit pressure testing of piping without the need for excavation.
- 6.1.9 Copper or brass tubing or malleable iron shall not be used in AST underground piping.
- 6.1.10 All new underground piping shall be tested in accordance with API 570 prior to introduction of regulated substance into the piping.
- 6.1.11 Underground metallic piping that penetrates earthen or concrete dike walls or other structures must be sleeved and electrically isolated from the sleeve.

#### 6.2 New Non-Metallic Underground Piping

- 6.2.1 Non-metallic underground piping shall be designed and constructed in accordance with:
  - 6.2.1.1 ASTM Specification D-2996-71, Standard Specification for Filament Wound RTRP; and
  - 6.2.1.2 UL 971, Standard for Nonmetallic Underground Piping for Flammable Liquids.
- 6.2.2 The ultimate shear strength of all adhesive and curing agents shall be in compliance with ASTM D-2517, as approved and supplied by the manufacturer.
- 6.2.3 Thermoplastic extrusion flexible underground piping shall be designed and constructed in accordance with:
  - 6.2.3.1 UL 971, Standard for Nonmetallic Underground Piping for Flammable Liquids.
- 6.2.4 Other non-metallic underground piping may be approved by the Department.

#### 6.3 New Steel Underground Piping

- 6.3.1 New Steel Underground Piping:
  - 6.3.1.1 shall be standard weight or heavier; and
  - 6.3.1.2 shall be installed in accordance with:
    - 6.3.1.2.1 API Recommended Practice 1615, Installation of Underground Petroleum Storage Systems; and

- 6.3.1.2.2 ANSI 31.1, Power Piping; and
- 6.3.1.2.3 ANSI 31.3 Process Piping; and
- 6.3.1.2.4 ANSI 31.4, Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols; and
- 6.3.1.3 shall have a protective coating and be cathodically protected in accordance with 6.5 of this Part; or
- 6.3.1.4 shall have non-metallic Secondary containment; or
- 6.3.1.5 shall have metallic Secondary containment that shall have protective wrapping or dielectric coating and shall be cathodically protected by an Impressed Current System or Sacrificial Anode System unless the metallic secondary containment is not in contact with the soil and is in a non-corrosive environment; or
- 6.3.1.6 shall not require the addition of cathodic protection if the steel Underground Pipe is not in contact with the soil and is in a non-corrosive environment.

#### 6.4 New Other Metallic Underground Piping

- 6.4.1 Metallic underground piping other than steel shall:
  - 6.4.1.1 be schedule 40 or heavier thickness; and
  - 6.4.1.2 be approved by the Department prior to installation.

#### 6.5 Corrosion Protection for New Steel Underground Piping

- 6.5.1 Corrosion protection for steel Underground Piping in contact with the soil shall:
  - 6.5.1.1 consist of a Sacrificial Anode System or an Impressed Current System designed, fabricated, and installed in accordance with nationally recognized standards including but not limited to API recommended practice 651, NACE standard number RP-0285-85, and NACE RP-01-69; and
  - 6.5.1.2 have a Cathodic Protection System designed by individuals who have obtained a NACE Cathodic Protection Level 3 Certification and have relevant work experience in the design of Cathodic Protection Systems for Underground Piping; and
  - 6.5.1.3 be designed to provide corrosion protection for the expected active life of the AST system or have provisions to allow for the periodic rehabilitation of the Cathodic Protection System; and
  - 6.5.1.4 have a test station or other method of monitoring which enables the Operator to confirm that the Cathodic Protection System is operating properly.
- 6.5.2 After installation of a Sacrificial Anode System, measurements of Underground Pipe-to-soil potential must be made no sooner than sixty (60) days and no later than 180 days after installation of the Cathodic Protection System. If inadequate cathodic protection is indicated, the cause shall be determined, and necessary repairs shall be made within ninety (90) days or other schedule approved by the Department in accordance with one of the industry standards referenced in 5.1.2 of this Part

#### 6.6 Requirements for Backfill Material for New Underground Piping Installations

- 6.6.1 Backfill material adjacent to the underground piping must consist of sand or pea gravel. The material must be clean, washed, inert, free flowing, homogeneous, well granulated, non-corrosive, and free of debris, rock, ice, snow or organic material. Particle length shall be no more than 3/8-3/4" in size and shall comply with the manufacturer's specifications. Mixing of the backfill adjacent to the pipe with native substance and/or foreign objects is prohibited.

## Appendix 10-4

### Aboveground Storage Tank Applicability and Exemptions

(Source: DE 7 1000 1352, Part A, Section 1.2) [Added January 2008; Citation Revised January 2010]

1.2.1 The requirements of these Regulations shall apply to all owners and operators of an AST as defined in these Regulations unless specifically exempted.

1.2.2 The following ASTs shall only be subject to the requirements of Part A, Sections 1, 2, and 8 and Part E of DE 7 1000 1352, Above Ground Storage Tanks:

- ASTs of 1,100 gallons or less in capacity, located on a farm, and used solely to facilitate the production of crops, livestock, or livestock products on the farm;
- ASTs used solely to store propane gas;
- ASTs of 1,100 gallons or less in capacity used solely to store heating fuel for consumptive use on the premises where stored;
- ASTs of 1,100 gallons or less in capacity used solely to store Motor Fuel or motor oil for Noncommercial purposes;
- ASTs installed on a temporary basis, not to exceed six months;
- ASTs regulated pursuant to Title 29 Del. C. Ch. 8028, *Division of Boiler Safety*.
- ASTs and associated equipment regulated as a part of a process regulated pursuant to Title 7 Del. C. Ch. 77 *Extremely Hazardous Substances Risk Management Act*.

1.2.3 The following ASTs shall only be subject to the requirements of Part A, Sections 1.3; 2; 4.1; 4.2; 4.3; 4.4; 8; 9; and Part E:

- ASTs greater than 250 gallons and less than 12,499 gallons
- ASTs used solely to store diesel, kerosene or heating fuel with a capacity of less than 40,000 gallons

1.2.4 ASTs regulated pursuant to 7 Del. C. Chapter 63 and the *Delaware Regulations Governing Hazardous Waste* shall only be subject to the requirements of Part A, 1.3; Part A, 2; Part A, 4.1; Part A, 4.2; Part A, 4.3; Part A, 4.4; Part A, 9; and Part B and Part C and Part D.

1.2.5 The following types of aboveground storage tanks shall not be subject to these Regulations:

- septic tank;
- pipeline facility (including gathering lines) regulated under:
  - *The Natural Gas Pipeline Safety Act of 1968* as amended [49 U.S.C. 1671 et seq.]; or
  - *The Hazardous Liquid Pipeline Safety Act of 1979* as amended [49 U.S.C. 2001 et seq.]; or
  - Pipelines regulated pursuant to 33 U.S.C. and 49 C.F.R. 195 Transportation of Hazardous Liquids by Pipeline; or
  - Pipelines regulated pursuant to 46 U.S.C. and 33 CFR 154 Facilities transferring oil or hazardous material in bulk and 33 CFR 156 Oil and hazardous material transfer operations.
- surface impoundment, pit, pond, or lagoon;
- liquid trap or associated gathering lines directly related to oil or gas production or gathering operations;
- Flow Through Process Tank that contains a regulated substance or substances and that forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of material during the operation of the process. Flow Through Process Tanks include, but are not limited to seal tanks, surge tanks, bleed tanks, check and delay tanks, phase separator tanks, or tanks in which physical or chemical change of a material is accomplished. A Flow Through Process Tank does not include:
  - a tank that is used for the storage of material before its introduction into a production process; or
  - a tank that is used for storage of products or by-products from the production process; or
  - a tank that is used only to recirculate materials.

- transformers, regulators and breakers used for the sole purpose of electrical power distribution and transmission;
- containment vessels operated as part of a publicly owned treatment works as defined pursuant to Title 7 Del.C. Ch. 60, *Environmental Controls*, 6002 and regulated pursuant to Title 7 Del.C. Ch. 60, *Environmental Controls*, 6003 or used for the storage and conveyance of wastewater to a treatment plant regulated in accordance with the requirements of the *Clean Water Act*.

1.2.6 Agricultural/Farm ASTs, shall only be subject to the requirements of Part A and Part E of these Regulations, provided that the Owner and Operator shall comply with a written best management practice for the Agricultural/Farm AST approved by the Department and appropriately updated for any substantial change of conditions. Failure to comply with the best management practices shall constitute a violation of this subsection subject to all appropriate enforcement sanctions including but not limited to daily penalties.

## Appendix 10-5

### Manual Tank Gauging for Oil UST systems

(Source: DE 7 1000 1351, Part B, 1.29, Table 1) [Added January 2010]

<b>Tank Size</b>	<b>Minimum Duration of Test</b>	<b>Weekly Standard (1 Test)</b>	<b>Monthly Standard (4-test average)</b>
Up to 550 gallons	36 hours	10 gallons	5 gallons
551-1,000 gallons (when Tank diameter is 64")	44 hours	9 gallons	4 gallons
551-1,000 gallons (when Tank diameter is 48")	58 hours	12 gallons	6 gallons
1,001 -2,000 gallons (also requires 2nd Release Detection method)	36 hours	26 gallons	13 gallons





## SECTION 11

### TOXIC SUBSTANCES MANAGEMENT

#### Delaware Supplement, January 2010

This section covers the state requirements for Toxic Substances Management and is intended to supplement the U.S. TEAM Guide. Refer to the U.S. TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

#### Definitions

- *Asbestos* - a general term used to describe a group of naturally occurring minerals that separate into fibers. The asbestiform varieties include chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite, and any of these materials that has been chemically treated and/or altered (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Asbestos Abatement* - the construction, demolition, repair, maintenance, or renovation of any public building or structure, mechanical piping equipment or system involving the demolition, removal, encapsulation, salvage, or disposal of asbestos-containing material. Asbestos abatement includes, but is not limited to: (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010]
  1. the wrecking or removal of any structural member containing asbestos material
  2. the coating, binding, or resurfacing of walls, ceilings, pipes, or other structures for the purpose of preventing asbestos from becoming airborne
  3. the construction of airtight walls and ceilings, by use of impact resistant materials, to isolate surfaces coated with material containing asbestos material
  4. the removal of asbestos-containing material from any pipe, duct, boiler, tank, reactor, furnace, or any other structural member including, but not limited to roofs, ceilings, floors, or interior or exterior sidewalls.
- *Asbestos Abatement Project* - Work undertaken by a contractor or person that involves the installation, removal, encapsulation, application, or enclosure of any asbestos or asbestos-containing materials, or the disturbance of friable asbestos or cementitious asbestos-containing material or the disturbance of nonfriable material that will become friable with handling, except for work in an owner occupied single family dwelling performed by the owner of such dwelling (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Asbestos-Containing Materials* - materials composed of asbestos of any type in and amount greater than 1 percent by area, either alone or mixed with other fibrous or nonfibrous materials (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Authorized Enforcement Agency* - the State of Delaware, Department of Natural Resources and Environmental Control, which enforces this regulation in accordance with 16 Delaware Code Chapter 7806(1) (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Building Owner* - legal right of possession through lawful title (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Certification* - the authorization issued by the Department of Administrative Services to any contractor, professional services firm, project supervisor, worker, or field technician who has met the minimum requirements established by the Department, permitting the contractor or individual to engage in asbestos abatement. Certification is limited to demonstrated ability to engage in asbestos abatement in accordance with the regulation and recognized standards for asbestos abatement only (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].

- *Certified Asbestos Abatement Contractor Class A (Unlimited)* - any individual, public or private corporation, partnership, association, firm, trust, estate, institution, or other legal entity who has met the minimum requirements established by the Department to perform all types of asbestos abatement within the State of Delaware. Certification is limited to demonstrated ability to engage in asbestos abatement in accordance with this regulation and recognized standards for abatement only (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Certified Asbestos Abatement Contractor Class B (Limited)* - any individual, public, or private corporation, partnership, association, firm, trust, estate, institution, or other legal entity who has met the minimum requirements established by the Department, and has been certified by the Department to perform limited or specialized (roofer, exterior sidings, plumber, high efficiency particulate air vacuum mechanic, or other tradesman who must work in and around asbestos-containing materials in their normal everyday craft) asbestos abatement within the State of Delaware, and whose main business is not asbestos abatement. Certification is limited to demonstrated ability to engage in asbestos abatement in accordance with this regulation and recognized standards for asbestos abatement only (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Certified Asbestos Abatement Project Supervisor Class A (Unlimited)* - an asbestos abatement project supervisor who has met the minimum requirements of the Department, has been certified by the Department to perform all types of asbestos abatement and is designated by the contractor as the contractor's representative, and responsible for the onsite supervision of the removal, encapsulation, enclosure, or repair of asbestos-containing materials. Certification is limited to demonstrated ability to engage in asbestos abatement in accordance with this regulation and recognized standards for asbestos abatement only (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Certified Asbestos Project Supervisor Class B (Limited)* - a project supervisor who has met the minimum requirements of the Department, has been certified by the Department to perform limited or specialized (roofs, exterior sidings, etc.) asbestos abatement for a Certified Asbestos Abatement Contractor (Class B), and is designated by the contractor as the contractor's representative and responsible for the onsite supervision of the removal, encapsulation, enclosure, or repair of asbestos-containing materials. Certification is limited to demonstrated ability to engage in asbestos abatement in accordance with this regulation and recognized standards for asbestos abatement only (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Certified Asbestos Abatement Worker Class A (Unlimited)* - an asbestos abatement worker who has met the minimum requirements of the Department, has been certified by the Department to perform all types of asbestos abatement, and is designated to construct and administer all environmental controls, clean, remove, encapsulate, haul, or dispose of asbestos-containing materials. Certification is limited to demonstrated ability to engage in asbestos abatement in accordance with this regulation and recognized standards for asbestos abatement only (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Certified Asbestos Abatement Worker Class B (Limited)* - an asbestos abatement worker who has met the minimum requirements of the Department, has been certified by the Department to perform limited (roofs, exterior sidings, etc.) asbestos abatement for a Certified Asbestos Abatement Contractor (Class B), and is designated to construct and administer all environmental controls, clean, remove, encapsulate, haul, or dispose of asbestos-containing materials. Certification is limited to demonstrated ability to engage in asbestos abatement in accordance with this regulation and recognized standards for asbestos abatement only (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Certified Field Technician* - a certified individual assigned by a certified professional service firm to and asbestos abatement project (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Certified Professional Services* - (for asbestos) includes design, plans and specifications, bulk and air samples, air monitoring, and lab results (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010; Citation Revised January 2010].

- *Contractor* - for the purpose of the regulation an abbreviation for “asbestos abatement contractor,” Class “A” or “B” (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Encapsulation* - the application of a material to asbestos-containing materials to control the release of asbestos fibers into the air. The material creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant) (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Enclosure* - the construction of airtight walls, ceilings, or other physical barriers between the asbestos materials and the building environment, or around surfaces coated with asbestos-containing materials, or other appropriate scientific procedure as determined by the Department which prevents the release of asbestos materials (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Friable Asbestos-Containing Materials* - any material that contains more than one percent asbestos, by area, that hand pressure can crumble, pulverize, or reduce to powder when dry or is already dry and pulverized (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Removal* - the demolition or stripping of asbestos-containing materials or dislodging of any asbestos fibers from the original location, such as pipe, duct, boiler, tank, reactor, furnace, or structural member including but not limited to ceilings, interior, or exterior sidewalls, or at any other location that asbestos may be found (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Renovation* - the altering of one or more building components to include modifications, changes, or additions (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].
- *Repair* - the restoration of asbestos-containing material that has been damaged. Repair usually consists of the application of duct tape, rewettable glass cloth, canvas, cement, or other suitable material to seal exposed areas where asbestos fibers may be released. Repair of previously encapsulated asbestos-containing materials may include filling damaged areas with nonasbestos substitutes and reencapsulating. Repair of enclosures around asbestos-containing materials is contemplated by this term (DE 16 4400 4475, Section 1) [Citation Revised December 2004; Citation Revised January 2010].

**TOXIC SUBSTANCES MANAGEMENT  
GUIDANCE FOR DELAWARE CHECKLIST USERS**

**REFER TO CHECKLIST ITEMS:**

PCB Management

Missing Checklist Items T1.2.1.DE.

Refer to the U.S TEAM Guide and the DOD Component Supplements for Federal, DOD, and service specific requirements

Asbestos Management

Missing Checklist Items T2.2.1.DE.

Renovation and Demolition of Asbestos-Containing Structures T2.5.1.DE. through T2.5.15.DE.

Asbestos Personnel Training/Certification T2.10.1.DE. and T2.10.2.DE.

Asbestos Disposal T2.15.1.DE.

Asbestos in Schools T2.20.1.DE.

Radon Management

According to *Guidelines for Persons Qualified to Provide Radon Services* of the Delaware Health and Social Services, Division of Public Health, the regulations of the State of Delaware do not apply to persons employed by or contracted by the Federal government to provide radon services.

Missing Checklist Items T3.2.1.DE.

Lead-Based Paint Management

All Facilities T4.1.1.DE. through T4.1.3.DE.

Missing Checklist Items T4.2.1.DE.

**COMPLIANCE CATEGORY:  
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Delaware Supplement**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
January 2010**

**PCB MANAGEMENT**

**T1.2.  
Missing Checklist Items**

**T1.2.1.DE.** Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).

Determine whether any new regulations have been issued since the finalization of the manual.

Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.

Verify that the Federal facility is in compliance with all applicable and newly issued regulations.

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**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
January 2010**

**ASBESTOS  
MANAGEMENT**

**T2.2.  
Missing Checklist Items**

**T2.2.1.DE.** Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).

Determine whether any new regulations have been issued since the finalization of the manual.

Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.

Verify that the Federal facility is in compliance with all applicable and newly issued regulations.

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>T2.5.</b></p> <p><b>RENOVATION AND DEMOLITION OF ASBESTOS CONTAINING STRUCTURES</b></p> <p><b>T2.5.1.DE.</b> Contractors must assign a certified asbestos project supervisor to asbestos abatement projects (DE 16 4400 4475, Section 3.3.5) [Citation Revised January 2010].</p> <p><b>T2.5.2.DE.</b> An Asbestos Abatement Contractor Certificate and a Professional Service Firm Certificate must be conspicuously displayed proximate to, but outside of, the work area for all asbestos projects (DE 16 4400 4475, Section 3.3.9) [Citation Revised January 2010].</p> <p><b>T2.5.3.DE.</b> All contractors or professional services, before removing, repairing, encapsulating, or demolishing material from a structure, must provide the building owner with certificates of laboratory analysis proving that the material is an asbestos-containing material (DE 16 4400 4475, Section 3.3.10) [Citation Revised January 2010].</p> <p><b>T2.5.4.DE.</b> Asbestos Abatement Contractors/ Professional Services Firms</p>	<p>Verify that all asbestos abatement projects, other than Class B work, have an asbestos abatement supervisor assigned to them, and that the Supervisor is present at the project site at all times the asbestos abatement portion of the project is in progress.</p> <p>Verify that a copy of a valid Asbestos Abatement Contractor Certificate and a valid Professional Service Firm Certificate is conspicuously displayed proximate to, but outside of, the work area of any asbestos project.</p> <p>Verify that the contractor or professional service provides the facility with certificates of laboratory analysis proving that the material is an asbestos-containing material before removing, repairing, encapsulating, or demolishing the material from the structure.</p> <p>(NOTE: This checklist item applies to the contractor/firm conducting the asbestos project. Unless a Federal facility is acting as an asbestos contractor, this checklist</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>must maintain records of all asbestos projects performed in the past 30 yr and make them available to the Department or authorized enforcement agency upon request (DE 16 4400 4475, Sections 8.1 and 8.2) [Revised December 2000; Citation Revised January 2010].</p> <p><b>T2.5.5.DE.</b> Asbestos Abatement Contractors/ Professional Services Firms must maintain complete accurate records of all employment medical examinations for employees involved in asbestos abatement for the duration of employment plus 30 yr (DE 16 4400 4475, Section 8.4) [Revised December 2000; Citation Revised January 2010].</p> <p><b>T2.5.6.DE.</b> Asbestos Abatement Contractors/ Professional Services Firms</p>	<p>item will not apply to the Federal facility.)</p> <p>Verify that the Asbestos Abatement Contractor/Professional Services Firm maintains records of all asbestos projects in the past 30 yr and makes them available to the Department or authorized enforcement agency upon request.</p> <p>Verify that the records include the following information:</p> <ul style="list-style-type: none"> <li>- name, address, social security number, and certification number of each job supervisor responsible for the project</li> <li>- name, social security number, and certification number of each certified asbestos abatement worker on the project</li> <li>- a copy of the asbestos abatement contract</li> <li>- a detailed description of how the asbestos was abated</li> <li>- the location and description of the project and estimated amount of asbestos removed or estimated area encapsulated or enclosed at each project</li> <li>- starting and completion dates; if completion date differs from that originally scheduled, include a statement of reason for delay</li> <li>- summary of procedures used to comply with applicable requirements including copies of all notifications</li> <li>- name and address of the asbestos waste disposal site and disposal receipts</li> <li>- name and address of the asbestos waste hauler and hauling receipts</li> <li>- results of all air sampling conducted during the abatement, including personal, area, and clearance samples</li> <li>- copies of all submittals, documents, and notices that are produced or are given to the owner or to any governmental agency</li> <li>- any other information which the Department may require on a form and according to instructions provided by the Department.</li> </ul> <p>(NOTE: This checklist item applies to the contractor/firm conducting the asbestos project. Unless a facility is acting as an asbestos contractor, this checklist item will not apply to the facility.)</p> <p>Verify that the Asbestos Abatement Contractor/Professional Services Firm maintains records of all replacement, annual, and termination of employment medical examinations for the duration of employment plus 30 yr.</p> <p>Verify that the Federal facility is responsible for the cost of medical examinations.</p> <p>(NOTE: This checklist item applies to the contractor/firm conducting the asbestos project. Unless a facility is acting as an asbestos contractor, this checklist item</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>must maintain exposure records for employees involved in asbestos abatement (DE 16 4400 4475, Section 8.5) [Revised December 2000; Citation Revised January 2010].</p> <p><b>T2.5.7.DE.</b> Asbestos Abatement Contractors/ Professional Services Firms must maintain records of all directly employed asbestos project supervisors and certified asbestos workers for 1 yr beyond the last date of employment (DE 16 4400 4475, Section 8.6) [Revised December 2000; Citation Revised January 2010].</p> <p><b>T2.5.8.DE.</b> Asbestos Abatement Contractors/ Professional Services Firms must notify the Department at least 90 days before the end of the 30 yr recordkeeping period (DE 16 4400 4475, Section 8.7) [Revised December 2000; Citation Revised January 2010].</p> <p><b>T2.5.9.DE.</b> Contractors involved in asbestos removal must use required air filtering equipment (DE 7 1100 1121, Section 10.2) [Revised January 2008; Citation</p>	<p>will not apply to the facility.)</p> <p>Verify that the Asbestos Abatement Contractor/Professional Services Firm maintains records of any personnel physical or environmental monitoring for at least 30 yr.</p> <p>Verify that employees have reasonable access to any record required to be maintained, including the employee's exposure to asbestos fibers.</p> <p>Verify that all employees found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the limits, as determined by a qualified laboratory's results, are notified in writing of the exposure as soon as practical but not later than 5 days after the finding.</p> <p>(NOTE: This checklist item applies to the contractor/firm conducting the asbestos project. Unless a facility is acting as an asbestos contractor, this checklist item will not apply to the facility.)</p> <p>Verify that the Asbestos Abatement Contractor/Professional Services Firm maintains records of all directly employed asbestos project supervisors and certified asbestos workers for 1 yr beyond the last date of employment, including:</p> <ul style="list-style-type: none"> <li>- name</li> <li>- address</li> <li>- social security number</li> <li>- training course completing certificate (certificate of course completion)</li> <li>- supervisor's/worker's certificate number.</li> </ul> <p>(NOTE: This checklist item applies to the contractor/firm conducting the asbestos project. Unless a facility is acting as an asbestos contractor, this checklist item will not apply to the facility.)</p> <p>Verify that the Asbestos Abatement Contractor/Professional Services Firm notifies the Department at least 90 days before destroying documents which have been kept for the required 30 yr.</p> <p>Verify that portable negative air handling equipment equipped with a high efficiency particulate air filter is used.</p> <p>Verify that the portable negative air-handling equipment supplies a minimum of 4 air changes per hour and maintain a minimum of 0.02 inch of water (static</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>Revised January 2010; Citation Revised January 2010].</p> <p><b>T2.5.10.DE.</b> Contractors involved in asbestos projects involving demolition must follow general requirements (DE 7 1100 1121, Section 10.3) [Revised January 2008; Citation Revised January 2010].</p> <p><b>T2.5.11.DE.</b> Contractors involved in asbestos projects involving renovation must follow general requirements (DE 7 1100 1121, Section 10.4) [Revised January 2008; Citation Revised January 2010].</p>	<p>pressure) between the work area and the area outside of the work area.</p> <p>Verify that a manometer or similar monitoring device is used to monitor the pressure differential between the work area and the area outside of the work area.</p> <p>Verify that wet removal is used in conjunction with negative air.</p> <p>(NOTE: Roofing and siding materials located on the exterior of a structure are excluded from this requirement.)</p> <p>(NOTE: Alternative asbestos control methods must be approved by the Secretary.)</p> <p>Verify that, before beginning any demolition project, all windows, doors, and other openings with critical seals are covered.</p> <p>Verify that, if only part of a structure or building is to be demolished the following steps are taken:</p> <ul style="list-style-type: none"> <li>- a barrier of plastic sheeting sealed with tape is constructed so as to prevent asbestos from entering any portion of the structure or building not to be demolished</li> <li>- all ducts, including air-conditioning and heat, are sealed.</li> </ul> <p>Verify that, before beginning any renovation project, the following steps are taken:</p> <ul style="list-style-type: none"> <li>- all movable objects are removed</li> <li>- all nonmovable objects are covered with plastic sheeting and taped securely in place</li> <li>- all floors, other large areas such as walls, and all windows are covered with plastic sheeting and sealed with tape</li> <li>- all forced-air ventilation to the work area is shut down and all exhaust and intake ducts are sealed</li> <li>- double barriers of plastic sheeting are constructed at all entrances and exits to the work area</li> <li>- a decontamination area is constructed within the work area for removal of contaminated items and tools</li> <li>- a clean room is provided where workers can obtain protective clothing and respirators before entering the work area.</li> </ul> <p>Verify that the containment area has clear viewing ports of adequate size installed on all accessible walls to permit optimum viewing of the work area.</p> <p>Verify that windows are maintained in a clean and unobscured manner at all times.</p> <p>Verify that the integrity of the containment seals and portable negative air</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>T2.5.12.DE.</b> Contractors involved in asbestos projects must follow general cleanup and monitoring requirements (DE 7 1100 1121, Section 10.5) [Revised January 2008; Citation Revised January 2010].</p>	<p>machine(s) are maintained throughout the project.</p> <p>Verify that, for asbestos projects in which the entire structure or building is demolished, the work area is cleaned until no residue of asbestos material is visible.</p> <p>Verify that, for NESHAP asbestos projects other than demolition, the following cleaning and monitoring guidelines are followed:</p> <ul style="list-style-type: none"> <li>- precleaning is required prior to installing the plastic sheeting in areas where dust, debris or asbestos is visibly present</li> <li>- the decontamination unit and critical seals are in place with the negative air machine(s) installed and operating before precleaning commences</li> <li>- after removal of asbestos materials and cleaning of the work area, a visual inspection is accomplished to ensure that all asbestos-containing or contaminated material has been removed</li> <li>- the final visual inspection and clearance air monitoring is conducted by a Certified Field Technician employed by a Certified Professional Service Firm</li> <li>- aggressive air sampling procedures are used within the work area during clearance air monitoring</li> <li>- if the airborne concentration of asbestos fibers is not less than 0.01f/cc, then clean-up procedures are repeated until compliance is achieved</li> <li>- recleaning includes the use of HEPA vacuums and/or wet-wiping of all surfaces with the portable negative air-handling equipment operating</li> <li>- after recleaning is complete, the sequence of visual inspection and aggressive air sampling is repeated.</li> </ul>
<p><b>T2.5.13.DE.</b> Contractors involved in asbestos projects must comply with general requirements for signs (DE 7 1100 1121, Section 10.6) [Revised January 2008; Citation Revised January 2010].</p>	<p>Verify that DANGER signs are displayed whenever airborne asbestos fibers may be present, in accordance with applicable OSHA Regulations and the National Emission Standards for Hazardous Air Pollutants ("NESHAP").</p>
<p><b>T2.5.14.DE.</b> Contractors involved in asbestos projects must comply with general asbestos wetting requirements (DE 7 1100 1121, Section 10.7.1) [Citation Revised January 2008].</p>	<p>Verify that the contractor wets all asbestos material to be stripped or removed with a water solution containing a surfactant which will adequately wet the material.</p>

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Delaware Supplement**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
January 2010**

**T2.5.15.DE.** Contractors involved in non-NESHAP asbestos projects must follow general guidelines (DE 7 1100 1121, Section 10.9 and 10.10) [Revised January 2008; Citation Revised January 2010].

Verify that for asbestos projects, not including renovation or demolition, contractors follow the following guidelines:

- wet all asbestos
- seal the work area and use appropriate work practices to minimize the dispersal of particulate asbestos
- leave no visible residue of asbestos after completing the project
- seal asbestos waste in appropriate container
- dispose of asbestos at a site or landfill approved by the Department in a manner that prevents asbestos from becoming airborne.

(NOTE: The Department may, on a case by case basis, approve an alternative procedure for the control of emission from an asbestos project provided the person submits the alternative procedure to the Department in writing.)

**COMPLIANCE CATEGORY:  
TOXIC SUBSTANCES MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>T2.10.</b></p> <p><b>ASBESTOS PERSONNEL TRAINING</b></p> <p><b>T2.10.1.DE.</b> [Deleted December 2000].</p> <p><b>T2.10.2.DE.</b> All asbestos project workers and supervisors must have a copy of their Department certification in their possession at all times during work on an asbestos project (DE 16 4400 4475, Section 12.2 and 13.02) [Citation Revised January 2010].</p>	<p>(NOTE: Checklist item not applicable to Federal facilities.)</p> <p>Verify that asbestos project workers and supervisors have a copy of their Departmental certification whenever they are working/supervising at an asbestos project.</p>

**COMPLIANCE CATEGORY:  
TOXIC SUBSTANCES MANAGEMENT  
Delaware Supplement**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
January 2010**

**T2.15.**

**ASBESTOS DISPOSAL**

**T2.15.1.DE.** Contractors involved in an asbestos project must dispose of asbestos waste according to general guidelines (DE 7 1100 1121, Section 10.7.2) [Citation Revised January 2008; Citation Revised January 2010].

Verify that the contractor deposits all asbestos-containing waste, sealing tape, plastic, mop heads, sponges, filters, and disposable clothing in a clearly labeled, sealed container.

**COMPLIANCE CATEGORY:  
TOXIC SUBSTANCES MANAGEMENT  
Delaware Supplement**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
January 2010**

**T2.20.**

**ASBESTOS IN SCHOOLS**

**T2.20.1.DE.** Asbestos abatement in schools must be performed by a contractor or professional service qualified under the Asbestos Hazard Emergency Response Act (DE 16 4400 4475, Section 3.3.11 [Citation Revised January 2010]).

Verify that contractors or professional services performing asbestos abatement in a school is certified under the Asbestos Hazard Emergency Response Act.

**COMPLIANCE CATEGORY:  
TOXIC SUBSTANCES MANAGEMENT  
Delaware Supplement**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
January 2010**

**RADON GAS**

**T3.2.  
Missing Checklist Items**

**T3.2.1.DE.** Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).

Determine whether any new regulations have been issued since the finalization of the manual.

Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.

Verify that the Federal facility is in compliance with all applicable and newly issued regulations.



**COMPLIANCE CATEGORY:  
TOXIC SUBSTANCES MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<b>LEAD BASED PAINT</b>	
<b>T4.1. All Facilities</b>	
<b>T4.1.1.DE.</b> [Deleted December 1998].	(NOTE: Delaware has promulgated regulations that replace these requirements.)
<b>T4.1.2.DE.</b> [Deleted December 1998].	(NOTE: Delaware has promulgated regulations that replace these requirements.)
<b>T4.1.3.DE.</b> Persons engaged in lead-based paint activities must be certified (DE 16 4400 4459, Section 3.1) [Added December 1998; Citation Revised January 2008; Citation Revised January 2010].	Verify that no individual or firm performs any lead-based paint activity unless certified to perform that activity.

**COMPLIANCE CATEGORY:  
TOXIC SUBSTANCES MANAGEMENT  
Delaware Supplement**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
January 2010**

**LEAD BASED PAINT**

**T4.2.  
Missing Checklist Items**

**T4.2.1.DE.** Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).

Determine whether any new regulations have been issued since the finalization of the manual.

Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.

Verify that the Federal facility is in compliance with all applicable and newly issued regulations.

## SECTION 12

### WASTEWATER MANAGEMENT

#### Delaware Supplement, January 2010

This section covers the state requirements for Wastewater Management and is intended to supplement the U.S. TEAM Guide. Refer to the U.S. TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

#### Definitions

- *25-Year, 24-Hour Rainfall Event* - the maximum 24-hour precipitation event with a probable recurrence interval of once in 25 years, as defined by the National Weather Service Technical Paper Number 40, "Rainfall Frequency Atlas of the United States", equivalent to regional or state rainfall probability information developed there from, or a rain event greater than 5.7 inches for New Castle county, 5.9 for Kent county and 6.3 for Sussex county (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *100-Year, 24-Hour Rainfall Event* - the maximum 24-hour precipitation event with a probable recurrence interval of once in 100 years, as defined by the National Weather Service Technical Paper Number 40, "Rainfall Frequency Atlas of the United States", equivalent to regional or state rainfall probability information developed there from, or a rain event greater than 7.3 inches for New Castle county, 7.6 for Kent county and 7.9 for Sussex county (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Agricultural Land* - land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture (DE 7 7000 71 03, Part III, Section 103) [Revised December 1999; Citation Revised January 2010].
- *Agricultural Land Management Practices* - those methods and procedures generally accepted by the Conservation Districts and used in the cultivation of land in order to further crop and livestock production and conservation of related soil and water resources (DE 7 5000 5101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Animal Feeding Operation or AFO* - a lot or facility (other than an aquatic animal production facility) where the animals have been, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and the animal confinement areas do not sustain crops, vegetation, forage growth or post-harvest residues in the normal growing season. Two or more AFOs under common ownership are considered to be a single AFO for the purposes of determining the number of animals in an operation, if the production areas adjoin each other or if the AFOs use a common area or system for the disposal of wastes. (For example, facilities or production areas that are commonly managed, co-located and share manure storage systems are considered a single AFO. A poultry operation with many facilities in a single location or address is deemed a single AFO) (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Animal Waste Management Plan* - a plan written by a certified nutrient management consultant that documents and recommends a combination of conservation practices and management measures for the handling, storage, treatment and management of any or all of the following for use on cropland and pastureland: animal wastes, manures, composted dead animals, or process wastewater from any animal feeding operation (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].

- *Bulk Storage Facility* - any facility used for the express purpose of storage of 40,000 or more gallons of any hazardous material, petroleum product or liquid waste but shall not include Aboveground Storage Tanks as defined in 7 Del.C. Ch. 74A and the Delaware Regulations Governing Aboveground Storage Tanks (DE 7 7000 7201, Section 2) [Revised December 2003; Revised December 2008].
- *Bulk Transfer Facility* - any facility used for the express purpose of transfer of 20,000 gpd or more of any hazardous material, petroleum product, or liquid waste to or from any carrier such as, but not limited to, ships, barges, trains, or trucks (DE 7 7000 7201, Section 2) [Citation Revised December 2003; Citation Revised December 2008].
- *Collection* - any action involved in the gathering or subsequent placement of sludge, treated sludge, or any other product containing these materials, into a vehicle, container or any other vessel for transportation to some other location (DE 7 7000 7103, Part III, Section 103) [Revised December 1999; Citation Revised January 2010].
- *Concentrated Animal Feeding Operation or CAFO* - is an animal feeding operation that is subject to the terms and conditions of these regulations. A CAFO is designated by the confinement of the number of animals specified in Section 9.4.4 of these regulations (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Crops for Direct Human Consumption* - crops that are consumed by humans without processing (DE 7 7000 7103, Part III, Section 103) [Revised December 1999; Citation Revised January 2010].
- *Delaware Nutrient Management Commission, DNMC, or Commission* - the Commission established by 3 Del.C. § 22 20 "or its designee" (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Department* - State of Delaware Department of Natural Resources and Environmental Control (DE 7 7000 7201, Section 2) [Citation Revised December 2003; Revised December 2008].
- *Discharge of a Pollutant* - the addition of any pollutant or combination of pollutants, to state waters or contiguous zones, or the ocean, from any source or activity other than a vessel or other floating craft when being used as a means of transportation and in compliance with § 312 of the Act. This definition includes additions of pollutants into State waters from (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised December 2008]:
  1. Surface runoff that is collected or channeled by man
  2. Discharges through pipes, sewers, and other conveyances which do not lead to a treatment works
  3. Discharges through pipes, sewers, or other conveyances, leading into a treatment works other than a publicly owned treatment works (POTW).
- *Disposal* - the discharge, deposit, injection, dumping, spilling, leaking, or replacing of sludge, any material containing sludge, or any constituent of it on or in the land, the air or any waters, including ground water, and includes any method of sludge utilization that involves reuse of nutrients in the sludge at greater than agronomic rates (this excludes land reclamation) (DE 7 7000 7103, Part II I, Section 103) [Revised December 1999; Citation Revised January 2010].
- *Distribute* - to barter, sell, offer for sale, consign, furnish, provide, or otherwise supply a material as part of a commercial enterprise or a giveaway program (DE 7 7000 7103, Part II I, Section 103) [Citation Revised January 2010].
- *Drainage Ditch* - a constructed or reconstructed watercourse with a drainage area less than 800 acres. A constructed or reconstructed watercourse with a drainage area greater than 800 acres is considered a stream (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].

- *Effluent Limitation* - any restrictions, prohibitions, or permit requirements established under State or Federal law, including but not limited to, standards of performance for new sources, best management practices or BMPs, effluent standards and ocean discharge criteria on the quantities, rates, and concentrations of the chemical, physical, biological, or other constituents discharged into State waters (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Erosion and Sediment Control* - the control of solid material, both mineral and organic, during a land disturbing activity to prevent its transport out of the disturbed area by means of air, water, gravity, or ice (DE 7 5000 5101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Existing On-Site Wastewater Treatment and Disposal System* - any installed on-site wastewater treatment and disposal system constructed in conformance with the rules, laws and local ordinances in effect at the time of construction, or which would have conformed satisfactorily with system design provided for in Department Regulations (DE 7 7000 7101, Section 2) [Added December 2008].
- *General Permit* - an authorization granted to a category of point sources discharges pursuant to § 9.0 of the Regulations Governing the Control of Water Pollution (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Ground Water* - any water naturally found under the surface of the earth (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Handling* - any way in which sludge, treated sludge, or any other product containing these materials is dealt with, other than collection, burning, storage, treatment, land application, disposal, or transportation, and including distribution of treated sludge (DE 7 70 00 71 03, Part III, Section 1 03) [Citation Revised January 2010].
- *Hazardous Material* - any element or compound which when discharged on to land or into surface or groundwater, presents an imminent and substantial danger to public health and welfare, aquatic organisms, including but not limited to, fish, shellfish, terrestrial life, shorelines and beaches (DE 7 7000 7201, Section 2) [Revised December 2003; Citation Revised December 2008].
- *Label* - the display of a label written, printed, or graphic material on the immediate container or information accompanying the material (DE 7 7000 7103, Part III, Section 103) [Citation Revised January 2010].
- *Land Application* - the placement of sludge, treated sludge, or any other product containing these materials within 2 ft below the surface of land used to support vegetative growth (DE 7 7000 7103, Part III, Section 103) [Citation Revised January 2010].
- *Land Disposal of Sludge* - application of sludge at rates higher than acceptable for agricultural utilization (DE 7 7000 7103, Part III, Section 103) [Citation Revised January 2010].
- *Land Disturbing Activity* - a land change or construction activity for residential, commercial, industrial, and institutional land use which may result in soil erosion from water or wind or movement of sediments or pollutants into state waters or onto lands in the state, or which may result in accelerated stormwater runoff including, but not limited to, clearing, grading, excavating, transporting, and filling of land (DE 7 5000 5101, Section 2) [Revised January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Land Reclamation* - the application of sludge at a rate not greater than necessary to support and maintain immediate revegetation. Application may be in multiple cycles prior to establishment of vegetation, but must be accomplished within a single short-term operational period (DE 7 7000 7103, Part III, Section 103) [Citation Revised January 2010].

- *Land Treatment* - a technology for the intimate mixing or dispersion of wastes into the upper zone of the plant-soil system with the objective of microbial stabilization, immobilization, selective dispersion, or crop recovery leading to an environmentally acceptable assimilation of the waste (DE 7 7000 7103, Part III, Section 103)) [Citation Revised January 2010].
- *Landfill* - a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials which has been lined with manmade materials or remains unlined and which is designed to hold an accumulation of solid wastes (DE 7 7000 7103, Part III, Section 103) [Citation Revised January 2010].
- *Liquid Manure* - usually less than 8.0 percent solids. Wash water, runoff, precipitation, and so forth are added, if needed to dilute the manure and lower the solids content (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Liquid Manure Handling System* - an operation where animals are raised outside with swimming areas or ponds, or with a stream running through an open lot, or in confinement buildings where water is used to flush the manure to a lagoon, pond, or some other liquid storage structure (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Manure* - defined to include fecal and urinary defecations of livestock and poultry; may include spilled feed, bedding, soil, compost and raw materials if commingled with manure. "NPDES" (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits for the discharge of any pollutant or combination of pollutants and imposing and enforcing pretreatment and sludge requirements pursuant to §307, 402, 318, and 405 of the Act. (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Revised December 2008].
- *Notice of Intent (NOI)* - the form used to serve as a notification of the intention of the facility identified on the form to adhere to the provisions of The Concentrated Animal Feeding Operation Regulations (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Nutrient Management Plan or Plan* - a plan by a certified nutrient consultant to manage the amount, placement, timing and application of nutrients in order to reduce nutrient loss or runoff and to maintain the productivity of soil when growing agricultural commodities and turf grass (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Nutrients* - nitrogen, nitrate, phosphorus, organic matter and any other elements necessary for or helpful to plant growth (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Person* - an individual, trust, firm, joint stock company, federal agency, corporation (including a government corporation), partnership, association, state, municipality, commission, political subdivision of a state, or any interstate body (DE 7 7000 7103, Part III, Section 103) [Revised January 2010].
- *Person* - any State or federal agency, individual, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, municipality or other political subdivision of this State, any interstate body or any other legal entity (DE 7 5000 5101) [Added December 2008].
- *Person* - any individual, partnership, association, fiduciary, corporation, or any organized group of persons, whether incorporated or not (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *PFRP* - process to further reduce pathogens (DE 7 7000 7103, Part III, Section 103). [Revised January 2010]

- *Point Source* - any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (DE 7 7000 7201, Section 2) [Revised December 2003; Citation Revised December 2008].
- *Pollutant* - any substance, radioactive material, or waste heat which causes or contributes to, or may cause or contribute to, pollution. The term includes dredged spoil and other dredged materials, fill material, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, hydrocarbons, oil, product chemicals, and industrial, municipal, agricultural and other wastes discharged into water (DE 7 7000 7201, Section 2) [Revised December 2003; Citation Revised December 2008].
- *Pollutant* - any substance, which causes or contributes to, or may cause or contribute to, pollution (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Process Wastewater* - any process-generated wastewater directly or indirectly used in the operation of an AFO (such as spillage or overflow from animal or poultry watering systems; washing, cleaning, or flushing pens, barns, manure pits; direct contact swimming, washing, or spray cooling of animals; and dust control) or any precipitation (rain or snow) which comes into contact with any manure or litter, bedding, or any other raw material or intermediate or final material or product used in or resulting from the production of animals or poultry or direct products (e.g., milk, eggs) (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Production Area* - that part of an AFO that includes the animal confinement area, the manure storage area, the raw materials storage area and the waste containment areas, also includes egg washing or processing facility and any area used in the storage, handling, treatment or disposal of mortalities (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Revised December 2008].
- *PSRP* - process to significantly reduce pathogens (DE 7 7000 7103, Part III, Section 103) [Revised January 2010].
- *Responsible Personnel* - a foreman or superintendent who is in charge of onsite clearing and land disturbing activities for sediment and stormwater control associated with a construction project (DE 7 5000 5101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Secondary Treatment* - any combination of unit processes that will consistently remove 85 percent or more of the organic and suspended material in domestic sewage and produce an effluent of sufficient quality to satisfy the requirements of Section 7 of these regulations (DE 7 7000 7201, Section 2) [Revised December 2003; Citation Revised December 2008].
- *Secretary* - the Secretary of the Delaware Department of Agriculture or his/her designee (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *Sediment and Stormwater Management Plan* - a plan for the control of soil erosion, sedimentation, stormwater quantity, and water quality impacts resulting from any land disturbing activity (DE 7 5000 5101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Sewage* - the water-carried human or animal wastes from septic tanks, water closets, residences, buildings, industrial establishments or other places together with such groundwater infiltration, subsurface water, storm inflow, admixture of industrial wastes, or other wastes as may be present (DE 7 7000 7201, Section 2) [Revised December 2003; Citation Revised December 2008].

- *Sewage Sludge* - sludges which derive in whole or in part from sewage (DE 7 7000 7103, Part III, Section 103) [Citation Revised January 2010].
- *Slow Rate Land Treatment* - the advanced treatment of wastewater by irrigation onto land to support vegetative growth. These systems are designed and operated so there is no direct discharge to surface waters. The irrigated wastewater evaporates and transpires to the atmosphere or enters the groundwater through percolation. Organic constituents in the wastewater are stored in the soil or stabilized by soil bacteria. Organic and ammonia nitrogen are taken up by plants, nitrified by soil bacteria, lost to the atmosphere through denitrification, and leached groundwater. Phosphorus and other constituents are adsorbed in the soil profile and/or taken up by plants. Properly designed and operated wastewater irrigation systems produce a percolate water of high quality and thus protect ground and surface water resources (DE 7 7000 7 103, Part II, Section 40.1.3) [Added January 2010].
- *Sludge* - the accumulated semi-liquid suspension, settled solids, or dried residue of these solids that is deposited from liquid waste in a municipal or industrial wastewater treatment plant. Septage is included as a sludge (DE 7 7000 7103, Part III, Section 103) [Revised December 1999; Citation Revised January 2010].
- *Sludge Generator* - a person who owns or operates a facility that receives or processes wastewater and produces or otherwise generates sludge. Does not include the owner or operator of a septic tank, chemical toilet, privy, or holding tanks used for the collection of sewage (DE 7 7000 71 03, Part III, Section 103) [Citation Revised January 2010].
- *Sludge Utilization* - the collection, handling, burning, storage, treatment, land application, disposal, or transportation of sludge (DE 7 7000 7103, Part III, Section 103) [Citation Revised January 2010].
- *State Nutrient Management Program or SNMP* - all the nutrient management program elements developed by the Commission, whether or not reduced to rules or regulations (DE 7 70 00 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].
- *State Waters or Waters of the State* - all water, on the surface and under the ground, wholly or partially within, or bordering the State, or within its jurisdiction including but not limited to (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised December 2008]:
  1. Waters which are subject to the ebb and flow of the tide including, but not limited to, estuaries, bays and the Atlantic Ocean;
  2. All interstate waters, including interstate wetlands;
  3. All other waters of the State, such as lakes, rivers, streams (including intermittent and ephemeral streams), drainage ditches, tax ditches, creeks, mudflats, sand flats, wetlands, sloughs, or natural or impounded ponds;
  4. All impoundments of waters otherwise defined as waters of the State under this definition;
  5. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in the above four statements.
  6. Waste and storm water treatment systems or waste storage structures including, but not limited to, treatment ponds or lagoons designed to meet the requirements of the Act (other than cooling ponds which otherwise meet the requirements of this definition) are not "State waters" or "waters of the State." This exclusion applies only to manmade bodies of water, which neither were originally created in waters of the State nor resulted from the impoundment of waters of the State.
- *Storage* - the interim containment of sludge, treated sludge, or any other product containing these materials after removal from the wastewater and before disposal or utilization (DE 7 7 000 71 03, Part III, Section 103) [Citation Revised January 2010].



- *Stormwater* - the runoff of water from the surface of the land resulting from precipitation, snow, or ice melt (DE 7 5000 5101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Stormwater Management* - for water quantity control, a system of vegetative, structural, and other measures that may control the volume and rate of stormwater runoff which may be caused by land disturbing activities or activities upon the land. For water quality control, a system of vegetative, structural, and other measures that control adverse effects on water quality that may be caused by land disturbing activities or activities upon the land (DE 7 5000 5101, Section 2) [Citation Revised January 2007; Citation Revised December 2008].
- *Transportation* - the offsite movement of sludge, treated sludge, or any other product containing these materials by air, rail, highway, pipeline, or water (DE 7 7000 7103, Part III, Section 103) [Citation Revised January 2010].
- *Treatment* - a process which alters, modifies, or changes the biological, physical, or chemical characteristics of sludge or liquid waste (DE 7 7000 7103, Part III, Section 103) [Citation Revised January 2010].
- *Wastewater* - water-carried waste from septic tanks, water closets, residences, buildings, industrial establishments, or other places, together with such groundwater infiltration, subsurface water, and mixtures of industrial wastes or other wastes as may be present (DE 7 7000 7101, Section 2) [Added December 2008].
- *Wastewater Utility* - any person who engages in the business of providing wastewater disposal and related services to the public for a fee, charge, or other remuneration in the State of Delaware (DE 7 7000 7101, Section 2) [Added December 2008].
- *Water Quality Standard* - any rule or limit established by the Secretary of the Department of Natural Resources and Environmental Control which consists of a designated use or uses for waters of the State and the water quality criteria for such waters based upon such designated uses (DE 7 7000 7201, Section 9.4.3) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].

**WASTEWATER MANAGEMENT  
GUIDANCE FOR DELAWARE CHECKLIST USERS**

**REFER TO CHECKLIST ITEMS:**

Missing Checklist Items	WA.2.1.DE.
Discharges to the Environment	WA.5.1.DE.
Permits	WA.10.1.DE. through WA.10.4.DE.
State Permits	WA.15.1.DE.
Treatment Works	WA.20.1.DE. through WA.20.12.DE.
Other Discharges and Dischargers	WA.95.1.DE. through WA.95.6.DE.
Individual Sewage Systems	WA.100.1.DE. through WA.100.12.DE.
Land Application of Sludge	
General	WA.105.1.DE. through WA.105.10.DE.
Vectors and Pathogens	WA.110.1.DE. and WA.110.2.DE.
Notifications	WA.115.1.DE. through WA.115.3.DE.
Monitoring	WA.120.1.DE.
State-Specific Requirements	WA.130.1.DE. through WA.130.4.DE.
Surface Disposal of Sludge	
General	[Deleted]
State-Specific Requirements	WA.145.1.DE.
Watershed Protection Programs/Recharge Programs	WA.150.1.DE. through WA.150.3.DE.

**WASTEWATER MANAGEMENT  
GUIDANCE FOR DELAWARE APPENDIX USERS**

**REFER TO APPENDIX NUMBER:**

**REFER TO APPENDIX TITLES:**

12-1	Soil Monitoring Requirements for Slow Rate Land Treatment Systems
12-2	Minimum Effluent Limitations for Industrial Wastewater
12-3	Site Specific Management Requirements for CAFOs Operating Under General Permits

<b>COMPLIANCE CATEGORY: WASTEWATER MANAGEMENT Delaware Supplement</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.2.</b></p> <p><b>MISSING CHECKLIST ITEMS</b></p> <p><b>WA.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

**COMPLIANCE CATEGORY:  
WASTEWATER MANAGEMENT  
Delaware Supplement**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.5.</b></p> <p><b>DISCHARGES TO THE ENVIRONMENT</b></p> <p><b>WA.5.1.DE.</b> Certain discharges are prohibited (DE 7 70 00 7201, Sections 3.2.1 through 3. 2.7) [ Revised December 2003 ; Citation Revised J anuary 2007 ; Citation R evised D ecember 2008; Revised January 2010].</p>	<p>Verify that the following activities do not occur:</p> <ul style="list-style-type: none"> <li>- discharges of liquid waste from an existing septic tank or other system where the liquid waste flows onto the ground surface or into surface water</li> <li>- operation of any existing pipeline or bulk transfer facility which causes or contributes to the discharge of pollutants on to the ground surface or into surface or groundwater</li> <li>- the discharge into any waters or any drainage ditch in the State any garbage, refuse, dead animal, poultry, trash, car ton, bottle, container, box lumber, timber, paper, or light material or other solid waste</li> <li>- any discharge of untreated or inadequately treated vessel sewage, by any means, into or upon the waters of any marina, boat docking facility or tidal water of the State.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.10.</b></p> <p><b>PERMITS</b></p> <p><b>WA.10.1.DE.</b> Land treatment systems with underdrains must meet NPDES permitting requirements ( DE 7 7000 7103, Section 58.22) [Revised January 2010].</p> <p><b>WA.10.2.DE.</b> Point source dischargers must apply for a NPDES permit ( DE 7 7000 7201, Sections 6.3 and 6.10) [Added December 2003 ; Citation Revised January 2007; Citation Revised December 2008 ; Citation Revised January 2010].</p>	<p>Verify that land treatment systems incorporating drainage improvements which result in a point discharge to surface waters have a valid NPDES Permit.</p> <p>Verify that the terms and conditions of the permit have been met.</p> <p>(NOTE: This NPDES permit is in place of a Delaware Land Treatment System (LTS) Permit. The NPDES Permit will include a special condition requiring submission and approval of a Plan of Operation and Management as required for the Delaware LTS Permit (see WA.20.1.DE.).)</p> <p>Verify that any person who discharges or proposes to discharge pollutants from any point source subject to NPDES program requirements and who does not have an effective permit or equivalent authorization from the Secretary, submits a complete application to the Department in accordance with this section.</p> <p>(NOTE: Applications are not required for NPDES permit coverage under the General Permit Program.)</p> <p>Verify that persons currently discharging who have:</p> <ul style="list-style-type: none"> <li>- existing permits, submit a new NPDES application when facility expansions, production increases, or process modifications will: <ul style="list-style-type: none"> <li>- result in significantly new or substantially increased discharges of pollutants or a significant change in the nature of the discharge of pollutants, or</li> <li>- violate the terms and conditions of the existing permit</li> </ul> </li> <li>- expiring permits, submit new applications at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Secretary.</li> </ul> <p>Verify that any person proposing one of the following submits an application for a NPDES permit at least 180 days prior to commencing the new, changed or increased discharge or the erection, construction, facility expansion, increased production or employment of new processes associated with such application:</p> <ul style="list-style-type: none"> <li>- an increased discharge or a change in the nature of the permitted discharge</li> <li>- a new discharge</li> <li>- a new source.</li> </ul> <p>Verify that any application for a NPDES permit to discharge any pollutant or</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.10.3.DE.</b> NPDES permit holders must meet reporting</p>	<p>combination of pollutants, including sewage, industrial wastes, or other wastes, to State waters is accompanied by plans, specifications, maps, quantitative data and such other relevant information as may be required to describe the nature of the activity(ies) generating the proposed discharge(s) and the characteristics thereof.</p> <p>(NOTE: At a minimum, the applicant will provide the information outlined in 40 CFR 122.21 or 122.26, as appropriate.)</p> <p>Verify that where the applicant or permittee becomes aware that he failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Secretary, he submits such facts or information as soon as possible.</p> <p>(NOTE: The following discharges do not require a NPDES permit:</p> <ul style="list-style-type: none"> <li>- any discharge of sewage from vessels, effluent from properly functioning marine engines, laundry, shower, and galley sink wastes, or any other discharge incidental to the normal operation of a vessel (this exclusion does not apply to rubbish, trash, garbage, or other such materials discharged overboard; nor to other discharges when the vessel is operating in a capacity other than as a means of transportation such as when a vessel is being used as an energy or mining facility, a storage facility, or a seafood processing facility or when secured to a storage facility or a seafood processing facility, or is secured to the bed of the ocean, contiguous zone, or State waters for the purpose of mineral or oil exploration or development)</li> <li>- discharges of dredged or fill material that are regulated under Section 404 of the Clean Water Act</li> <li>- the introduction of sewage, industrial wastes or other pollutants into a treatment works by indirect dischargers, unless the Secretary determines that such permit is necessary to protect the treatment works' interests and to ensure compliance with the Act, with 7 Delaware Code, Chapter 60, or with these regulations</li> <li>- any discharge in compliance with the instructions of an on-scene coordinator pursuant to 40 CFR Part 300 (The National Oil and Hazardous Substances Pollution Contingency Plan) or 33 CFR Part 153.10(e) (Pollution by Oil and Hazardous Substances)</li> <li>- return flows from irrigated agriculture</li> <li>- any introduction of pollutants from non-point source agricultural and silvicultural activities, including storm water runoff from orchards, cultivated crops, pastures and forest lands, but not discharges from aquaculture or aquatic animal production facilities that produce 2,000 lbs or more harvest weight fish or aquatic animals per year, discharges to aquaculture projects, discharges from concentrated animal feeding operations (CAFOs) or discharges from silvicultural point sources.)</li> </ul> <p>Verify that, in addition to the reporting requirements specified in the permit, all existing manufacturing, commercial, mining, and silvicultural dischargers holding</p>

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<p>requirements for toxic substances (DE 7 7000 7201, Section 6. 44) [ Added December 2003 ; Citation Revised January 2007 ; Citation Revised December 2008].</p> <p><b>WA.10.4.DE.</b> Discharges to surface or ground water must meet permit requirements (DE 7 7000 7201, Sections 3.2) [Added December 2003 ; Citation Revised January 2007; Citation Revised December 2008].</p>	<p>NPDES permits notify the Secretary as soon as they know or have reason to believe:</p> <ul style="list-style-type: none"> <li>- that any activity has occurred or will occur which would result in the discharge of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:" <ul style="list-style-type: none"> <li>- one hundred micrograms per liter (100 microg/L)</li> <li>- two hundred micrograms per liter (200 microg/L) for acrolein and acrylonitrile</li> <li>- five hundred micrograms per liter (500 microg/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol</li> <li>- one milligram per liter (1 mg/L) for antimony</li> <li>- five (5) times the maximum concentration value reported for that pollutant in the permit application</li> <li>- a level established by the Secretary</li> </ul> </li> <li>- that they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.</li> </ul> <p>(NOTE: The Secretary may include in a permit a " notification level" which exceeds the notification levels cited above, upon a petition from the permittee or on the Secretary's initiative. This new notification level may not exceed the level which can be achieved by the technology-based treatment requirements appropriate to the permittee.)</p> <p>Verify that no activity causes or contributes to the discharge of a pollutant to any surface water or groundwater except as authorized pursuant to a permit or equivalent authorization, issued by the Secretary or as prescribed by these regulations (i.e., general permits).</p> <p>Verify that no person constructs, installs, replaces, modifies, or uses any equipment or device or other article which is intended to control the discharge of pollutants into surface water or groundwater except as authorized pursuant to a permit or equivalent authorization issued by the Secretary or as prescribed by these regulations (i.e., general permits).</p> <p>Verify that there is no discharge of any pollutant from a point source into surface or ground water, directly or indirectly, except as authorized pursuant to a permit granted under these regulations, unless such discharge is specifically exempted from such permit regulations.</p> <p>(NOTE: The following activities do not require a permit under these regulations:</p> <ul style="list-style-type: none"> <li>- existing ditches used for the express purpose of draining water from the surface of the land</li> <li>- storm water discharges not regulated under the NPDES or the General Permit Program (see WA.10.2.DE. for details)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
	<ul style="list-style-type: none"> <li>- application of organic or inorganic fertilizer to the land for agricultural or horticultural purposes where accomplished using recognized methods in accordance with all applicable regulatory requirements ( e.g., the Department's Guidance and Regulations Governing the Land Treatment of Wastes, nutrient management regulations promulgated by the Secretary of Agriculture, and so forth)</li> <li>- transportation of organic or inorganic fertilizers</li> <li>- application of herbicides, pesticides, and plant growth regulators for agricultural or horticultural purposes</li> <li>- the sewer connection from any single family or multi-family dwelling, office building, store or other commercial building which generates less than 2,000 gallons of liquid waste per day, provided the connection will be made prior to use and to a sewer system that has a permit for discharge</li> <li>- plowing or cultivating for agricultural or horticultural purposes</li> <li>- irrigation practices utilizing uncontaminated surface or groundwater for agricultural or horticultural purposes</li> <li>- acid cleansing of masonry, provided such activity does not constitute a point source discharge of a pollutant to State waters or involve the point source discharge of a pollutant to State waters (such cases require a NPDES permit under Section 6)</li> <li>- movement or regrading of less than 5 acres of earth for building excavation, foundations or footings</li> <li>- construction and operation of potable water transmission lines and storage tanks</li> <li>- construction, installation or operation of any pipe or system of pipes which does not convey liquid waste and which is located wholly on the property of the owner where processing, manufacturing, commercial or business operations occur</li> <li>- replacement of any pollution control equipment or facility if a permit authorizing the construction or installation of that pollution control equipment or facility had been issued previously, and if the replacement is equivalent to what was originally designed and constructed or installed</li> <li>- discharges incidental to the normal operation of a vessel, excluding sewage, when such vessel is operating as a means of transportation.)</li> </ul> <p>(NOTE: The following activities do not require a permit under these regulations unless the Department determines that the activity is a source of pollutants to State waters, involves a discharge of pollutants to State waters or has the potential to discharge pollutants to waters of the State. To qualify for the exclusion herein, either the activity will be conducted in such a way as to preclude the discharge of pollutants or the quantity and quality of the discharge or the constituents in the discharge are such that the discharge will not alter the physical, chemical, biological or radiological properties of the receiving waters:</p> <ul style="list-style-type: none"> <li>- condensate from any cooling system used for air temperature control</li> <li>- steam trap blowdown from any steam tracing system</li> <li>- feedlot or animal feeding operations that do not meet the criteria outlined in Section 6.61 of these regulations or Appendix B of 40 CFR Part 122</li> <li>- aquaculture or aquatic animal production facilities producing less than 2,000</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
	<ul style="list-style-type: none"> <li>lbs harvest weight fish or aquatic animals per year</li> <li>- well or pump testing</li> <li>- pipe and tank cleaning operations</li> <li>- dewatering of construction site(s) or wellpointing</li> <li>- the operation of a quarry, gravel pit or borrow pit operation</li> <li>- water line flushing</li> <li>- landscape or lawn irrigation</li> <li>- diverted stream flows</li> <li>- uncontaminated ground water infiltration to separate storm sewers</li> <li>- discharges from potable water sources</li> <li>- discharges from foundation drains</li> <li>- individual residential car/vehicle washing</li> <li>- dechlorinated backwash from a filter used for an individual dwelling swimming pool</li> <li>- snow and ice removal</li> <li>- salting and sanding of roadways for the express purpose of snow and ice removal</li> <li>- discharges or flows from emergency fire fighting activities.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.15.</b></p> <p><b>STATE PERMITS</b></p> <p><b>WA.15.1.DE.</b> Specific land uses must meet sediment and stormwater approval requirements ( DE 7 5000 5101, Sections 1 .2, 3 .1.1 through 3, and 8. 1) [Citation Revised January 2007 ; Citation Revised December 2008].</p>	<p>Verify that land changes or construction activities for residential, commercial, silvicultural, industrial, or institutional land use which are not exempted or waived have sediment and stormwater approvals.</p> <p>(NOTE: The following activities are exempt from both sediment and stormwater - management requirements:</p> <ul style="list-style-type: none"> <li>- agricultural land management practices, unless the local Conservation District or the Department determines that the land requires a new or updated soil and water conservation plan and the owner or operator has refused to apply for the development of a plan or implement a developed plan</li> <li>- developments or construction that disturb less than 5000 ft<sup>2</sup></li> <li>- land development activities which are regulated under specific state or Federal laws which provide for managing sediment control and stormwater runoff, such as specific permits required under the NPDES permit.)</li> </ul> <p>Verify that no land is disturbed without an approved sediment and stormwater management plan from the appropriate plan approving agency.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.20.</b></p> <p><b>TREATMENT WORKS</b></p> <p><b>WA.20.1.DE.</b> Slow rate land treatment systems must meet permitting and operation requirements ( DE 7 7000 7103, Part II, Section 40.1, 54.0 and 56.8.3) [Revised January 2010].</p> <p><b>WA.20.2.DE.</b> Slow rate land treatment systems must meet reporting and noncompliance requirements ( DE 7 7000 7103, Part II, Sections 56.8.6 and 56. 9) [Citation R evised January 2010].</p>	<p>(NOTE: Part II, L and T treatment of Waste Waters Regulations for Slow Rate Land Treatment, provides regulations for the planning, design, and operation of slow rate land treatment or wastewater irrigation systems for wastewaters in Delaware. The regulations apply to wastewaters with and without domestic wastes. These guidelines and regulations do not apply to overland flow or rapid infiltration systems.)</p> <p>Verify that land treatment systems for wastewater have a valid Land Treatment System (LTS) Permit prior to commencing construction and have written approval from the Department prior to startup and operation.</p> <p>(NOTE: L and t treatment systems incorporating drainage improvements in the system design that result in a point discharge to surface waters will be issued a NPDES Permit in lieu of a LTS Permit.)</p> <p>Verify that the terms and conditions of the permit(s) have been met.</p> <p>Verify that all structures, systems, and equipment for treatment, control, and monitoring are properly maintained and operated at all times.</p> <p>(NOTE: See WA.20.1.DE. for applicability.)</p> <p>Verify that systems report to the Department as follows:</p> <ul style="list-style-type: none"> <li>- in writing within 30 days before any planned physical alteration or any addition to the permitted facility or activity if the planned work would result in any significant change in information that was submitted during the permit application process</li> <li>- in writing within 30 days before any anticipated change which would result in noncompliance with any permit condition</li> <li>- orally within 24 h of awareness of any noncompliance which may endanger the public health or the environment</li> <li>- a written report submitted within 5 days of awareness of any noncompliance, unless extended by the Department, which contains the following: <ul style="list-style-type: none"> <li>- a description of the noncompliance and its cause</li> <li>- the period of noncompliance including, to the extent possible, times and dates and, if the noncompliance has not been corrected, the anticipated time it is expected to continue</li> <li>- steps taken or planned to reduce or eliminate recurrence of the noncompliance</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.20.3.DE.</b> Slow rate land treatment systems must meet specific minimum monitoring requirements ( DE 7 7000 7103, Part II, Sections 58.21 and 80. 3 and 8 0.5) [ Revised December 1997 ; Re vised January 2010].</p>	<p>- in writing as soon as possible after a awareness of facts not submitted or incorrect information submitted in a permit application or any report to the Department.</p> <p>Verify that systems take all necessary actions to eliminate and correct any adverse impact on the public health or the environment resulting from the noncompliance.</p> <p>(NOTE: See WA.20.1.DE. for applicability.)</p> <p>(NOTE: The owner or owner’s engineer is required to submit a Plan of Operation and Management prior to the receipt of a L TS Permit. Once accepted by the Department, the plan becomes the operating and monitoring manual for the facility.)</p> <p>Verify that slow rate land treatment systems monitor the quality of groundwaters influenced by the system.</p> <p>Verify that the Division's Water Supply Branch is consulted for the design and construction of groundwater monitoring wells at slow rate land treatment sites and permits are obtained prior to installing groundwater monitoring wells.</p> <p>Verify that the following minimum monitoring requirements are met:</p> <ul style="list-style-type: none"> <li>- there is one monitoring well upgradient, or otherwise outside the influence of the land treatment site, for background monitoring</li> <li>- there is one monitoring well within the wetted field area of each drainage basin intersected by the land treatment site</li> <li>- there are 2 monitoring wells downgradient of the wetted field area in each drainage basin intersected by the land treatment site</li> <li>- there is one well upgradient and one well downgradient of the pond treatment and storage facilities in each drainage basin intersected by the land treatment site</li> <li>- monitoring wells are constructed according to the Department’s <i>Guidelines for the Construction of Monitoring Wells</i>.</li> </ul> <p>Verify that protective casings or other barriers are located around all monitor wells to protect them from damage by farm equipment or other vehicles and are labeled as indicated in the design plan.</p> <p>Verify that sampling of the groundwater is performed according to the Department's "Manual for Groundwater Sampling" or other Department-approved procedure.</p> <p>(NOTE: The analyses parameters and the sampling frequency for those parameters are included in the permit and are determined on a case by case basis</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.20.4.DE.</b> Operators of wastewater facilities must meet licensing requirements (DE 7 7000 7204, Sections 4.1, 4.4, and 5.2) [Citation Revised December 2008; Revised January 2010].</p> <p><b>WA.20.5.DE.</b> POTWs must meet notification requirements (DE 7 7000 7201, Section 6.14.6.2) [Citation Revised December 2003; Citation Revised January 2007 ; Citation Revised December 2008].</p>	<p>and will be dependent on site conditions.)</p> <p>Verify that representative soil samples from each major soil series within the wetted field area are taken and analyzed according to the schedule in Appendix 12-1.</p> <p>(NOTE: This checklist item applies to land treatment systems for both municipal and industrial wastewater. Wastewater irrigation systems for industrial and animal wastes are evaluated by the Department on an individual basis.)</p> <p>Verify that wastewater facilities are under the supervision of an operator(s) who is licensed by the Secretary in a classification corresponding to or higher than the classification of the facility to be supervised.</p> <p>Verify that, on or before January 31 of each year, wastewater facilities whether publicly or privately owned, used or intended for use by the public or private persons, register with the Department and list the type of facility, the average daily flow, and the name(s) of all Wastewater Operators in Direct Responsible Charge (DRC).</p> <p>Verify that any personnel changes involving the operator(s) in Direct Responsible Charge (DRC) are reported to the Department within 30 days after the change.</p> <p>(NOTE: Wastewater treatment plants other than those with onsite sewage disposal systems, which the Department scores 15 points or less, are exempt from this operator licensing requirement. Wastewater treatment plants with onsite sewage disposal systems only and which the Department scores 10 points or less is exempt from this operator licensing requirement.)</p> <p>Verify that the POTW notifies the Department of the following:</p> <ul style="list-style-type: none"> <li>- any new introduction of pollutants into the POTW from new sources</li> <li>- any new introduction of pollutants into the POTW from sources subject to NPDES permit requirements</li> <li>- any substantial change in volume or character of pollutants being introduced into the POTW at the time the permit is issued.</li> </ul> <p>Verify that the notifications include information on the following:</p> <ul style="list-style-type: none"> <li>- the quality and quantity of effluent to be introduced into the POTW</li> <li>- any anticipated impact of the changes in the quantity or quality of effluent to be discharged from the POTW.</li> </ul>

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<p><b>WA.20.6.DE.</b> POTWs must meet recordkeeping requirements ( DE 7 7000 7201, Sections 6.41) [Revised December 2003 ; Citation Revised January 2007 ; Citation Revised December 2008].</p> <p><b>WA.20.7.DE.</b> Sewage must meet treatment requirements prior to being discharged into a surface water ( DE 7 7000 7201, Sections 7.2) [Citation Revised December 2003; Citation Revised January 2007; Citation Revised December 2008].</p> <p><b>WA.20.8.DE.</b> Industrial waste must meet effluent limitations (DE 7 7000 7201,</p>	<p>Verify that the POTW maintains records of all information resulting from any monitoring activities required by the NPDES permit.</p> <p>Verify that records of monitoring activities and results include the following for all samples:</p> <ul style="list-style-type: none"> <li>- date, location, and time of sampling</li> <li>- name of the individual(s) performing the sampling</li> <li>- dates analyses were performed</li> <li>- name of the individual(s) who performed the analyses</li> <li>- analytical techniques or methods used</li> <li>- results of the analyses.</li> </ul> <p>Verify that records of monitoring activities and results are retained for at least 3 yr, including all original strip chart recording for continuous monitoring instrumentation and calibration and maintenance records.</p> <p>Verify that any liquid waste discharged into the Delaware River, Delaware Bay, or Atlantic Ocean has received at least secondary treatment and disinfection.</p> <p>Verify that any liquid waste discharged into a lake, a pond, or a lake or pond tributary has received at least secondary treatment, filtration, nutrient removal, and disinfection.</p> <p>Verify that any liquid waste discharged into the Little Assawoman Bay, Indian River Bay, or Rehoboth Bay, including their tributaries, has received at least secondary treatment, filtration, and disinfection.</p> <p>Verify that any liquid waste discharged into a stream, tidal or nontidal, has received at least secondary treatment, filtration, and disinfection.</p> <p>(NOTE: This does not apply to discharges into the Delaware River, the Delaware Bay, or the Atlantic Ocean as these bodies are governed separately. Existing facilities may not be required to provide filtration if they have demonstrated the ability to continuously meet secondary treatment levels.)</p> <p>(NOTE: The Department may require additional treatment requirements and effluent limitations.)</p> <p>Verify that industrial wastewater flows containing pollutants added by the discharger receive at least the treatment necessary to not exceed the limitations</p>

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Section 7.3) [Citation Revised December 2003 ; Citation Revised January 2007 ; Citation Revised December 2008].	specified in Appendix 12-2.
<b>WA.20.9.DE.</b> [Deleted December 1997].	
<b>WA.20.10.DE.</b> [Deleted December 1997].	
<b>WA.20.11.DE.</b> [Deleted December 2003].	(NOTE: Regulations rescinded.)
<b>WA.20.12.DE.</b> [Deleted December 2003].	(NOTE: Regulation rescinded; see WA.5.1.DE. for similar requirements.)

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<p><b>WA.95.</b></p> <p><b>OTHER DISCHARGES AND DISCHARGERS</b></p> <p><b>WA.95.1.DE.</b> Concentrated Animal Feeding Operations (CAFOs) must be permitted under a general or individual NPDES permit ( DE 7 7000 7201, Section 9.4.4 and 9.4.5) [Added January 2006 ; Citation Revised January 2007; Citation Revised December 2008].</p>	<p>Verify that any person who owns or operates a CAFO (see Notes below) operates under a general or individual CAFO NPDES permit coverage.</p> <p>Verify that any person who owns or operates a CAFO or is designated as a CAFO submits a Notice of Intent (NOI) on a form provided by the Department, to the Secretary within 120 calendar days of the effective date of these regulations (September 11, 2005) or upon operation of a new facility.</p> <p>Verify that anyone who expands their operation and becomes a CAFO submits a NOI within 90 days of becoming a CAFO.</p> <p>(NOTE: The NOI will serve as a formal commitment by the CAFO applicant to comply with the standards established in these regulations.)</p> <p>(NOTE: Provided one of the following conditions are met and the number of animals is equal to or greater than the number specified below, the operator has a duty to apply for a general or individual NPDES permit:</p> <ul style="list-style-type: none"> <li>- pollutants are discharged into waters of the State through a man-made ditch, flushing system, or other similar man-made device</li> <li>- pollutants are discharged directly into waters of the State, which originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation</li> <li>- pollutants are discharged into waters of the State caused by the improper handling of animal mortalities or improper manure management as identified by standards adopted by NRCS and or the commission</li> <li>- pollutants are discharged into waters of the State from the application area as agricultural storm water, except for agricultural storm water exemption</li> <li>- number of animals: <ul style="list-style-type: none"> <li>- 300 beef cattle or heifers</li> <li>- 210 mature dairy cattle (whether milked or dry cows)</li> <li>- 750 swine each weighing over 55 pounds</li> <li>- 3,000 swine weighing under 55 pounds</li> <li>- 150 horses</li> <li>- 3,000 sheep or lambs</li> <li>- 6,500 turkeys</li> <li>- 9,000 laying hens or broilers, if the AFO uses a liquid manure handling system</li> <li>- 37,500 chickens except laying hens (if other than a liquid manure handling system)*</li> <li>- 24,600 laying hens (if other than a liquid manure handling system)</li> </ul> </li> </ul>



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<p><b>WA.95.2.DE.</b> Concentrated Animal Feeding Operations (CAFOs) operating under a general nutrient management requirements (DE 7700 7201, Section 9.4.6) [ Added January 2006 ; Citation Revised January 2007; Citation Revised December 2008].</p>	<p align="center">- 300 veal calves.)</p> <p>(NOTE: These NPDES permit requirements apply to any person who engages in the management of a CAFO where animal manure is, has been or will be generated and the AFO ( Animal Feeding Operation) is not currently compliant with the State Nutrient Management Law and Regulations. An AFO is a CAFO if the number of animals equal or exceed the numbers of animals specified in any of the following categories:</p> <ul style="list-style-type: none"> <li>- 1,000 beef cattle or heifers</li> <li>- 700 mature dairy cattle (whether milked or dry cows)</li> <li>- 2,500 swine each weighing over 55 pounds</li> <li>- 10,000 swine weighing under 55 pounds</li> <li>- .5 500 horses,</li> <li>- 10,000 sheep or lambs</li> <li>- 55,000 turkeys</li> <li>- 30,000 laying hens or broilers, if the AFO uses a liquid manure handling system</li> <li>- 125,000 chickens except laying hens (if other than a liquid manure handling system)*</li> <li>- 82,000 laying hens (if other than a liquid manure handling system)</li> <li>- 1,000 veal calves.)</li> </ul> <p>(*Note: An alternative criterion for square footage calculations may be utilized and adopted as policy that qualifies a CAFO based on the area within the confined facility. For example, the animal density of 0.75 square feet per bird calculates to 93,750 square feet and can be defined as a CAFO. This alternative may not supersede the actual number of chickens maintained.)</p> <p>Verify that each CAFO operating under a general permit meets or exceeds the minimum standards of a general permit found in Section 9.4.6.</p> <p>Verify that the nutrient management plan or animal waste management plan required by the Commission is developed by a Delaware certified consultant.</p> <p>Verify that the site-specific management requirements that supplement the animal waste management plan and/or nutrient management plan address the site-specific measures identified in Appendix 12-3.</p> <p>Verify that the nutrient management plan and/or animal waste management plan and site-specific management requirements are updated a minimum of every 3 years or upon significant alteration to include, but not be limited to, a 25 percent increase in animal units or acres of crops grown.</p> <p>Verify that the updated plans are reported to the Commission no later than</p>

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<p><b>WA.95.3.DE.</b> Concentrated Animal Feeding Operations (CAFOs) operating under a general must meet reporting requirements ( DE 7 7000 7201, Section 9. 4.8) [ Added January 2006 ; Citation Revised January 2007 ; Citation Revised December 2008].</p> <p><b>WA.95.4.DE.</b> Concentrated Animal Feeding Operations (CAFOs) operating under a general must meet recordkeeping requirements (DE 7 70 00 7201, Section 9.4.9) [ Added January 2006 ; Citation Revised January 2007; Citation Revised December 2008].</p>	<p>December 15 of the year in which they are required to be updated.</p> <p>Verify that a report is submitted to the Department and the Commission by March 1 of every calendar year, on a form developed and supplied by the Commission.</p> <p>Verify that, if for any reason, there is a discharge from a CAFO the Department verbally notified within 24 hours of becoming aware of the discharge and the incident is documented in writing within 5 days.</p> <p>Verify that the information provided includes the following:</p> <ul style="list-style-type: none"> <li>- a description of the discharge and cause, including a description of the flow path to the receiving waters, an estimate of the flow and volume discharged</li> <li>- the period of discharge, including exact dates and times and if not corrected, the anticipated time the discharge is expected to continue and the steps being taken to reduce, eliminate and prevent recurrence of the discharge</li> <li>- if the discharge was caused by a precipitation event(s), the amount of rainfall, as measured with a rain gauge at the site</li> <li>- results of any sampling and analysis of the discharge, if available.</li> </ul> <p>Verify that implementation records are maintained for 6 years.</p> <p>Verify that all animal waste management plans, nutrient management plans, site-specific management requirements and records of implementation are kept by the landowner or person responsible for the plans or records.</p> <p>Verify that animal waste management plans, nutrient management plans and records of implementation are made available for inspection.</p> <p>(NOTE: Records of implementation include:</p> <ul style="list-style-type: none"> <li>- soil test results and recommended nutrient application rates or the nutrient management plan</li> <li>- quantities, analyses and sources of all nutrients applied to fields</li> <li>- dates, weather conditions (as specified by the Commission) and methods of nutrient application(s)</li> <li>- crops planted, yields, and plant matter (grain, silage, etc.) removed from the land</li> <li>- the annual report and supporting documents.</li> <li>- off site use of manure</li> <li>- corrective actions taken as a result of visual inspections of storm water diversion devices, water lines, manure, litter, and process wastewater impoundments.)</li> </ul> <p>Verify that, if the manure is sold or given to other persons for disposal and/or</p>

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<p><b>WA.95.5.DE.</b> Concentrated Animal Feeding Operations (CAFOs) operating under a general must meet effluent standards and limitations (DE 7 70 00 7201, Section 9.4.13) [Added January 2006 ; Citation Revised January 2007; Citation Revised December 2008].</p> <p><b>WA.95.6.DE.</b> Concentrated Animal Feeding Operations (CAFOs) constructed after September 11, 20 05 must meet criteria for new facilities (DE 7 70 00 7201, Section 9.4.14) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008].</p>	<p>utilization, the following applicant information is maintained at the facility generating the waste or manure:</p> <ul style="list-style-type: none"> <li>- the date of manure removal</li> <li>- name of receiver and contact information</li> <li>- quantity (tons/gallons) of waste removed</li> <li>- a copy of the manure nutrient analysis is given to the receiver.</li> </ul> <p>Verify that no discharge of process wastewater from any animal feeding operation subject to these regulations enters waters of the United States.</p> <p>Verify that, the following conditions are met when a discharge is caused by a rainfall event:</p> <ul style="list-style-type: none"> <li>- production area is designed, built, operated and maintained to handle all of the process wastewater, plus the runoff and direct precipitation from a 25-year, 24-hour rainfall event</li> <li>- discharge consists only of overflows caused by the rainfall event.</li> </ul> <p>(NOTE: Dry weather discharges are not permitted. Discharges caused by poor management are never permitted.)</p> <p>Verify that waste storage structures are not located in the 100-year flood plain unless the facility is designed and constructed such that the manure from a facility is protected from floodwaters from a storm of 24 hours duration having a one percent chance of recurrence within a given year.</p> <p>Verify that waste storage structures and treatment lagoons are designed as essentially watertight structures in accordance with NRCS practices and standards.</p> <p>Verify that waste storage structures are not located closer than 300 feet from a public water well nor 200 feet from domestic water well.</p> <p>Verify that no waters of the State come into direct contact with the animals confined at the facility.</p> <p>Verify that animal confinement areas are not located:</p> <ul style="list-style-type: none"> <li>- in the 100 year flood plain unless they are protected from inundation and damage that may occur during that flood event</li> <li>- closer than 300 feet from a public water well, nor 200 feet from a domestic water well.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
	<p>Verify that the handling, treatment, and management of AFO wastes does not:</p> <ul style="list-style-type: none"> <li>- result in the inadvertent destruction or adverse modification of the critical habitat of endangered or threatened species of plant, fish, or wildlife</li> <li>- create a public health hazard</li> <li>- result in groundwater contamination.</li> </ul> <p>Verify that no discharge of process wastewater from any animal feeding operation subject to these regulations enters waters of the United States.</p> <p>Verify that, the following conditions are met when a discharge is caused by a rainfall event:</p> <ul style="list-style-type: none"> <li>- the production area for horse, sheep, duck, dairy and beef (other than veal) is designed, built, operated and maintained to handle all of the process wastewater, plus the runoff and direct precipitation from a 25-year, 24-hour rainfall event</li> <li>- the production area for swine, veal calf, turkey and chickens is designed, built, operated and maintained to handle all of the process wastewater, plus the runoff and direct precipitation from a 100-year, 24-hour rainfall event</li> <li>- the discharge consists only of overflows caused by the rainfall event.</li> </ul> <p>(NOTE: Dry weather discharges are not permitted. Discharges caused by poor management are never permitted.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.100.</b></p> <p><b>INDIVIDUAL SEWAGE SYSTEMS</b></p> <p><b>WA.100.1.DE.</b> Onsite wastewater treatment and disposal systems must meet permitting and certification requirements ( DE 7 7000 7101, Sections 3 .2, 3 .3, and 5.4) [ Revised December 1997; R evised D ecember 2002; C itation R evised January 2007 ; C itation Revised December 2008].</p> <p><b>WA.100.2.DE.</b> Onsite wastewater treatment and disposal systems must meet operating requirements (DE 7 7000 710 1, Sections 3.9 through 3. 14, 3. 18, 3 .19, and 5.8.3) [ Revised December 1997; R evised D ecember 2002; Revised January 2007].</p>	<p>Verify that a valid permit is received prior to the following activities:</p> <ul style="list-style-type: none"> <li>- construction, installation, modification, rehabilitation, or replacement of an onsite system</li> <li>- construction, installation, modification, rehabilitation, or replacement of an onsite system.</li> </ul> <p>Verify that a permit is obtained prior to the construction of an experimental onsite sewage treatment and disposal system.</p> <p>Verify that a construction installation permit is obtained prior to installation of a community onsite system.</p> <p>Verify that systems have a Certificate of Satisfactory Completion from the Department for the permitted activity.</p> <p>Verify that all wastewater is treated and disposed of in a Department-approved manner.</p> <p>Verify that the following does not occur:</p> <ul style="list-style-type: none"> <li>- disposal of wastewater at any location not authorized by the Department</li> <li>- discharge of untreated or partially treated wastewater or septic tank effluent directly or indirectly onto the ground surface or into surface waters of the state, unless authorized by a permit</li> <li>- discharge of cooling water, air conditioning water, groundwater, oil, water softener brine or roof drainage into any system without the specific authorization of the Department.</li> </ul> <p>Verify that water softener brine is discharged in a manner that does not allow surface discharge.</p> <p>Verify that a dwelling or commercial facility is not connected to a system if the total projected wastewater flow would be greater than that allowed under the original system construction permit.</p> <p>Verify that each system has adequate capacity to properly treat and dispose of the maximum projected daily wastewater flow.</p>

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<p><b>WA.100.3.DE.</b> [Deleted December 1997].</p>	<p>Verify that the spare areas are kept vacant and free of vehicular traffic and soil modification.</p> <p>Verify that all systems are operated and maintained so as not to create a public health hazard or cause water pollution.</p> <p>Verify that septic tanks, cesspools, or other treatment are pumped by a Class F licensed hauler to remove all of the contents.</p> <p>Verify that septic tanks, cesspools, or other treatment are filled with sand, bark run grave, or other material approved by the Department.</p> <p>Verify that the system building sewer is permanently capped.</p>
<p><b>WA.100.4.DE.</b> Existing onsite wastewater treatment and disposal systems must meet a authorization requirements ( DE 7 7000 7101, Sections 5.9) [Revised January 2007].</p>	<p>Verify that application for an Authorization to Use an Existing System Permit is made on forms provided by the Department.</p> <p>Verify that an Authorization to Use is received prior to the following:</p> <ul style="list-style-type: none"> <li>- placing an existing system into service</li> <li>- changing the use of a system</li> <li>- increasing the projected daily wastewater flow into an existing system to a flow which is above design standards.</li> </ul> <p>(NOTE: An Authorization to use is not required for the following:</p> <ul style="list-style-type: none"> <li>- where there is a replacement of mobile homes or recreational vehicles with similar units in mobile home parks or recreational vehicle facilities with onsite sewage disposal system approved by the Department</li> <li>- for use of a previously unused system for which a Certificate of Satisfactory Completion has been issued within 1 yr of the date the system is placed into service, providing the projected daily sewage flow does not exceed the design flow.)</li> </ul>
<p><b>WA.100.5.DE.</b> Existing onsite wastewater treatment and disposal systems must meet alteration requirements (DE 7 7000 7101, Section 5.10) [ Revised December</p>	<p>Verify that an alteration permit is obtained prior to altering or increasing the design capacity of an existing system.</p> <p>Verify that the projected daily wastewater flow into an existing system is not increased beyond the design capacity of the system until an alteration permit is</p>

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<p>2002; Citation Revised January 2007 ; Citation Revised December 2008; Citation Revised January 2010].</p>	<p>obtained.</p> <p>Verify that a Certificate of Satisfactory Completion is obtained from the Department upon completion of installation of that part of a system for which an alteration permit was issued.</p> <p>(NOTE: An increase in the projected daily wastewater flow into the system is not allowed until the Certificate is issued.)</p>
<p><b>WA.100.6.DE.</b> Existing onsite wastewater treatment and disposal systems must meet repair requirements (DE 7 7000 710 1, Section 5.11) [Revised December 2002; Citation Revised January 2007; Citation Revised December 2008].</p>	<p>Verify that malfunctioning systems are repaired immediately.</p> <p>(NOTE: The Department may allow a delay in commencing repairs until soil conditions improve if adverse soil conditions exist due to climactic conditions which would preclude a successful repair. If this allowance is made, a compliance date and interim system maintenance requirements will be specified in a Notice of Violation to the system owner.)</p> <p>Verify that a repair permit is obtained prior to commencing the repair of a malfunctioning system.</p> <p>(NOTE: Emergency repairs of broken system components may be made without first obtaining a permit provided that a permit is applied for within 3 days after the emergency repairs are begun.)</p> <p>Verify that a Certificate of Satisfactory Completion is obtained from the Department upon completion of installation of that part of a system for which a repair permit was issued.</p> <p>Verify that malfunctioning systems which cannot be repaired are abandoned.</p>
<p><b>WA.100.7.DE.</b> [Deleted December 2008].</p>	<p>(NOTE: Inspections will be made by the Department or its designee.)</p>
<p><b>WA.100.8.DE.</b> Large onsite wastewater treatment and disposal systems must meet design requirements (DE 7 7000 710 1, Section 5.14.3) [Revised December 1997; Revised December 2002; Citation Revised January 2007].</p>	<p>Verify that large systems meet the following requirements:</p> <ul style="list-style-type: none"> <li>- absorption facilities are designed with pressure distribution</li> <li>- disposal system is divided into relatively equal areas with each area receiving no more than 1300 gallons per day if seepage beds are utilized, and no more than 2600 gallons per day if seepage trenches are utilized</li> <li>- replacement (repair) disposal area is divided into relatively equal units</li> <li>- effluent distribution alternates between the disposal area units</li> <li>- the absorption areas are at least 10 feet apart</li> </ul>

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<p>2007].</p> <p><b>WA.100.9.DE.</b> Onsite wastewater treatment and disposal systems must meet maintenance requirements (DE 7 7000 7101, Sections 8.2 through 8.5) [ Revised December 2002 ; Citation Revised January 2007 ; Revised December 2008].</p> <p><b>WA.100.10.DE.</b> Holding tanks must meet permitting requirements ( DE 7 7000 7101, Sections 5.15.2 and 5.15.3) [ Revised December 2002; Citation Revised January 2007 ; Citation Revised December 2008].</p> <p><b>WA.100.11.DE.</b> Holding tanks must meet service and construction requirements (DE 7 7000 7101, Sections 5.15.9) [ Revised December 1997; Revised December 2002; Citation Revised January 2007 ; Citation Revised December 2008].</p>	<p>- each system has at least 2 pumps or siphons.</p> <p>Verify that each onsite wastewater treatment and disposal system is pumped by a licensed class F liquid waste hauler once every 3 years and that the system owner maintains a record indicating the system has been pumped.</p> <p>(NOTE: Alternative systems will be pumped according to manufacturer recommendations.)</p> <p>Verify that organic chemical septic tank cleaning agents are not used in individual or community onsite systems.</p> <p>Verify that grease traps are cleaned when 75 percent of the grease retention capacity has been reached.</p> <p>Verify that the sites of the initial and replacement absorption facilities are:</p> <ul style="list-style-type: none"> <li>- not covered by asphalt or concrete or subject to vehicular traffic or other activity which would adversely affect the soils</li> <li>- maintained so that they are free from encroachments by accessory buildings and additions to the main building.</li> </ul> <p>Verify that holding tanks have a valid permit.</p> <p>Verify that no holding tank is installed prior to obtaining a valid permit.</p> <p>(NOTE: The use of a holding tank on a permanent basis is prohibited unless permitted by the Department. Permanent tanks are prohibited on unimproved lots.)</p> <p>Verify that holding tanks meet the following requirements:</p> <ul style="list-style-type: none"> <li>- holding tanks in no case have a capacity less than 7 days average flow from the wastewater generating facility or 1000 gal, whichever is larger</li> <li>- holding tanks meet septic tank standards and are constructed of the same materials as septic tanks</li> <li>- holding tanks are located and designed to facilitate removal of contents by pumping</li> <li>- holding tanks are equipped with both an audible and visual alarm installed on an AC circuit and placed in a location acceptable to the Department which indicates when the contents of the tank are at 75 percent of capacity</li> </ul>



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<p><b>WA.100.12.DE.</b> Any on-site wastewater treatment and disposal system receiving over 2,500 GPD must have a licensed wastewater operator (DE 7 7000 7101, Sections 5.14.3.12) [ Added December 2008].</p>	<ul style="list-style-type: none"> <li>- holding tanks have no vent at an elevation lower than the overflow level of the lowest fixture served</li> <li>- holding tanks are designed for antibuoyancy if test hole examination or other observations indicate seasonally high groundwater may float the tank when empty</li> <li>- holding tanks are watertight and structurally sound to withstand internal and external loads</li> <li>- holding tanks are equipped with an 18 in. diameter or square access opening extended to 6 inches above grade level</li> <li>- holding tanks constructed onsite are tested to assure watertight conditions and alarms are tested for proper operation.</li> </ul> <p>Verify that each holding tank is inspected annually.</p> <p>Verify that no liquid waste from a holding tank is applied directly or indirectly onto the ground surface or into surface waters.</p> <p>Verify that on-site wastewater treatment and disposal system receiving 2,500 GPD has a licensed wastewater operator.</p> <p>(NOTE: The class of operator will be determined based on the Board of Certification for Licensed Wastewater Operators.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>LAND APPLICATION OF SLUDGE</b></p> <p><b>WA.105. General</b></p> <p><b>WA.105.1.DE.</b> Land treatment of sludge must meet permitting and general monitoring requirements (DE 77000 7103, Part III, Section 102.2, 105.0, 106.0 and 107.4) [Revised December 1997; Revised December 1998; Revised December 1999; Revised December 2000; Revised January 2010].</p> <p><b>WA.105.2.DE.</b> Land treatment of sludge must meet general operating</p>	<p>Verify that a valid permit is obtained prior to the generation, collection, storage, preparation, treatment, land application, marketing and distribution, disposal, or transportation of sludge, treated sewage sludge, or any product containing these materials.</p> <p>(NOTE: The following are not required to have a permit:</p> <ul style="list-style-type: none"> <li>- a wastewater treatment plant, if the pertinent activities involve the construction and operation of the plant in accordance with plans approved by the Department, excluding removal of sludge from the plant</li> <li>- cofiring of sewage sludge with other waste in an incinerator, unless the other waste is used as auxiliary fuel for the firing of the sludge</li> <li>- hazardous wastewater sludge determined to be hazardous by this regulation or any other Federal, State, County or local regulation as they may apply</li> <li>- sewage sludge with high PCB concentrations as determined by this regulation or any other Federal, State, County or local regulations as they may apply</li> <li>- incinerator ash for use or disposal from the firing of sewage sludge in a sewage sludge incinerator</li> <li>- grit and screenings generated or collected in a wastewater treatment process</li> <li>- aquatic plants or managed wetlands plants used and harvested as part of a wastewater treatment process and that are not complexed with the sludge at the time of harvest</li> <li>- drinking water treatment residuals from nonsewage sources</li> <li>- commercial septage, industrial septage, a mixture of domestic septage and commercial septage or a mixture of domestic septage and industrial septage</li> <li>- grease trap waste.)</li> </ul> <p>Verify that each separate sludge utilization site has a valid permit.</p> <p>Verify that the site complies with all the conditions of the permit.</p> <p>(NOTE: Adjacent properties owned by separate individuals are considered separate sites. Noncontiguous but proximate parcels owned by a person may be considered a single utilization site.)</p> <p>(NOTE: See WA.105.1.DE. for exemptions.)</p> <p>Verify that all structures, systems, and equipment for treatment, control, and</p>

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<p>requirements (DE 7 7000 7103, P art III, 1 09.1.3 and 138.6 through 138. 8) [Revised D ecember 199 9; Citation R evised J anuary 2010].</p>	<p>monitoring are properly maintained and operated at all times.</p> <p>Verify that sludge is not applied to a site unless the site complies with all of the following:</p> <ul style="list-style-type: none"> <li>- the soils have a minimum depth from surface to impermeable strata of 20 in.</li> <li>- the site has a minimum depth from surface to seasonal high water table of 20 in.</li> <li>- slopes to be utilized for sludge application do not exceed 15 percent (except that the Department may allow slopes of up to 30 percent for forest systems in the permit)</li> <li>- soil pH is adjusted to values of 6.5 6.2 or above unless the natural climatic conditions and soil chemistry preclude such values</li> <li>- for silvicultural applications the soil may remain at ambient pH provided sufficient li tter e xist o n th e f orest tr act floor a s d etermined b y t he Department</li> <li>- if the site is planted with nursery crops that require a pH of less than 6.5, the Department may approve a soil pH of 5.8 or greater in the permit).</li> </ul> <p>Verify that sludge is spread evenly over the site using conventional agronomic equipment such as manure spreaders, spray equipment, or other applicators, or by commercial eq uipment specifically de signed f o r s ludge a p p l i c a t i o n o n agricultural land.</p> <p>Verify that sludge or products derived from sewage sludge is applied to the soil surface or incorporated in a manner that prevents unreasonable nuisance or odor conditions.</p> <p>Verify that sludge that has been land applied is incorporated into the soil by the end of each working day, except under the following circumstances when:</p> <ul style="list-style-type: none"> <li>- liquid sludge is surface sprayed, odors and nuisances are controlled, and the Department d etermines th at t here will b e n o a d v e r s e i m p a c t o n th e environment or public health</li> <li>- site management p lans such as n o t i l l f a r m i n g o r t h e p r e s e n c e o f an established crop precludes sludge incorporation, adequate site features exist to p r e c l u d e s l u d g e m i g r a t i o n f r o m t h e s i t e , o d o r s a n d n u i s a n c e s a r e controlled, a n d t h e D e p a r t m e n t d e t e r m i n e s t h a t t h e r e w i l l b e n o a d v e r s e impact on the environment or public health.</li> </ul> <p>Verify that the areas to receive sludge application are clearly marked with stakes or contain other markers before the sludge application.</p> <p>Verify that trucks are reasonably cleaned on the site to prevent drag-out of soil or sludge onto public roads.</p> <p>Verify that sludge is not land applied when the ground surface is saturated or</p>

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<p><b>WA.105.3.DE.</b> Sludge distribution and marketing programs must meet permitting, monitoring, and reporting requirements (DE 7000 7103, Part III, Sections 141.1 through 141.3) [Revised December 1997; Revised December 1999; Revised January 2010].</p>	<p>covered with snow, or during periods of rain or runoff.</p> <p>Verify that sludge is not land applied when the ground is frozen, unless the Department has approved the application in the permit and all of the following conditions exist:</p> <ul style="list-style-type: none"> <li>- the slopes at the site do not exceed 3 percent</li> <li>- the site contains sufficient vegetation or a well-established cover crop to prevent runoff of sludge</li> <li>- no sludge storage capacity or other means of storage or disposal exists at the generating facility.</li> </ul> <p>(NOTE: See WA.105.1.DE. for exemptions.)</p> <p>(NOTE: The processes to significantly reduce pathogens (PSRP), processes to further reduce pathogens (PFRP), vector reduction methods, and pollutant concentration limits are described in the Wastewater Management chapter of the U.S. TEAM Guide.)</p> <p>Verify that the treatment facility treats the sludge or sludge product to be distributed and marketed with a process to further reduce pathogens (PFRP).</p> <p>Verify that sludge or sludge product distributed and marketed meets the vector attraction methods and the Pollutant Concentration Limits at the time of distribution.</p> <p>Verify that all sludge or sludge products are dried or otherwise amended to a minimum of 20 percent solids prior to distribution or marketing.</p> <p>Verify that the sludge distribution employs a Department-approved quality control program to ensure that pathogen reduction requirements and pollutant concentration limits are met.</p> <p>Verify that the sludge or sludge products are tested according to the frequencies specified in Subsection 401, unless the Department requires a different monitoring as a permit condition.</p> <p>Verify that the sludge distribution facility submits to the Department additional analyses if there has been a significant change in the quality of the sludge or sludge products.</p> <p>Verify that a log of all persons that receive more than 10 yd<sup>3</sup> of material per year is maintained.</p> <p>Verify that a plan which includes the following is submitted to the Department before distributing sludge or sludge products to any person who will utilize more</p>

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<p><b>WA.105.4.DE.</b> Sludge or sludge product application must meet pathogen control requirements (DE 7 7000 7103, Part III, Section 138.3) [Revised December 1 999; Revised January 2010].</p>	<p>than 100 tons of the material in a 12-mo period:</p> <ul style="list-style-type: none"> <li>- the end use(s) of the product</li> <li>- maximum application rates</li> <li>- total amount of material to be utilized</li> <li>- storage practices, and</li> <li>- transportation methods.</li> </ul> <p>(NOTE: See WA.105.1.DE. for exemptions.)</p> <p>(NOTE: The processes to significantly reduce pathogens (PSRP), processes to further reduce pathogens (PFRP), vector reduction methods, and pollutant concentration limits are described in the Wastewater Management chapter of the U.S. TEAM Guide.)</p> <p>Verify that sewage sludge and septage treated by a PSRP process is land applied in the State only if it meets the following restrictions:</p> <ul style="list-style-type: none"> <li>- food crops with harvested parts that touch the sewage sludge/soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 20 mo after application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil</li> <li>- food crops, feed crops, and fiber crops are not harvested for 30 days after application of sewage sludge.</li> <li>- animals are not allowed to graze on the land for 30 days after application of sewage sludge</li> <li>- turf grown on land where sewage sludge is applied is not harvested for 1 yr after application of the sewage sludge when the harvested turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority</li> <li>- public access to land with a high potential for public exposure is restricted for 1 yr after application of sewage sludge.</li> <li>- public access to land with a low potential for public exposure is restricted for 30 days after application of sewage sludge</li> <li>- bulk sewage sludge is not applied to a public contact site unless the sludge meets exceptional quality standards.</li> </ul> <p>Verify that there is no use of spray irrigation equipment to apply sludge unless such person has demonstrated to the Department in his permit application the</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.105.5.DE.</b> Land reclamation by sludge application must meet specific site and operating requirements (DE 7 7000 7103, Part III, Section 139.1 through 139.3) [ Revised December 1999 ; Citation Revised January 2010].</p>	<p>specific means by which pathogens will be controlled so as not to present a public health hazard.</p> <p>(NOTE: See WA.105.1.DE. for exemptions.)</p> <p>Verify that sludge is not land applied on slopes which exceed 20 percent.</p> <p>(NOTE: The Department may approve slopes up to 35 percent in the land reclamation permit.)</p> <p>Verify that sludge is incorporated into the soil within 24 hours after surface application.</p> <p>Verify that sludge is not land applied when:</p> <ul style="list-style-type: none"> <li>- the ground is saturated, snow covered, frozen, or during periods of rain or runoff</li> <li>- between 15 October and 15 April, unless a cover crop can be established.</li> </ul> <p>(NOTE: The Department may approve the storage of sludge between 15 October and 30 May in the permit. Storage may not exceed in amount the sludge necessary to reclaim the permitted area that was prepared for sludge application prior to 15 October.)</p>
<p><b>WA.105.6.DE.</b> Land reclamation by sludge application must meet revegetation requirements (DE 7 7000 7103, Part III, Section 139.4) [ Revised December 1999 ; Citation Revised January 2010].</p>	<p>(NOTE: See WA.105.1.DE. for exemptions.)</p> <p>Verify that vegetation is established on all land where sludge has been incorporated.</p> <p>(NOTE: The standard for successful vegetation establishment is:</p> <ul style="list-style-type: none"> <li>- at least 70 percent ground cover of permanent species</li> <li>- no more than 1 percent of the area may have less than 30 percent ground cover</li> <li>- no single or contiguous area exceeding 3000 ft<sup>2</sup> may have less than 30 percent ground cover.)</li> </ul> <p>Verify that disturbed areas are seeded and planted when weather and planting conditions permit but no later than the first normal period for favorable planting after final grading.</p> <p>Verify that mulch is applied to all regraded areas at rates adequate to control erosion, promote germination of seeds and increase the moisture retention of the soil.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.105.7.DE.</b> Land reclamation by sludge application must meet monitoring requirements (DE 7700 07 103, Part III, Sections 139.6, 139.7, and 139.9) [Citation Revised December 1999; Revised January 2010].</p>	<p>Verify that vegetation is not harvested for 2 yr for food chain use following the application of sludge, unless approved by the Department.</p> <p>(NOTE: See WA.105.1.DE. for exemptions)</p> <p>(NOTE: Because the use of sludge for land reclamation is often a one-time or short-term application, the Department may waive or reduce groundwater monitoring requirements specified in the land reclamation permit.)</p> <p>Verify that soil analyses are conducted 2 yr after land application of sludge if the land will be used for agriculture.</p> <p>Verify that all monitoring performed on the sludge utilized at the reclamation site is reported to the Department as specified in the permit.</p>
<p><b>WA.105.8.DE.</b> Land disposal of sludge at sanitary landfills must meet specific requirements (DE 77000 7103, Part III, Sections 142.0) [Revised December 1999; Revised January 2010].</p>	<p>(NOTE: See WA.105.1.DE. for exemptions.)</p> <p>Verify that sludge utilized or disposed of in a sanitary landfill does not contain free liquids, and contains a minimum of 20 percent solids as determined by the EPA paint filter test.</p> <p>(NOTE: Persons with a valid permit from the Delaware Solid Waste Authority or the Delaware Department of Natural Resources and Environmental Control, Division of Air and Waste Management to dispose or utilize sludge at an approved landfill are exempt from the permit requirements of these regulations.)</p> <p>Verify that, unless specified in an NPDES or Ground Water Discharges Permit, all facilities record the volume of sludge generated and disposed of on a daily weight basis, and report on a yearly basis the volume of sludge generated and disposed.</p>
<p><b>WA.105.9.DE.</b> [Deleted December 1999].</p>	<p>(NOTE: Regulation revised.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.105.10.DE.</b> Land application of sludge must comply with buffer zone restrictions (DE 7 7000 7103, Part I II, Section 138.2) [Added December 1999; Citation Revised January 2010].</p>	<p>(NOTE: See WA.105.1.DE. for exemptions.)</p> <p>Verify that, unless treated by PFRP, sewage sludge is not land applied within the following buffer zones:</p> <ul style="list-style-type: none"> <li>- occupied off-site d welling: 200 ft for surface applications and 100 ft for subsurface injections</li> <li>- occupied on-site d welling: 100 ft for surface applications and 50 ft for subsurface injections</li> <li>- potable wells: 100 ft for surface applications and 100 ft for subsurface injections</li> <li>- nonpotable wells: 25 ft for surface applications and 25 ft for subsurface injections</li> <li>- public roads: 25 ft for surface applications and 15 ft for subsurface injections</li> <li>- property lines: 50 ft for surface applications and 25 ft for subsurface injections</li> <li>- bedrock outcrops: 50 ft for surface applications and 25 ft for subsurface injections</li> <li>- streams, tidal waters, or other water bodies: 50 ft for surface applications and 25 ft for subsurface injections</li> <li>- drainage ditches: 25 ft for surface applications and 25 ft for subsurface injections.</li> </ul> <p>(NOTE: The Department may require increased buffer distances or may reduce buffer distances, and may set buffer zones between sludge boundaries and other land uses such as wetlands. In making these determinations, the Department may consider adjacent land use, type of sludge, sludge application method, sludge application rate, sludge quality and level of treatment, land slopes, vegetative cover used, the nature of any surrounding bodies of water, and any other factors considered relevant by the Department.)</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>LAND APPLICATION OF SLUDGE</b></p> <p><b>WA.110. Vectors and Pathogens</b></p> <p><b>WA.110.1.DE.</b> Land treatment of sludge must meet general pathogen control requirements ( DE 7 7000 7103, Part III Section 102.2 and 132.0) [ Revised December 1999; Revised January 2010].</p> <p><b>WA.110.2.DE.</b> [Deleted December 1999].</p>	<p>(NOTE: DE 7 700 0 7103 Part III, Land and Treatment of Sludges and Sludge, applies to all persons engaged in the collection, handling, generation, preparation, storage, and transportation of sludge, treated sludge or any product containing these materials in the State of Delaware.)</p> <p>(NOTE: The processes to significantly reduce pathogens (PSRP), processes to further reduce pathogens (PFRP), vector reduction methods, and pollutant concentration limits are described in the Wastewater Management chapter of the U.S. TEAM Guide.)</p> <p>Verify that all sewage sludges and domestic septage prepared for land application in Delaware are, at a minimum, treated to significantly reduce pathogens (PSRP).</p> <p>(NOTE: Sludges treated to meet PSRP requirements will be defined as Class A sludges for the purpose of these regulations.)</p> <p>Verify that all sewage sludges prepared for Distribution and Marketing in Delaware are treated to further reduce pathogens.</p> <p>(NOTE: Sludges treated to meet the PFRP requirements will be defined as Class A sludges for the purpose of these regulations.)</p> <p>Verify that any sewage sludge or domestic septage prepared in a manner to meet the Class A or Class B requirements also meets the vector attraction reduction requirements prior to being applied to land, given away or sold in bulk or bag.</p>

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<p><b>LAND APPLICATION OF SLUDGE</b></p> <p><b>WA.115. Notifications</b></p> <p><b>WA.115.1.DE.</b> Land treatment of sludge must meet reporting requirements (DE 7 7000 7 103, Part II, Sections 102.2, 109.1.3 and 190. 2) [Citation Revised December 1999; Revised January 2010].</p> <p><b>WA.115.2.DE.</b> Sludge preparers, applicators, and owners of the land where sludge is applied must meet specific recordkeeping requirements ( DE 7 7000 7103, Part II, Section 157.0</p>	<p>(NOTE: DE 7 700 0 7103 Part III, Land and Treatment of Sludges and Sludge, applies to all persons engaged in the collection, handling, generation, preparation, storage, and transportation of sludge, treated sludge or any product containing these materials in the State of Delaware.)</p> <p>Verify that a permitted facility or activity report to the Department as follows:</p> <ul style="list-style-type: none"> <li>- in writing within 30 days before any planned physical alteration or any addition to the permitted facility or activity if the planned work would result in any significant change in information that was submitted during the permit application process</li> <li>- in writing within 30 days before any anticipated change which would result in noncompliance with any permit condition</li> <li>- orally within 24 h of awareness of any noncompliance which may endanger the public health or the environment</li> <li>- a written report submitted within 5 days of awareness of any noncompliance, unless extended by the Department, which contains the following: <ul style="list-style-type: none"> <li>- a description of the noncompliance and its cause</li> <li>- the period of noncompliance including, to the extent possible, times and dates and, if the noncompliance has not been corrected, the anticipated time it is expected to continue</li> <li>- steps taken or planned to reduce or eliminate recurrence of the noncompliance</li> </ul> </li> <li>- in writing as soon as possible after awareness of facts not submitted or incorrect information submitted in a permit application or any report to the Department.</li> </ul> <p>Verify that a permitted facility or activity take all necessary actions to eliminate and correct any adverse impact on the public health or the environment resulting from the noncompliance.</p> <p>(NOTE: See WA.115.1.DE. for applicability.)</p> <p>Verify that each sludge preparer who prepares or otherwise treats sludge for final utilization or disposal in Delaware submit to the Department the following information:</p> <ul style="list-style-type: none"> <li>- the concentration of total nitrogen of the prepared sludge</li> </ul>

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<p>through 159. 0) [ Revised December 1999 ; Citation Revised January 2010].</p>	<ul style="list-style-type: none"> <li>- the concentration of pollutants</li> <li>- other constituent concentrations identified in the sludge utilization or disposal permit</li> <li>- a description of how pathogen and vector reduction requirements are met, including a signed certification statement approved by the Department.</li> </ul> <p>Verify that this information is also provided to the sludge applier, if the applier is different from the sludge preparer, and is maintained for a minimum of 5 yr.</p> <p>Verify that each sludge applier who land applies or disposes of sludge in the state submit to the Department the following information:</p> <ul style="list-style-type: none"> <li>- the location, either by street address and longitude and latitude of all sludge utilization, disposal or reclamation sites where the applier has placed sludge</li> <li>- the total volume of sludge (in dry metric tons per hectare) applied to each site annually; the number of hectares the sludge was applied to; and the total site acreage</li> <li>- the cumulative pollutant loading rate (CPLR) of each</li> <li>- a description and certification of how the management requirements were met</li> <li>- for all Class B sludges that are land applied, a description and certification of how all site restrictions were met.</li> </ul> <p>Verify that, when vector attraction reduction requirements are by sewage sludge injection or incorporation, the applier maintains records documenting and certifying the methods employed to comply with these requirements.</p> <p>Verify that the applier provides to the landowner or leaseholder notice and information necessary to comply with these regulations and the permit, including:</p> <ul style="list-style-type: none"> <li>- the date(s) sludge was applied to the site</li> <li>- the areas on which sludge was applied, including acreage</li> <li>- the loading rate of sludge in dry tons per acre</li> <li>- the total amount of nitrogen available for crop uptake from the sludge application in pounds per acre</li> <li>- a copy of a recent laboratory analyses of the sludge</li> <li>- any other information required by the Department.</li> </ul> <p>(NOTE: The above sludge applier requirements do not apply to sludge appliers who transport sludge to a sanitary landfill or to sludge appliers who apply sludge or sludge products in accordance with a valid Distribution and Marketing permit issued by the Department.)</p> <p>Verify that prior to sludge application the landowner or leaseholder provides the sludge applier the following information:</p> <ul style="list-style-type: none"> <li>- identification of crops to be grown</li> <li>- approximate dates for seeding or planting of crops</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WA.115.3.DE.</b> Sludge generating facilities must meet reporting requirements (DE 7 7000 71 03, Part III, Section 156.0) [ Revised December 1999 ; Citation Revised January 2010].</p>	<ul style="list-style-type: none"> <li>- a statement agreeing to comply with site and crop restrictions when Class B sludges are applied to the field(s)</li> <li>- any other information required by the Department.</li> </ul> <p>(NOTE: See WA.115.1.DE. for applicability.)</p> <p>Verify that each sludge generator who generates or otherwise produces sludge in Delaware maintains the following information for a minimum of 5 yr:</p> <ul style="list-style-type: none"> <li>- volume of sludge generated monthly, or a dry weight basis</li> <li>- the name, address, telephone number and NPDES permit number and the sludge utilization permit number of the person(s) who prepare and apply the sludge, if different from the generator</li> <li>- the location, by either street address or longitude and latitude of all sludge storage, utilization, disposal, or reclamation sites where the generator's sludge has been placed</li> <li>- the concentration of pollutants</li> <li>- a description of how pathogen and vector reduction requirements are met, including a signed certification statement approved by the Department</li> <li>- any additional information required by the Department.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>LAND APPLICATION OF SLUDGE</b></p> <p><b>WA.120. Monitoring</b></p> <p><b>WA.120.1.DE.</b> Sludge-generating facilities must meet monitoring requirements (DE 7 7000 71 03, Part III, Section 102.2, 152.1 and 152.3) [Citation Revised December 1999 ; Revised January 2010].</p>	<p>(NOTE: DE 7 7000 71 03 Part III, Land and Treatment of Sludges and Sludge, applies to all persons engaged in the collection, handling, generation, preparation, storage, and transportation of sludge, treated sludge or any product containing these materials in the State of Delaware.)</p> <p>Verify that all sludge-generating facilities developed a sludge sampling program which addresses random and cyclic variations within the sludge stream and receive Departmental approval prior to implementing the program.</p> <p>Verify that the sludge sampling program addresses, with respect to both stabilized and unstabilized sludges, the following:</p> <ul style="list-style-type: none"> <li>- sampling equipment, personnel, and containers, including set-up, tear-down and cleaning procedures</li> <li>- representative sampling ( collection points, compositing method, frequency and timing of sampling)</li> <li>- sample preservation</li> <li>- recordkeeping/logbook</li> <li>- transfer and chain-of-custody samples.</li> </ul> <p>Verify that all sludge generating facilities submit a sludge analysis program and receive Departmental approval prior to implementing the program.</p> <p>Verify that the sludge analyses program addresses, the following:</p> <ul style="list-style-type: none"> <li>- laboratories used, addresses, qualifications</li> <li>- parameters analyzed at each laboratory for each medium (water, soil, sludge)</li> <li>- QA/QC procedures utilized, results of procedures</li> <li>- methodologies employed, citation for methodologies.</li> </ul> <p>Verify that all laboratory results submitted to the Department list the method(s) used for analysis.</p>

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<p><b>LAND APPLICATION OF SLUDGE</b></p> <p><b>WA.130. State Specific Requirements</b></p> <p><b>WA.130.1.DE.</b> Sludge transportation requirements must be met ( DE 7 7000 7103, Part III, Section 143.0) [Revised January 2010].</p> <p><b>WA.130.2.DE.</b> Sludge storage facilities must meet permitting requirements ( DE 7 7000 7103, Part III, Section 146.0) [Revised January 2010].</p>	<p>Verify that off-site transportation of sludge offsite has a valid permit.</p> <p>Verify that all transporters of sludge or septage submit a plan for the prevention, control, and cleanup of accidental discharges to the Department.</p> <p>Verify that, when liquid sludge ( less than 15 percent solids) is transported by truck, rail, or barge, closed watertight vessels are used.</p> <p>(NOTE: Liquid sludge can be pumped and transported by pipeline.)</p> <p>Verify that, when sludge cake (15-35 percent solids) is transported by dump truck, the following standards are met:</p> <ul style="list-style-type: none"> <li>- trucks are properly sealed to prevent leakage</li> <li>- trucks are equipped with splash guards firmly attached horizontally at the front and rear of the trailer</li> <li>- each splash guard covers at least 25 percent of the trailer's open area</li> <li>- a minimum 2 ft of freeboard is maintained between the sludge and the top of the trailer, unless the top is completely sealed.</li> </ul> <p>(NOTE: Sludge cake may be transported in watertight boxes and cement-type vehicles.)</p> <p>(NOTE: The Department may require certain cake sludges to be transported as liquid sludges.)</p> <p>Verify that, when dried sludge (greater than 35 percent solids) is transported in dump trucks, the trucks are properly sealed to prevent leakage and are covered with tarps or their equivalent.</p> <p>Verify that temporary and permanent sludge storage facilities have a valid permit prior to construction and operation.</p> <p>(NOTE: Temporary facilities exist for less than 1 yr or are used for storage for less than 6 mo.)</p> <p>(NOTE: Unless governed by another permitting authority, facilities for the temporary storage of sludge are authorized only as an interim measure to provide</p>

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	<p>sufficient time for the location, authorization, design and construction of permanent sludge storage facilities.)</p> <p>(NOTE: Portable equipment used for the short-term holding of sludge (i.e., dumpsters and roll-offs) are not considered as storage facilities provide this equipment is included in the list of equipment provided in the permit application.)</p> <p>(NOTE: Storage facilities are to be used as proactive staging areas for sludge or sludge products and not to be used for final or permanent disposal. Storage facilities used in a manner that constitutes final or permanent disposal shall be classified as surface disposal unit and subject to the requirements of <i>The Regulations Governing the Disposal of Solid Waste in Delaware.</i>)</p>
<b>WA.130.3.DE.</b> [Deleted December 1999].	(NOTE: Regulation revised.)
<b>WA.130.4.DE.</b> [Deleted December 1999].	(NOTE: Regulation revised.)

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>SURFACE DISPOSAL OF SLUDGE</b></p> <p><b>WA.135. General</b></p> <p><b>WA.135.1.DE.</b> [Deleted December 1999].</p>	<p>(NOTE: Regulation revised.)</p>



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<p><b>SURFACE DISPOSAL OF SLUDGE</b></p> <p><b>WA.145. State Specific Requirements</b></p> <p><b>WA.145.1.DE.</b> Research projects utilizing sludge must meet permitting requirements (DE 7 7000 71 03, Part III, Sections 119.8 and 140. 1) [Citation Revised December 1999; Revised January 2010].</p>	<p>Verify that research projects that utilize sludge have a valid permit.</p> <p>(NOTE: As a condition of any permit under this section the title holder must execute and record in the appropriate County Office of Recorder of Deeds an affidavit in a form approved by the Department which notifies prospective purchasers that the property has been used to conduct sludge utilization research.)</p> <p>(NOTE: Research projects may be designed to improve current sludge utilization methods, develop new methods, and/or determine the environmental or health effects of sludge utilization.)</p>

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<p><b>WA.150.</b></p> <p><b>WATERSHED PROTECTION PROGRAMS/ RECHARGE PROGRAMS</b></p> <p><b>WA.150.1.DE.</b> Contractors engaged in onsite clearing and land disturbing activities must meet certification requirements ( DE 7 5000 5101, Section 13. 1) [Citation Revised J anuary 2007 ; Citation R evised D ecember 2008].</p> <p><b>WA.150.2.DE.</b> Land developers must meet notification requirements (DE 7 5000 510 1, Section 14. 2) [Citation Revised J anuary 2007; C itation R evised December 2008].</p> <p><b>WA.150.3.DE.</b> Erosion and sediment control maintenance requirements must be met (DE 7 5000 5101, Sections 15.1 a nd 15.4) [Citation Revised J anuary 2007 ; Citation R evised D ecember 2008].</p>	<p>Verify that responsible personnel are certified for any foreman or superintendent who is in charge of onsite clearing and land disturbing activities for sediment and stormwater control associated with a construction project.</p> <p>Verify that the land developer notifies the appropriate inspection agency before initiation of construction and upon project completion when a final inspection will be done to ensure compliance with the approved sediment and stormwater management plan.</p> <p>Verify that, for erosion and sediment control, all practices are maintained according to the requirements specified in the <i>Delaware Sediment and Erosion Control Handbook</i> dated 1989 or as directed by the construction reviewer.</p> <p>Verify that the owner or person responsible performs or causes to be performed preventive maintenance of all completed stormwater management practices to ensure proper functioning.</p> <p>Verify that all stormwater management practices are inspected at least once per year by the responsible inspection agency.</p>

## Appendix 12-1

### Soil Monitoring Requirements<sup>1</sup> for Slow Rate Land Treatment Systems

(Source: DE 7 7000 7103, Part II, Section 80.7) [Citation Revised January 2010]

Parameter	Sampling Frequency
pH	Once per year
Cation exchange capacity	If pH changes <sup>4</sup>
Percent base saturation	If pH changes <sup>4</sup>
Phosphorus adsorption <sup>2</sup>	Once every 4 yr
Metals and priority pollutants <sup>3</sup>	Once per year

<sup>1</sup> Composite soil samples representing each soil series within spray fields. Soil samples should be taken at 15-30 in. depth. A minimum of one composite sample for every 10-20 acres of each soil series is required.

<sup>2</sup> At sites receiving high phosphorus loadings where percolate is likely to flow to a sensitive surface water, sampling frequencies are determined on a case-by-case basis.

<sup>3</sup> For facilities receiving significant quantities of metals or priority pollutants, this analysis is required. For other facilities, frequency is determined on a case-by-case basis.

<sup>4</sup> More than one standard unit from pH of soil prior to the application of wastes.

## Appendix 12-2

### Minimum Effluent Limitations for Industrial Wastewater

(Source: DE 7 7000 7201, Section 7.3) [Citation Revised December 2008]

Parameter	Limitation (mg/L)
Biological oxygen demands	30.0
Cadmium	0.10
Chromium (total)	0.150
Copper	0.50
Cyanide	0.050
Fluoride	3.0
Iron (total)	2.0
Lead	0.150
Mercury	0.005
Nickel	1.0
Oil and grease	10.0
Phenolics	1.0
Selenium	0.020
Silver	0.10
Suspended solids	30.0
Zinc	1.0

## Appendix 12-3

### Site Specific Management Requirements for CAFOs Operating Under General Permits

(Source: DE 7 7000 7201, Section 9.4.6.2) [Citation Revised December 2008].

9.4.6.2.1 An overall manure balance budget that clearly identifies available manure, intended manure use, manure storage capacity, and excess manure determined by the animal waste management plan and/or nutrient management plan. This budget must identify intended use to include land application, exportation, or other described uses. Operations must account for excess manure in the Annual Nutrient Management Report.

9.4.6.2.2 A description of manure storage capacity and general schedule or timeframe when manure is removed or transported from storage site to include but not be limited to:

9.4.6.2.2.1 Management practices to prevent storage, collection, and conveyance systems from leaking pollutants to ground or surface water.

9.4.6.2.2.2 For liquid storage: storage must be conducted to prevent a discharge and must include a calendar plan for liquid and sediment removal, with a freeboard action level of not less than one foot, with a depth marker.

9.4.6.2.2.3 For solid storage: permanent and temporary storage must be conducted to prevent a discharge and be consistent with standards adopted by NRCS and/or the Commission.

9.4.6.2.2.4 Emergency actions for spills and catastrophic events for existing CAFO liquid storage systems to include the volume of water generated and collected by a 25-year, 24-hour rainfall event or as specified in Section 9.4.14.2.1.1.

9.4.6.2.3 A description and action plan to divert or segregate all clean water as appropriate from the production area and/or for collecting all water coming in contact with the production area to include but not limited to the following categories:

9.4.6.2.3.1 Roof runoff control to prevent contact of clean runoff with production areas where animal manures are present;

9.4.6.2.3.2 Direct contact between animals and waters of the State; and

9.4.6.2.3.3 Runoff coming into contact with animal waste.

9.4.6.2.4 A detailed animal mortality plan indicating as outlined. Burial of dead animals is prohibited except with approval and under special circumstances such as serious bio-security circumstances as approved by the state veterinarian.

9.4.6.2.4.1 Daily handling and disposal of dead animals in a manner that prevents contamination of ground/surface waters as recommended by the BMPs approved by the Commission.

9.4.6.2.4.2 Methods for handling catastrophic mortalities as recommended by the BMPs approved by the Commission.

9.4.6.2.5 Manure and processed wastewater application setbacks. These setbacks are defined as the distance between the application area and any down-gradient surface waters, open tile line, intake structures, sinkholes or other conduits to surface waters. The direct application of manure or processed wastewater to ditches or surface waters is prohibited. These setback standards are provided as three options:

9.4.6.2.5.1 100-foot application setback, or

9.4.6.2.5.2 35-foot vegetated buffer where applications of manure, litter, and process wastewater are prohibited, or

9.4.6.2.5.3 Alternative compliance practices as follows:

9.4.6.2.5.3.1 For surface waters other than drainage ditches:

9.4.6.2.5.3.1.1 50-foot application setback for the field under the conservation practice of incorporation or planting a winter cover crop following the crop receiving manure, litter or process wastewater.

9.4.6.2.5.3.1.2 15-foot application setback for the field under the conservation practice of incorporation within 2 days of application and planting a winter cover crop following the crop receiving manure, litter or process wastewater.

9.4.6.2.5.3.2 For drainage ditches:

9.4.6.2.5.3.2.1 20 -foot application setback for the field under the conservation practice of incorporation or planting a winter cover crop following the crop receiving manure, litter or process wastewater.

9.4.6.2.5.3.2.2 10 -foot application setback for the field under the conservation practice of incorporation within 2 days of application and planting a winter cover crop following the crop receiving manure, litter or process wastewater.

9.4.6.2.5.3.3 Any alternative compliance practice approved by the Commission.

9.4.6.2.6 Chemicals and other contaminants handled on-site are not to be disposed of in any manure, litter, process wastewater, or storm water storage or treatment system unless specifically designed to treat such chemicals and contaminants.

9.4.6.3 A nutrient management plan and/or animal waste management plan and site-specific management requirements shall be updated a minimum of every three years or upon significant alteration to include, but not be limited to, a 25 percent increase in animal units or acres of crops grown. Such plans shall be reported to the Commission no later than December 15 of the year in which they must be updated.

## SECTION 13

### WATER QUALITY MANAGEMENT

#### Delaware Supplement, January 2010

This section covers the state requirements for Water Quality Management and is intended to supplement the U.S. TEAM Guide. Refer to the U.S. TEAM Guide and the DOD Component Supplements for Federal, DOD, and service-specific requirements.

#### Definitions

- *Abandoned Well* - a well which has been permanently filled or sealed (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Acute* - involving a stimulus severe enough to rapidly induce an adverse response; in toxicity tests, an adverse response observed in 96 h or less is typically considered acute. An acute effect is not always measured in terms of lethality; it can measure a variety of short term adverse effects (DE 7 700 0 7401, Section 2) [Citation Revised January 2007].
- *Agricultural Well* - a well used for the watering of livestock, poultry, or the watering of household yards and gardens or other uses related to farming in general but not including the irrigation of lands or crops (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Agricultural Well* - a well used for the watering of livestock, poultry, aquaculture uses, or solely for the watering of household yards and gardens or for other purposes related to farming in general but not including the irrigation of lands or crops. Water is not used for human consumption or to service a dwelling (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Annular Space* - the space between two cylindrical objects, one of which surrounds the other, such as the space between a drillhole and a casing pipe, or between two well casings (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Appropriate Act and Regulations* - the *Delaware Environmental Protection Act* or *Safe Drinking Water Act* and applicable regulations promulgated under those statutes (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Approved* - approved by the Division (DE 40 700 016, Section 1) [Citation Revised December 1998; Citation Revised January 2007].
- *Aquifer* - A part of a formation, a formation, or a group of formations that contains sufficient saturated permeable material to yield economically useful quantities of water to wells and springs (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Base Level License* - a water treatment and/or distribution license in which the following information is covered: general water system information; disinfection by hypochlorination; and distribution operation and maintenance for water supply systems having a flow of less than 500 gpm at 20 psi (DE 16 4000 4463, Section 2) [Added December 2004; Citation Revised January 2007; Citation Revised January 2008].

- *Beneficial Use* - any use of water which is necessary to the applicant, non-wasteful, reasonably non-damaging to other users, and in the best interest of the public (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Best Management Practice* - methods, measures, or practices that are determined by the Department to be reasonable and cost-effective means for a person to meet certain, generally nonpoint source, pollution control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during or after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters (DE 7 7000 7401, Section 2) [Revised December 2004; Citation Revised January 2007].
- *Chronic* - involving a stimulus that produces an adverse response that lingers or continues for a relatively long period of time, often one-tenth of the life span or more. Chronic should be considered a relative term depending on the life span of the organism. A chronic effect can be lethality, growth or reproductive impairment, or other longer term adverse effect (DE 7 7000 7401, Section 2) [Revised December 2004; Citation Revised January 2007].
- *Class I Injection Wells* - wells used by generators of hazardous wastes or owners or operators of hazardous waste management facilities to inject hazardous waste beneath the lowermost formation containing, within 1/4 mi of the well bore, an underground source of drinking water. Other industrial and municipal disposal wells which inject fluids beneath the lowermost formation containing, within 1/4 mi of the well bore, an underground source of drinking water (State Administered Underground Injection Control Program, Section 122.22(a)(1) and (2)) [Citation Revised January 2007; Citation Revised December 2008].
- *Class IV Injection Wells* - wells used by generators of hazardous wastes or of radioactive wastes, by owners or operators of hazardous wastes management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous wastes or radioactive wastes into a formation which, within 1/4 mi of the well, contains an underground source of drinking water. Wells used by generators of hazardous wastes or of radioactive wastes, by owners or operators of hazardous wastes management facilities, or by owners or operators of radioactive waste above a formation which, within 1/4 mi of the well, contains an underground source of drinking water. Wells used by generators of hazardous wastes or owners or operators of hazardous waste management facilities to dispose of hazardous wastes, which cannot be classified under Class I Injection Wells or under the above two designations for Class IV Injection Wells (e.g., wells used to dispose of hazardous wastes into or above a formation which contains an aquifer which has been exempted) (State Administered Underground Injection Control Program, Section 122.22(d)(1) through (3)) [Citation Revised January 2007; Citation Revised December 2008].
- *Class V Injection Wells* - injection wells not included in Class I or IV. Class V wells include (State Administered Underground Injection Control Program, Section 122.22(e)(1) through (4)) [Citation Revised January 2007; Citation Revised January 2008; Citation Revised December 2008]:
  1. air-conditioning return flow wells used to return to the supply a quifer the water used for heating or cooling in a heat pump
  2. cooling water return flow wells used to inject water previously used for cooling
  3. drainage wells used to drain surface fluid, primarily storm runoff, into a subsurface formation
  4. recharge wells used to replenish the water in an aquifer
  5. saltwater intrusion barrier wells used to inject water into a fresh water aquifer to prevent the intrusion of saltwater into the fresh water
  6. subsidence control wells used to inject fluids into a nonoil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water (not used for the purpose of oil or natural gas production)
  7. cesspools including multiple dwelling, community or regional cesspools, or other devices that receive wastes which have an open bottom and sometimes perforated sides (does not apply to single family



residential cesspools which receive solely sanitary wastes and have the capacity to serve fewer than 20 persons a day)

8. septic system wells used to inject the waste or effluent from a multiple dwelling or business establishment septic tank (does not apply to single family residential septic system wells not to nonresidential septic system wells which are used solely for the disposal of sanitary waste and have the capacity to serve fewer than 20 persons a day)
  9. dry wells used for the injection of wastes into a subsurface formation
  10. sand backfill or other backfill wells used to inject a mixture of water and sand, mill tailings, or other solids into mined out portions of subsurface mines, whether what is injected is a radioactive waste or not
  11. radioactive waste disposal wells other than Class IV
  12. wells use for solution mining of conventional mines, such as stopes leaching
  13. wells used to inject spent brine into the same formation from which it was withdrawn after extraction of halogens or their salts
  14. injection wells used for in situ recovery of lignite, coal, tar sands, and oil shale
  15. injection wells associated with the recovery of geothermal energy for heating, aquaculture, and production of electric power
  16. injection wells used in experimental technologies.
- *Community Water System* - a public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents (DE 40 700 016, Section 1) [Citation Revised January 2007].
  - *Complete Mix* - the concentration of a discharged pollutant varies by no more than 5 percent over the cross-sectional area of the receiving water at the point of discharge (DE 7 7000 740 1, Section 2) [Citation Revised January 2007].
  - *Confining Zone* - a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement above an injection zone (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
  - *Consecutive Water Supply* - a public water system that obtains all of its water from, but is not owned or operated by, a public water system to which the regulations apply and does any one of the following (DE 40 700 016, Section 1) [Citation Revised December 1998; Citation Revised January 2007]:
    1. alters the purchased water by some type of treatment
    2. resells the purchase water to its consumer
    3. furnishes water to an interstate carrier.

The state may opt to accept a consecutive supply as a single system for monitoring purposes.

- *Contaminant* - any physical, chemical, biological or radiological substance or matter in water (DE 40 700 016, Section 1) [Citation Revised December 1998; Citation Revised January 2007].
- *Conventional Mine* - an open pit or underground excavation for the production of minerals (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Critical Flow* - a statistically determined minimum flow which has a defined duration and recurrence interval (DE 7 7000 7401, Section 2) [Citation Revised January 2007].
- *Department* - the Department of Natural Resources and Environmental Control (DNREC) (DE 7 7300 730 1, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].

- *Dewatering Well* - a well used to remove ground water for construction of footings, sewer lines, building foundations, elevator shafts, etc. (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Direct-Responsible-Charge (DRC)* - certified water system operator(s) assigned active daily technical direction and supervision or active daily accountability for process control decisions of a facility or a major segment of a facility that directly impacts public health or the environment (DE 16 4000 4463, Section 2) [Added December 2004; Citation Revised January 2007; Citation Revised January 2008].
- *Discharge Length Scale* - the square root of the cross-sectional area of any discharge outlet (DE 7 7000 7401, Section 2) [Citation Revised January 2007].
- *Disinfectant* - any oxidant including, but not limited to, chlorine, chlorine dioxide, chloramines, and ozone added to water in any part of the treatment or distribution process that is intended to kill or inactivate pathogenic microorganisms (DE 40 700 016, Section 1) [Citation Revised January 2007].
- *Disinfection* - the inactivation of pathogenic organisms in water by chemical oxidants or equivalent agents. (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Disposal Area* - the entire area used for underground dispersion of the liquid portion of sewage (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Disposal Well* - a well used for the disposal of waste into a subsurface stratum (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Division* - the Division of Public Health of the Department of Health and Social Services (DE 40 700 016, Section 1) [Citation Revised December 1998; Citation Revised January 2007].
- *DNREC* - the Department of Natural Resources and Environmental Control (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Domestic Well* - well primarily used for potable non-public water supply purposes and which may be used for non-potable purposes, excluding heat pump supply (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Drawdown* - the extent of lowering of the static water level in a well and of the water table or piezometric surface adjacent to a well, resulting from the discharge of water from a well by pumping a natural flow (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Drilled Well* - a well that is excavated wholly or in part by means of a drill (either percussion or rotary) which operates by cutting or abrasion or by use of a water jet (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Driven Well* - a well that is constructed by driving a casing, at the end of which there is a drive point and screen (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].

- *Dug Well* - well that is constructed in an excavation created by the use of picks, shovels, or other hand tools, or by means of a power shovel (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Endorsement* - any water treatment operation which is over and above the base level license. (DE 16 4000 4463, Section 2) [Added December 2004; Citation Revised January 2007; Citation Revised January 2008].
- *Emergency Permit* - a UIC permit (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Excavated Waters* - waters of the state which are wholly human-created. Such waters shall include but not be limited to upland basins with surface outlets, drainage and tax ditches which are ephemeral, and dug ponds (DE 7 7000 7401, Section 2) [Revised December 2004; Citation Revised January 2007].
- *Exempted Aquifer* - an aquifer or its portion that meets the criteria in the definition of USDW but which has been exempted according to the procedures in State Administered Underground Injection Control Program, Section 122.25(b) ( State Administered Underground Injection Control Program, Section 122. 3) [ Citation Revised January 2007; Citation Revised December 2008].
- *Exemption* - an allowance to deviate from or to exceed a maximum contaminant level (MCL) requirement or treatment technique requirement for a specific period of time ( DE 40 700 016, Section 1) [Citation Revised December 1998; Citation Revised January 2007].
- *Facility or Activity* - any injection well activity or any other facility or activity, including land or appurtenances, that is subject to regulation under the UIC program ( State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Flow Rate* - the volume per time unit given to the flow of gases or other fluid substance which emerges from an orifice, pump, turbine, or passes along a conduit or channel (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Fluid* - material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state ( State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Formation* - a body of rock characterized by a degree of lithologic homogeneity which is prevailingly, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface ( State Administered Underground Injection Control Program, Section 122. 3) [ Citation Revised January 2007 ; Citation Revised December 2008].
- *Formation Fluid* - fluid present in a formation under natural conditions as opposed to introduced fluids (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Generator* - any person, by site location, whose act or process produces hazardous waste identified or listed in Part 126 of the Delaware Regulations Governing Hazardous Waste Program (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Groundwater* - any water naturally found under the surface of the earth ( State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].

- *Ground Water* - any water naturally found under the surface of the earth (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Halogen* - one of the chemical elements chlorine, bromine, or iodine (DE 40 700 016, Section 1) [Citation Revised January 2007].
- *Hazardous Waste* - a hazardous waste as defined in 40 Code of Federal Regulations (CFR) Section 261.3 (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Hazardous Waste Management Facility* - all contiguous land, structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Industrial Well* - well which is used in the processing, washing, packaging, or manufacturing of a product excluding food and beverages (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Injection Well* - a well into which fluids are being injected (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Injection Well* - well used to inject fluid into the subsurface as regulated in the "Regulations Governing Underground Injection Control." (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Injection Zone* - a geological formation, group of formations, or part of a formation receiving fluids through a well (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Irrigation Well* - a well that is used for the watering of lands or crops other than household lawns and gardens (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Lethal Concentration (LC)* - the point estimate of the toxicant concentration that would be lethal to a given percentage of test organisms during a specific period (DE 7 7000 7401, Section 2) [Revised December 2004; Citation Revised January 2007].
- *Maximum Contaminant Level (MCL)* - the maximum permissible level of a contaminant in water which is delivered to any user of a public water system (DE 40 700 016, Section 1) [Revised December 1998; Citation Revised January 2000].
- *Maximum Total Trihalomethane Potential (MTP)* - the maximum concentration of total trihalomethanes (TTHM) produced in a given water containing a disinfectant residual after seven days at a temperature of 25°C or above (DE 40 700 016, Section 1) [Citation Revised January 2007].
- *Miscellaneous Public Water System* - a public water system that is neither community or noncommunity (DE 40 700 016, Section 1) [Citation Revised January 2007].
- *Monitor Well* - a well installed for the sole purpose of the determination of subsurface conditions and collecting ground water samples (DE 7 730 073 01, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].

- *Net Advective Flow* - that flow which represents the difference between the amount of water passing a point in a tidal system on a flood tide and the subsequent ebb tide. It is approximately equal to the freshwater input to the system upstream of that point (DE 7 7000 7401, Section 2) [Revised December 2004; Citation Revised January 2007].
- *New Injection Well* - a well which began injection after a UIC program for the state applicable to the well is approved ( State Administered Underground Injection Control Program, Section 122.3) [ Citation Revised January 2007; Citation Revised December 2008].
- *Noncommunity Water System* - a public water system which has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year (DE 40 700 0 16, Section 1) [Citation Revised January 2007].
- *Nuisance Condition* - any condition that, as a result of pollutant addition to a stream, causes unreasonable interference with the designated uses of the water or the uses of the adjoining land areas (DE 7 7000 7401, Section 2) [Citation Revised January 2007].
- *Nuisance Species* - any species of fish, other animal, or plant living in or near the water whose presence causes unreasonable interference with the designated uses of the water or the uses of the adjoining land areas. Nuisance species include, but are not limited to, filamentous and blue-green algae (DE 7 7000 7401, Section 2) [Citation Revised January 2007].
- *Observation Well* - a well used for the purpose of ground water levels (DE 7 7300 73 01, Section 2) [ Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Operator* - the individual who has responsibility for the operation of a water treatment plant or water distribution system and any individual who normally has charge of an operating shift, or who performs process control decisions including analytical control (DE 16 4000 4463 , Section 2) [Added December 2004; Citation Revised January 2007; Citation Revised January 2008].
- *Owner or Operator* - the owner or operator of any facility or activity subject to regulation under the UIC program ( State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Packer* - a device lowered into a well to produce a fluid-tight seal within the casing ( State Administered Underground Injection Control Program, Section 122.3) [ Citation Revised January 2007 ; Citation Revised December 2008].
- *Permit* - an authorization, license, or equivalent control document issued by DNREC to implement the requirements of State Administered Underground Injection Control Program, Section Part 122 and 124. The term includes UIC emergency permit. The term does not include any permit which has not yet been the subject of final agency action (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Person* - any individual, firm, association, organization, partnership, business, trust, corporation, company, contractor, supplier, installer, user, or owner, or any Federal, State or local governmental agency or public district or any officer or employee thereof DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Person* - any individual, firm, association, organization, partnership, business trust, corporation, company, contractor, supplier, installer, user or owner, or any Federal, State or local governmental agency or public

district or any officer or employee thereof (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].

- *Plugging* - the act or process of stopping the flow of water, oil, or gas into or out of a formation through a borehole or well penetrating that formation ( State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Pollution* - the presence of anything in water which tends to degrade its quality so as to constitute a hazard or impair the usefulness of the water ( DE 40 700 016 , Section 1) [ Citation Revised December 1998; Citation Revised January 2007].
- *Potable Water* - water which is in compliance with all the primary health related drinking water standards specified in the Delaware Regulations Governing Public Drinking Water Systems and the USEPA Safe Drinking Water Act, and is acceptable for human consumption. (DE 7 7300 7301 , Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Pressure* - the total load or force per unit area acting on a surface (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Primary Contact Recreation* - any water-based form of recreation, the practice of which has a high probability for total body immersion or ingestion of water (examples include but are not limited to swimming and water skiing) (DE 7 7000 7401, Section 2) [Revised December 2004; Citation Revised January 2007].
- *Project* - a group of wells in a single operation (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Public Water System* - a water supply system for the provision to the public of piped water for human consumption either directly from the user's free flowing outlet, or indirectly by the water being used to manufacture ice, foods, and beverages or that supplies water for potable or domestic purposes to employees, tenants, members, guests, or the public at large in commercial offices, industrial areas, multiple dwellings or semipublic buildings including, but without limitation, rooming and boarding houses, motels, tourists cabins, mobile home parks, restaurants, camps of all types, day and boarding school, clubhouses, hospitals, and other institutions, or offers any water for sale for potable or domestic purposes (DE 40 700 016, Section 1) [Citation Revised December 1998; Revised January 2007].
- *Public Well* - a well which is used to supply water to more than three dwelling units; twenty-five (25) or more employees; in the manufacture of ice, foods, or beverages; to the public in food washing, processing, or preparation in a plant, restaurant, or other facility (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Pump Installer Contractor* - any person licensed by the State of Delaware to engage in the business of contracting for the installation, modification, or repair of water well pumps and related equipment (DE 7 7300 7301, Section 2) [ Added January 2006; Citation Revised January 2007 ; Citation Revised December 2008 ; Citation Revised January 2010].
- *Pump Installer* - any person licensed by the State of Delaware to act in responsible charge of all on-site work in the installation, maintenance, and repair of pumps and related equipment in and for wells (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Pump Pit* - a hole or depression in the ground in which the well and external pumping equipment is contained, and which is not protected from freezing ( DE 7 7300 7301 , Section 2 ) [ Added December 2008; Citation Revised January 2010].

- *Radioactive Waste* - any waste which contains radioactive material in concentrations which exceed those listed in 10 C.F.R. Part 20, Appendix B, Table II, Column 2 (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Regulatory Mixing Zone* - a designated, mathematically defined portion of a receiving water body, in close proximity to an effluent discharge in which initial dilution and dispersion of effluent occur (DE 7 7000 7401, Section 2) [Citation Revised January 2007].
- *Sanitary Survey* - an onsite review of the water source, facilities, equipment, operation, and maintenance of a public water supply system for the purpose of evaluating the adequacy of the source, facilities, equipment, operation, and maintenance for producing and distributing safe drinking water (DE 40 700 016, Section 1) [Citation Revised December 1998; Citation Revised January 2007].
- *Schedule of Compliance* - a schedule of remedial measures included in a permit, including a nonenforceable sequence of interim requirements leading to compliance with the appropriate act and regulations (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Secretary* - the Secretary of the Department of Natural Resources and Environmental Control or his or her duly authorized designee (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Secretary* - the Secretary of the Department of Natural Resources and Environmental Control or his or her duly authorized designee (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Septic Tank* - watertight receptacle which receives the discharge of sanitary sewage, and is designed and constructed so as to permit settling of settleable solids from the liquid, digestion of the organic matter by detention, and discharge of the liquid portion into a disposal area (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Site* - the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Source* - the place from which a system obtains its water. This may be either from underground or from the surface. Surface water may include rivers, lakes, reservoirs, springs, impoundments, or a body of water with surface exposed to the atmosphere (DE 40 700 016, Section 1) [Citation Revised December 1998; Citation Revised January 2007].
- *Subsidence* - the lowering of the natural land surface in response to (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised January 2007; Citation Revised December 2008]:
  1. earth movements
  2. lowering of fluid pressure
  3. removal of underlying supporting material by mining or solution of solids, either artificially or from natural causes
  4. compaction due to wetting (hydrocompaction)
  5. oxidation of organic matter in soils
  6. added load on the land surface.

- *Supplier of Water* - any person who owns or operates a public water system (DE 40 700 016, Section 1) [Citation Revised December 1998; Citation Revised January 2007].
- *Test Well* - a well installed to ascertain the lithology and water transmission properties of an aquifer or geologic materials and which may be used to determine water quality; a well which is not used on a permanent basis (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Total Trihalomethanes (TTHM)* - the sum of the concentration in milligrams per liter of the trihalomethane compounds trichloromethane (chloroform), dibromochloromethane, bromodichloromethane, and tribromomethane (bromoform) rounded to two significant figures (DE 40 700 016, Section 1) [Citation Revised January 2007].
- *Toxic Substance* - any substance or combination of substances including disease-causing agents, which after discharge and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, may cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction, or physical deformities in the organisms or their offspring (DE 7 7000 7401, Section 2) [Citation Revised January 2007].
- *Toxicity Test* - the means to determine the toxicity of a chemical or effluent using living organisms. A toxicity test measures the degree of response of an exposed test organism to a specific chemical or effluent (DE 7 7000 7401, Section 2) [Citation Revised January 2007].
- *Treatment* - any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize the wastes, to recover energy or material resources from the waste, render the waste nonhazardous or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Treatment Technique Requirement* - a requirement which specifies for a contaminant a specific treatment technique(s) demonstrated to the satisfaction of the Division to lead to a reduction in the level of such contamination sufficient to comply with these Regulations (DE 40 700 016, Section 1) [Citation Revised December 1998; Revised January 2007].
- *Trihalomethane* - one of the family of organic compounds named as derivatives of methane wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure (DE 40 700 016, Section 1) [Citation Revised January 2007].
- *True Daily Mean* - the mean value for a parameter which accurately accounts for diurnal variations over one 24-h period (DE 7 7000 7401, Section 2) [Citation Revised January 2007].
- *Underground Injection* - a well injection (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Underground Source of Drinking Water (USDW)* - an aquifer or its portion which (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised January 2008; Citation Revised December 2008]:
  1. supplies any public water system
  2. contains a sufficient quantity of groundwater to supply a public water system
  3. currently supplies drinking water for human consumption
  4. contains fewer than 10,000 mg/L total dissolved solids
  5. which is not an exempted aquifer.



- *USEPA* - the United States Environmental Protection Agency (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Variance* - an allowance to deviate from or to exceed a MCL requirement or treatment technique requirement when necessary treatment techniques are not available (DE 40 700 016, Section 1) [Citation Revised December 1998; Citation Revised January 2007].
- *Water Supply System* - includes the works and appurtenances for collection, treatment, storage, and distribution of the water from the source of supply to the free-flowing outlet of the ultimate consumer (DE 40 700 016, Section 1) [Citation Revised December 1998; Citation Revised January 2007].
- *Water Well Contractor* - any person engaged in the business of contracting for the construction of water wells, and/or the installation of pumping equipment in or for wells (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Water Well Contractor* -any person licensed by the State of Delaware to engage in the business of contracting for the construction of wells or the installation or repair of pumping equipment in or for wells, or both (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Revised December 2008; Citation Revised January 2010].
- *Waters of the State* -
  1. all surface waters of the state including, but not limited to, the following:
    - a. waters which are subject to the ebb and flow of the tide including, but not limited to, estuaries, bays, and the Atlantic Ocean
    - b. all interstate waters, including interstate wetlands
    - c. all other waters of the state, such as lakes, rivers, streams, drainage ditches, tax ditches, creeks, mudflats, sandflats, wetlands, sloughs, or natural or impounded ponds
    - d. all impoundments of waters otherwise defined waters of the state
    - e. wetlands adjacent to waters (other than waters that are themselves wetlands) identified in 1-4,
  2. waste and stormwater treatment systems including, but not limited to, treatment ponds or lagoons (DE 7 7000 7401, Section 2) [Citation Revised January 2007].
- *Waters of Exceptional Recreational or Ecological Significance (ERES)* - waters that are important, unique, or sensitive from a recreational and/or ecological perspective, but which may or may not have excellent water quality. These waters normally have regional significance with respect to recreational use or have significant or widespread riverine, riparian, or wetland natural areas (DE 7 7000 7401, Section 2) [Citation Revised January 2007].
- *Well* - a bored, drilled, or driven shaft, or a dug hole whose depth is greater than the largest surface dimension (State Administered Underground Injection Control Program, Section 122.3) [Citation Revised January 2007; Citation Revised December 2008].
- *Well* - any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed when the intended use of such excavation is for the location, testing, acquisition, artificial recharge or injection of fluids or gases, or to otherwise make use of groundwater and where the depth is greater than the diameter or width. For the purpose of these regulations this definition does not include geotechnical test; soil, telephone, and construction piling borings; fence posts or test pits. Horizontal closed loop heat pump circulation systems constructed within twenty (20) feet of the ground surface are not considered wells (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].

- *Well Driller* - any person in responsible charge of all on-site work relating to the drilling, boring, coring, driving, digging, construction, installation, removal or repair of a well (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Well Driller* - any person in responsible charge of all on-site work relating to the drilling, construction, developing and testing of water wells, water well alteration and repair, test boring and coring, and the installation, modification, and repair of water well pumps and related equipment (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].
- *Well Driver* - any person in responsible charge for all on-site work relating to the driving, construction, installation, removal or repair of driven wells, or the installation modification or repair of water well pumps and related equipment ordinarily used in driven wells (DE 7 7300 7301, Section 2) [Added January 2006; Citation Revised January 2007; Citation Revised December 2008; Citation Revised January 2010].

**WATER QUALITY MANAGEMENT  
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**REFER TO CHECKLIST ITEMS:**

Missing Checklist Items	WQ.2.1.DE.
State Specific	WQ.6.1.DE.
Public Water Systems	
General	WQ.10.1.DE. through WQ.10.6.DE.
Monitoring/Sampling	[Deleted]
Disinfection and Filtration	WQ.20.1.DE. through WQ.20.7.DE.
Notification and Reporting Requirements	WQ.30.1.DE. through WQ.30.13.DE.
Community Water Systems	
Standards	WQ.35.1.DE. through WQ.35.3.DE.
Monitoring/Sampling	WQ.40.1.DE. through WQ.40.11.DE.
Notification and Reporting Requirements	[Deleted]
Noncommunity Water Systems	
Standards	WQ.60.1.DE.
Monitoring/Sampling	WQ.65.1.DE. and WQ.65.2.DE.
Notification and Reporting Requirements	[Deleted]
Drinking Water Wells	WQ.90.1.DE. through WQ.90.5.DE
Miscellaneous Wells	WQ.100.1.DE. through WQ.100.10.DE.
Underground Injection Control (UIC)	
All Wells	[Deleted]
Class I Wells	[Deleted]
Water Quality Standards	WQ.115.1.DE. through WQ.115.17.DE.

**WATER QUALITY MANAGEMENT  
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**REFER TO APPENDIX NUMBERS:**

**REFER TO APPENDIX TITLES:**

13-1	Inorganic Primary MCL and Secondary MCL
13-2	PMCL for Radioactivity
13-3	[Deleted December 2004]
13-4	Notification Requirements
13-5	NPDWR Violations and Other Situations Requiring Public Notice
13-6	Numeric Aquatic Life Criteria
13-7	Numeric Human Health Criteria
13-8	Bacterial Water Quality Criteria

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<p><b>WQ.2.</b></p> <p><b>MISSING CHECKLIST ITEMS</b></p> <p><b>WQ.2.1.DE.</b> Federal facilities are required to comply with all applicable state regulatory requirements not contained in the checklist (a finding under this checklist item will have the citation of the applied regulation as a basis of findings).</p>	<p>Determine whether any new regulations have been issued since the finalization of the manual.</p> <p>Determine whether the Federal facility has activities or facilities that are regulated but not addressed in the checklists.</p> <p>Verify that the Federal facility is in compliance with all applicable and newly issued regulations.</p>

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<p><b>WQ.6.</b></p> <p><b>STATE SPECIFIC</b></p> <p><b>WQ.6.1.DE.</b> By September 2006, persons in position of direct responsible charge or persons operating public water supply system treatment facility or public water supply distribution system must have a valid license and all applicable endorsements (DE 16 400 0 44 63, Section 4.1) [Added December 2004 ; Citation Revised January 2007].</p>	<p>Verify that by September 10, 2006, persons in a position of direct-responsible charge and operate the following facilities have a valid base level water operator's license and all applicable endorsements:</p> <ul style="list-style-type: none"> <li>- any public water supply system treatment facility</li> <li>- any public water supply distribution system, capable of producing greater than 500 gallons per minute at 20 pounds per square inch.</li> </ul> <p>Verify that by September 10, 2006, any public water distribution system, capable of producing greater than 500 gallons per minute at 20 pounds per square inch, is under the direct-responsible-charge of a person possessing a valid base level water operator's license and, at a minimum, a distribution endorsement.</p> <p>(NOTE: The requirement of a distribution endorsement may be waived if the owner can demonstrate to the Division that all distribution system operation and maintenance is contracted out to another licensed operator.)</p> <p>Verify that by November 10, 2006, any owner of a public water supply system treatment facility, distribution system, or combined treatment/distribution system provides to the Division a list of all persons in direct-responsible-charge and all operators who have been duly licensed under these regulations.</p> <p>Verify that the owner notifies the Division in writing of any additions, deletions, or other changes in the number of licensed direct-responsible-charges within 30 days of the change.</p>

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<p><b>PUBLIC WATER SYSTEMS</b></p> <p><b>WQ.10. General</b></p> <p><b>WQ.10.1.DE.</b> Public water systems must meet emergency order requirements ( DE 40 700 016 , Section 2.10) [Citation Revised December 1999; Citation Revised January 2007].</p> <p><b>WQ.10.2.DE.</b> Construction or modification of public water systems must meet approval and siting requirements (DE 40 700 016, Sections 2.12 and 2.1313) [Revised December 1999; Citation Revised January 2007].</p> <p><b>WQ.10.3.DE.</b> Public water systems must meet laboratory testing requirements ( DE 40 700 016 , Section 2.14) [Citation Revised December 1999; Citation Revised January 2007].</p>	<p>Verify that systems have met the requirements of any emergency orders issued to them by the Director of the Division.</p> <p>(NOTE: This checklist item applies to community water systems, noncommunity water systems, and miscellaneous water systems.)</p> <p>Verify that a Certification of Approval for Construction is obtained prior to the construction of a new Public Water System or a alteration of an existing Public Water System.</p> <p>Verify that a Certificate of Approval to Operate is obtained prior to operation of a newly constructed public water system or renovated portion of an existing water system without.</p> <p>Verify that part or all of the new or expanded facility is not located at sites which:</p> <ul style="list-style-type: none"> <li>- are subject to a significant risk from earthquakes, floods, fires, or other disasters which could cause a breakdown of the public water system or a portion of it</li> <li>- except for intake structures, are within the floodplain of a 100-yr flood or is lower than any recorded high tide, where appropriate records exist.</li> </ul> <p>Verify that samples used in determining compliance with the following are analyzed by the Division or by a laboratory which is approved/certified by the Division and the USEPA:</p> <ul style="list-style-type: none"> <li>- bacteriological quality requirements</li> <li>- inorganic and organic chemical requirements</li> <li>- turbidity and corrosivity requirements</li> <li>- radioactivity requirements.</li> </ul> <p>(NOTE: Measurements for turbidity, free chlorine residual, temperature, and pH may be performed by any person acceptable to the Division.)</p>

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<p><b>WQ.10.4.DE.</b> Public water systems must meet water source requirements ( DE 40 700 01 6, Section 3.1) [Citation Revised January 2007].</p> <p><b>WQ.10.5.DE.</b> Public notification requirements must be met for failures to comply with MCLs turbidity (DE 40 700 016, Section 7.1) [Added December 2002 ; Revised January 2007].</p> <p><b>WQ.10.6.DE.</b> Public water systems must meet treatment requirements (DE 40 700 016, Section 8.1) [Revised January 2007].</p>	<p>Verify that the system obtains its water supply from the most desirable source which is feasible and makes efforts to prevent or control pollution of the source.</p> <p>(NOTE: If the source fails to meet the bacteriological standards and is not already disinfected, it may be required to do so in order to meet the bacteriological standards.)</p> <p>(NOTE: The primary maximum contaminant level (PMCL) for turbidity applies to community and noncommunity water systems utilizing surface water sources in whole or in part.)</p> <p>Verify that the system does not exceed the PMCLs for turbidity of:</p> <ul style="list-style-type: none"> <li>- 1 TU, as determined by a monthly average</li> <li>- 5 TU, based on an average for 2 consecutive days.</li> </ul> <p>(NOTE: Five or fewer turbidity units may be allowed if the supplier of water can demonstrate to the Division that the higher turbidity does not do any of the following:</p> <ul style="list-style-type: none"> <li>- interfere with disinfection</li> <li>- prevent maintenance of an effective disinfectant agent throughout the distribution system</li> <li>- interfere with microbiological determinations.)</li> </ul> <p>(NOTE: Waters exhibiting a Langelier Index (LI) of &lt;-2.0 or an Aggressive Index of &lt;10.0 are considered highly corrosive/aggressive.)</p> <p>Verify that all public water systems meet the following:</p> <ul style="list-style-type: none"> <li>- all bacteriological requirements</li> <li>- the nitrate and nitrite requirements</li> <li>- frequency of coliform sampling requirements.</li> </ul> <p>Verify that all community and non-transient, non-community (NTNC) systems meet the following:</p> <ul style="list-style-type: none"> <li>- all the requirements for public water systems listed above, plus</li> <li>- all synthetic organic requirements, and</li> <li>- all other primary requirements.</li> </ul> <p>Verify that community public water systems that serve more than 500 service</p>

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	<p>connections meet the following:</p> <ul style="list-style-type: none"> <li>- all the requirements for public and community and NTNC systems listed above, plus</li> <li>- all other primary requirements.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>PUBLIC WATER SYSTEMS</b></p> <p><b>WQ.15. Monitoring/ Sampling</b></p> <p><b>WQ.15.1.DE.</b> [Deleted (NOTE: Equivalent to the Federal requirements.) December 1998].</p> <p><b>WQ.15.2.DE.</b> [Deleted (NOTE: Equivalent to the Federal requirements.) December 1998].</p> <p><b>WQ.15.3.DE.</b> [Deleted (NOTE: Equivalent to the Federal requirements.) December 1998].</p> <p><b>WQ.15.4.DE.</b> [Deleted (NOTE: Equivalent to the Federal requirements.) December 1998].</p> <p><b>WQ.15.5.DE.</b> [Deleted (NOTE: Equivalent to the Federal requirements.) December 1998].</p>	

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>PUBLIC WATER SYSTEMS</b></p> <p><b>WQ.20. Disinfection and Filtration</b></p> <p><b>WQ.20.1.DE.</b> Public water systems must meet disinfection requirements (DE 40 700 01 6, Section 8.2) [Citation Revised January 2007].</p> <p><b>WQ.20.2.DE.</b> Public water systems with surface water sources or groundwater sources under the direct influence of surface water must meet treatment requirements (DE 40 700 016, Section 10.2) [Citation Revised January 2007].</p> <p><b>WQ.20.3.DE.</b> Public water systems with surface water</p>	<p>Verify that, when it is required by these regulations, or demonstrated through bacteriological testing that there is a need for disinfection, the system provides continuous disinfection.</p> <p>Verify that, if chlorine is the disinfectant used, a sample of water withdrawn immediately beyond the point of chlorination has a free chlorine residual of not less than 0.3 mg/L.</p> <p>Verify that the system has approval from the Division prior to the installation and use of disinfectants other than chlorine.</p> <p>Verify that the supplier of water maintains accurate records of amounts of disinfectant used and has an approved test kit for measuring disinfectant levels.</p> <p>(NOTE: The supplier may be required to conduct regular residual testing and report these results to the Division.)</p> <p>(NOTE: Systems must not use untreated surface water or untreated groundwater under the direct influence of surface water. Untreated water is water without filtration and disinfection.)</p> <p>Verify that systems are operated by qualified personnel who meet the requirements of the Division.</p> <p>Verify that systems install and operate water treatment processes which reliably achieve the following:</p> <ul style="list-style-type: none"> <li>- at least 99.9 percent (3-log) removal and/or inactivation of <i>Giardia lamblia</i> cysts between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer, and</li> <li>- at least 99.99 percent (4-log) removal and/or inactivation of viruses between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer.</li> </ul> <p>Verify that systems provide filtration and disinfection water treatment processes</p>

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<p>sources o r gr oundwater sources under t he d irect influence of surface water must meet specific disinfection requirements (DE 40 7 00 016, S ection 10.3) [Citation R evised D ecember 1999; C itation R evised January 2007].</p> <p><b>WQ.20.4.DE.</b> Public water systems w ith surface w ater sources o r gr oundwater sources under t he d irect influence of surface water must meet r esidual disinfectant c oncentration monitoring r equirements ( DE 40 7 00 0 16, S ections 10.5.2 and 10.5.3) [Citation R evised January 2007].</p>	<p>which reliably achieve the following:</p> <ul style="list-style-type: none"> <li>- at least 99.9 percent (3-log) removal and/or inactivation of <i>Giardia lamblia</i> cysts</li> <li>- at least 99.99 percent (4-log) removal and/or inactivation of viruses</li> <li>- residual d isinfectant c oncentration i n t he w ater e ntering t he d istribution system of at least 0.3 mg/L</li> <li>- residual d isinfectant c oncentration i n t he d istribution system, measured a s total ch lorine, co mbined ch lorine, o r ch lorine d ioxide, d etectable i n 9 5 percent o f t he s amples eac h m onth f or an y 2 consecutive months t hat t he system serves water to the public.</li> </ul> <p>(NOTE: The residual disinfectant concentration in the water entering the distribution system cannot be less than 0.3 mg/L for more than 4 h. The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide, can not be undetectable in more than 5 percent of the samples each month, for any 2 consecutive months that the system serves water to the public. Water in the distribution system with a heterotrophic bacteria co ncentration l ess t han o r e q ual t o 5 0/mL, measured as heterotrophic plate count (HPC) plate count (HPC), is deemed to have a detectable disinfectant residual for purposes of determining compliance with this requirement.)</p> <p>(NOTE: If t he D ivision d etermines t hat a s ystem h as n o m eans f or h aving a sample transported a nd a nalyzed f or HPC by a n a pproved laboratory u nder t he requisite t ime a nd t e mperature c onditions a nd t hat t he s ystem is p roviding adequate d isinfection i n t he d istribution system, t he a bove r equirements do n ot apply.)</p> <p>Verify that t he r esidual d isinfectant co ncentration o f t he w ater e ntering t he distribution system is c ontinuously monitored a nd t he l owest v alue i s r ecorded each day.</p> <p>(NOTE: I f t here i s a f ailure i n t he c ontinuous monitoring e quipment, grab sampling every 4 h may be conducted in lieu of continuous monitoring, but for no more than 5 working days following the failure of equipment.)</p> <p>(NOTE: Systems serving 3300 or fewer persons may take grab samples in lieu of providing c ontinuous monitoring o n a n ong oing b asis a t t he following frequencies:</p> <ul style="list-style-type: none"> <li>- system population less than 500, one sample/day</li> <li>- system population 501-1000, 2 samples/day</li> <li>- system population 1001-2500, 3 samples/day</li> <li>- system population 2501-3300, 4 samples/day</li> </ul> <p>The day's samples cannot be taken at the same time and sampling intervals are subject to Division review and approval. I f at any t ime t he residual d isinfectant concentration i s l ess t han 0.3 m g/L i n a s ystem u sing gr ab s ampling i n l ieu o f</p>

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<p><b>WQ.20.5.DE.</b> Public water systems with surface water sources or groundwater sources under the direct influence of surface water must meet specific filtration and monitoring requirements (DE 40 700 016, Section 10.4 and 10.5) [Citation Revised January 2007].</p>	<p>continuous monitoring, the system must take a grab sample every 4 hours until the residual disinfectant concentration is equal to or greater than 0.3 mg/L.)</p> <p>Verify that the residual disinfectant concentration is measured at least at the same points in the distribution system and at the same time as total coliforms are sampled.</p> <p>(NOTE: The Division may allow a system using both a surface water source or a groundwater source under the direct influence of surface water and a groundwater source to take disinfectant residual samples at points other than the total coliform sampling points.)</p> <p>(NOTE: Heterotrophic bacteria, measured as HPC, may be measured in lieu of residual disinfectant concentration. If the Division determines that a system has no means for having a sample transported and analyzed for HPC by an approved laboratory under the requisite time and temperature conditions and that the system is providing a dequate disinfection in the distribution system, the residual disinfectant concentration requirements do not apply.)</p> <p>Verify that systems provide filtration and disinfection water treatment processes which meet the requirements of one of the following:</p> <ul style="list-style-type: none"> <li>- for conventional filtration or direct filtration, the turbidity level of representative samples of the system's filtered water: <ul style="list-style-type: none"> <li>- is less than or equal to 0.5 NTU in at least 95 percent of the measurements taken each month</li> <li>- at no time exceeds 5.0 NTU</li> </ul> </li> <li>- for diatomaceous earth filtration, the turbidity level of representative samples of the system's filtered water: <ul style="list-style-type: none"> <li>- is less than or equal to 1.0 NTU in at least 95 percent of the measurements taken each month</li> <li>- at no time exceeds 5.0 NTU.</li> </ul> </li> </ul> <p>(NOTE: For conventional filtration or direct filtration, the Division may substitute a higher turbidity limit for a system if it is determined that the system is capable of achieving at least 99.9 percent removal and/or inactivation of <i>Giardia lamblia</i> cysts at some turbidity level higher than 0.5 NTU in at least 95 percent of the measurements taken each month.)</p> <p>(NOTE: For slow sand filtration, the Division may substitute a higher turbidity limit for a system if it is determined that there is no significant interference with disinfection a higher turbidity level.)</p> <p>(NOTE: A system may use other filtration technologies with approval from the Division.)</p>

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<p><b>WQ.20.6.DE.</b> [Deleted January 2007].</p> <p><b>WQ.20.7.DE.</b> Subpart H systems that recycle spent filter backwash water, thickener supernatant or liquids from dewatering must meet specific recycling provisions ( DE 40 700 01 6, Section 10.12) [ Added December 2003 ; Citation Revised January 2007].</p>	<p>Verify that turbidity measurements are performed on representative samples of the systems filtered water at least every 4 h that the system serves water to the public.</p> <p>(NOTE: A system may substitute continuous turbidity monitoring for grab sample monitoring if it validates the continuous measurement for accuracy on a regular basis using a protocol approved by the Division. The Division may reduce the sampling frequency to once per day for the following systems:</p> <ul style="list-style-type: none"> <li>- systems using slow sand filtration or a filtration treatment other than conventional filtration, direct filtration, or diatomaceous earth filtration</li> <li>- systems serving 500 or fewer persons.)</li> </ul> <p>(NOTE: Deleted January 2007, equivalent to Federal requirements.)</p> <p>(NOTE: This checklist item applies to subpart H systems that employ conventional filtration or direct filtration treatment and that recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes.)</p> <p>Verify that the system notifies the Division in writing by December 8, 2003 if the system recycles spent filter backwash water, thickener supernatant, or liquids from dewatering processes, and that the notification includes:</p> <ul style="list-style-type: none"> <li>- a plant schematic showing the origin of all flows that are recycled (including, but not limited to, spent filter backwash water, thickener supernatant, and liquids from dewatering processes), the hydraulic conveyance used to transport them, and the location where they are reintroduced back into the treatment plant</li> <li>- typical recycle flow in gallons per minute (gpm), the highest observed plant flow experienced in the previous year (gpm), design flow for the treatment plant (gpm), and Division-approved operating capacity for the plant where the Division has made such a determination.</li> </ul> <p>Verify that any system that recycles spent filter backwash water, thickener supernatant, or liquids from dewatering processes returns these flows through the processes of a system's existing conventional or direct filtration system or at an alternate location approved by the Division by June 8, 2004.</p> <p>(NOTE: If capital improvements are required to modify the recycle location to meet this requirement, all capital improvements will be completed no later than June 8, 2006.)</p> <p>Verify that the system collects and retains on file the following recycle flow information for review and evaluation by the Division beginning June 8, 2004:</p>

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	<ul style="list-style-type: none"> <li>- a copy of the recycle notification and information submitted to the Division</li> <li>- a list of all recycles flows and the frequency with which they are returned</li> <li>- the average and maximum backwash flow rate through the filters and the average and maximum duration of the filter backwash process in minutes</li> <li>- the typical filter run length and a written summary of how filter run length is determined</li> <li>- the type of treatment provided for the recycle flow</li> <li>- data on the physical dimensions of the equalization and/or treatment units, typical and maximum hydraulic loading rates, type of treatment chemicals used and average dose and frequency of use, and frequency at which solids are removed, if applicable.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>PUBLIC WATER SYSTEMS</b></p> <p><b>WQ.30. Notification and Reporting Requirements</b></p> <p><b>WQ.30.1.DE.</b> Public water systems must meet reporting requirements (DE 40 700 016, Section 4.1) [ Revised December 1998; Revised December 2002 ; Citation Revised January 2007].</p>	<p>Verify that the supplier of water reports to the Division the results of any test, measurement, or analysis required within the first 10 days following:</p> <ul style="list-style-type: none"> <li>- the month in which the result is received</li> <li>- the end of the required monitoring period as stipulated by the Division, whichever is shortest.</li> </ul> <p>Verify that a system that is required to monitor unregulated contaminants sends a copy of the results to the Division, and any public notice issued, within 30 days of receipt.</p> <p>Verify that a public water system that uses a surface water source or a ground water source under the direct influence of surface water and provides filtration treatment reports monthly to the Division:</p> <ul style="list-style-type: none"> <li>- turbidity measurements within 10 days after the end of each month the system serves water to the public</li> <li>- disinfection information within 10 days after the end of each month the system serves water to the public</li> <li>- information on the samples taken in the distribution system in conjunction with total coliform monitoring.</li> </ul> <p>Verify that the water system, upon discovering that a waterborne disease outbreak potentially attributable to that water system has occurred, reports the occurrence to the Division as soon as possible, but no later than by the end of the next business day.</p> <p>Verify that, if at any time the turbidity exceeds 5 NTU, the system informs the Division as soon as possible, but no later than the end of the next business day.</p> <p>Verify that if at any time the residual falls below 0.3 mg/L in the water entering the distribution system, the system notifies the Division as soon as possible, but no later than by the end of the next business day.</p> <p>Verify that the system notifies the Division by the end of the next business day whether or not the residual was restored to at least 0.3 mg/L within 4 hours.</p> <p>Verify that the system reports to the Division, within 24 hours, any incidents of</p>

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<p><b>WQ.30.2.DE.</b> [Deleted December 2002].</p> <p><b>WQ.30.3.DE.</b> Public water systems must meet recordkeeping requirements (DE 40 700 0 16, Section 4.4.1) [Revised December 2002; Citation Revised January 2007].</p>	<p>chemical overfeed and/or unusual events.</p> <p>Verify that the supplier of water reports to the Division within 24 h of the failure to meet any Primary Drinking Water Regulations, including the failure to meet monitoring requirements.</p> <p>(NOTE: The supplier of water is not required to report analytical results to the Division in cases where an approved laboratory performs the analyses and reports the results directly to the Division.)</p> <p>(NOTE: Regulation revised; see WQ.30.5.DE. through WQ.30.12.DE. below.)</p> <p>Verify that systems maintain records of the following:</p> <ul style="list-style-type: none"> <li>- bacteriological analyses records for at least the previous 5 yr</li> <li>- chemical analyses records for at least the previous 10 yr</li> <li>- records of action taken by the system to correct violations of Primary Drinking Water Regulations for at least 3 yr after the last action was taken, with respect to the particular violation involved</li> <li>- reports, summaries, and communications relating to sanitary surveys for at least 10 yr after completion of the sanitary survey of the system conducted by the system itself, by a private consultant, or by any local, state, or Federal agency</li> <li>- copies of Public Notices, Consumer Confidence Reports, the certifications for each, and any decisions by the Division relating to the Public Notice for at least 5 years</li> <li>- records concerning a variance or exemption for at least 5 yr following its expiration date.</li> </ul> <p>(NOTE: Actual laboratory reports may be kept, or data may be transferred to summaries, provided that the following information is included:</p> <ul style="list-style-type: none"> <li>- date, place, time of sampling, and name of the person who collected the sample</li> <li>- identification of whether the sample is a routine distribution system sample, a check sample, or a raw or process water sample or other special purpose sample</li> <li>- date of analysis</li> <li>- laboratory and person responsible for performing analysis</li> <li>- analytical technique/method used</li> <li>- results of the analyses.)</li> </ul>



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<p><b>WQ.30.4.DE.</b> Community water systems must meet construction material reporting requirements ( DE 40 700 016 , Sections 7.2.4.1 through 7. 2.4.8) [ Revised December 1998 ; Citation Revised January 2007].</p>	<p>(NOTE: This checklist item moved here from WQ.45.2.DE.; December 1999. These requirements now apply to all PWS, not just CWS.)</p> <p>Verify that the system identifies whether the following construction materials are present in their distribution system and reports to the Division:</p> <ul style="list-style-type: none"> <li>- lead from piping, solder, caulking, interior lining of distribution mains, alloys, and home plumbing</li> <li>- copper from piping, alloys, service lines, and home plumbing</li> <li>- galvanized piping, service lines, and home plumbing</li> <li>- ferrous piping materials such as cast iron and steel</li> <li>- asbestos cement pipe</li> <li>- vinyl lined asbestos cement pipe</li> <li>- coal tar lined pipes and tanks.</li> </ul> <p>(NOTE: The Division may require identification and reporting of other materials of construction present in distribution systems that may contribute contaminants in the drinking water.)</p>
<p><b>WQ.30.5.DE.</b> Public water systems must meet Tier 1 public notification requirements under specific circumstances ( DE 40 700 016, Section 4.2.1.1.1) [Added December 2002 ; Citation Revised January 2007].</p>	<p>(NOTE: See Appendix 13-5 for a comprehensive listing of situations that require notification.)</p> <p>Verify that a water supply owner gives Tier 1 public notice in the following situations:</p> <ul style="list-style-type: none"> <li>- violation of the MCL for total coliforms when fecal coliform or E. coli are present in the water distribution system or when the water system fails to test for fecal coliforms or E. coli when a ny repeat sample tests positive for coliform</li> <li>- violation of the MCL for nitrate, nitrite, or total nitrate and nitrite or when the water system fails to take a confirmation sample within 24 hours of the system's receipt of the first sample showing an exceedance of the nitrate or nitrite MCL, or violation of the fluoride MCL</li> <li>- exceedance of the nitrate MCL by non-community water systems, where permitted to exceed the MCL by the Division</li> <li>- violation of the MRDL for chlorine dioxide when one or more samples taken in the distribution system the day following an exceedance of the MRDL at the entrance of the distribution system exceed the MRDL, or when the water system does not take the required samples in the distribution system</li> <li>- violation of the turbidity MCL, where the Division determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation</li> <li>- violation of the Surface Water Treatment Rule (SWTR) or Interim Enhanced Surface Water Treatment rule (IESWTR) treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit, where the Division determines after consultation that a Tier 1 notice is</li> </ul>

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**WQ.30.6.DE.** Public water systems must meet Tier 2 public notification requirements under specific circumstances ( DE 40 700 016, Section 4. 2.1.1.2) [Added December 2002; Citation Revised January 2007].

required or where consultation does not take place within 24 hours after the system learns of the violation

- occurrence of a waterborne disease outbreak or other waterborne emergency (such as a failure or significant interruption in key water treatment processes, a natural disaster that disrupts the water supply or distribution system, or a chemical spill or unexpected loading of possible pathogens into the source water that significantly increases the potential for drinking water contamination)
- other violations or situations with significant potential to have serious adverse effects on human health as a result of short-term exposure, as determined by the Division either in these regulations or on a case-by-case basis.

Verify that public water systems:

- provide a public notice as soon as practical but no later than 24 hours after the system learns of the violation
- initiate consultation with the Division as soon as practical, but no later than 24 hours after the public water system learns of the violation or situation, to determine additional public notice requirements
- comply with any additional public notification requirements (including any repeat notices or direction on the duration of the posted notices) that are established as a result of the consultation with the Division.

Verify that public water systems provide the notice within 24 hours in a form and manner reasonably calculated to reach all persons served.

(NOTE: The form and manner used by the public water system are to fit the specific situation, but must be designed to reach residential, transient, and non-transient users of the water system. In order to reach all persons served, water systems are to use, at a minimum, one or more of the following forms of delivery:

- appropriate broadcast media (such as radio and television)
- posting of the notice in conspicuous locations throughout the area served by the water system
- hand delivery of the notice to persons served by the water system, or
- another delivery method approved in writing by the Division.)

(NOTE: See Appendix 13-5 for a comprehensive listing of situations that require notification.)

Verify that a water supply owner gives Tier 2 public notice in the following situations:

- all violations of the MCL, MRDL, and treatment technique requirements, except where a Tier 1 notice is required or where the Division determines that a Tier 1 notice is required
- violations of the monitoring and testing procedure requirements, where the

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	<p>Division determines that a Tier 2 rather than a Tier 3 public notice is required, taking into account potential health impacts and persistence of the violation</p> <ul style="list-style-type: none"> <li>- failure to comply with the terms and conditions of any variance or exemption in place</li> <li>- other violations or situations with significant potential to have adverse effects on human health as a result of exposure, as determined by the Division either in these regulations or on a case-by-case basis.</li> </ul> <p>Verify that public water systems:</p> <ul style="list-style-type: none"> <li>- provide the public notice as soon as practical, but no later than 14 days after the system learns of the violation (if the public notice is posted, the notice remains in place for as long as the violation or situation persists, but in no case for less than 7 days, even if the violation or situation is resolved)</li> <li>- repeats the notice every 3 months as long as the violation or situation persists, unless the Division determines in writing that appropriate circumstances warrant a different repeat notice frequency</li> <li>- for the turbidity violations specified in this paragraph, consult with the Division as soon as practical but no later than 24 hours after the public water system learns of the violation, to determine whether a Tier 1 public notice is required to protect public health.</li> </ul> <p>Verify that, when consultation does not take place within the 24-hour period, the water system distributes a Tier 1 notice of the violation within the next 24 hours (i.e., no later than 48 hours after the system learns of the violation).</p> <p>Verify that public water systems provide the initial public notice and any repeat notices in a form and manner that is reasonably calculated to reach persons served in the required time period.</p> <p>(NOTE: The form and manner of the public notice may vary based on the specific situation and type of water system, but it must at a minimum meet the following requirements:</p> <ul style="list-style-type: none"> <li>- unless directed otherwise by the Division in writing, community water systems provide notice by: <ul style="list-style-type: none"> <li>- mail or other direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the public water system</li> <li>- any other method reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required above. Such persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.). Other methods may include: Publication in a local newspaper; delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., a apartment building owners or large private employers); posting in public places served by</li> </ul> </li> </ul>

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<p><b>WQ.30.7.DE.</b> Public water systems must meet Tier 3 public notification requirements under specific circumstances (DE 40 700 016, Section 4. 2.1.1.3) [Added December 2002; Citation Revised January 2007].</p>	<p>the system or on the Internet; or delivery to community organizations</p> <ul style="list-style-type: none"> <li>- unless directed otherwise by the Division in writing, non-community water systems provide notice by:               <ul style="list-style-type: none"> <li>- posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection (where known), and</li> <li>- any other method reasonably calculated to reach other persons served by the system if they would not normally be reached by the notice required in the preceding paragraph. Such persons may include those served who may not see a posted notice because the posted notice is not in a location they routinely pass by. Other methods may include: Publication in a local newspaper or newsletter distributed to customers; use of E-mail to notify employees or students; or, delivery of multiple copies in central locations (e.g., community centers.)</li> </ul> </li> </ul> <p>(NOTE: See Appendix 13-5 for a comprehensive listing of situations that require notification.)</p> <p>Verify that a water supply owner gives Tier 3 public notice in the following situations:</p> <ul style="list-style-type: none"> <li>- monitoring violations under 40 CFR part 141, except where a Tier 1 notice is required or where the Division determines that a Tier 2 notice is required</li> <li>- failure to comply with a testing procedure established in 40 CFR part 141, except where a Tier 1 notice is required or where the Division determines that a Tier 2 notice is required</li> <li>- operation under a variance or an exemption</li> <li>- availability of unregulated contaminant monitoring results</li> <li>- other violations or situations with significant potential to have adverse effects on human health as a result of exposure, as determined by the Division either in these regulations or on a case-by-case basis.</li> </ul> <p>Verify that public water systems:</p> <ul style="list-style-type: none"> <li>- provide the public notice not later than 90 days after the public water system learns of the violation or situation or begins operating under a variance or exemption</li> <li>- following the initial notice, repeat the notice annually for as long as the violation, variance, exemption, or other situation persists (if the public notice is posted, the notice remains in place for as long as the violation, variance, exemption, or other situation persists, but in no case less than 7 days (even if the violation or situation is resolved))</li> <li>- provide the initial notice and any repeat notices in a form and manner that is reasonably calculated to reach persons served in the required time period.</li> </ul> <p>(NOTE: The form and manner of the public notice may vary based on the specific situation and type of water system, but it must at a minimum meet the following</p>

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<p><b>WQ.30.8.DE.</b> Tier 1, 2 or 3 notifications must contain specific information requirements (DE 40 700 016, Section 4. 2.2) [ Added December 2002; Citation Revised January 2007].</p> <p><b>WQ.30.9.DE.</b> Public water systems that must submit Tier 1, 2 or 3 notifications must submit a report upon completion of the notification requirements (DE 40 700 016,</p>	<p>requirements:</p> <ul style="list-style-type: none"> <li>- unless directed otherwise by the Division in writing, community water systems, provide notice by:               <ul style="list-style-type: none"> <li>- mail or other direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the public water system, and</li> <li>- any other method reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required in the preceding paragraph. Such persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.). Other methods may include: Publication in a local newspaper; delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or large private employers); posting in public places or on the Internet; or delivery to community organizations)</li> </ul> </li> <li>- unless directed otherwise by the Division in writing, non-community water systems, provide notice by:               <ul style="list-style-type: none"> <li>- posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection (where known), and</li> <li>- any other method reasonably calculated to reach other persons served by the system, if they would not normally be reached by the notice required in the preceding paragraph. Such persons may include those who may not see a posted notice because the notice is not in a location they routinely pass by. Other methods may include: Publication in a local newspaper or newsletter distributed to customers; use of E-mail to notify employees or students; or, delivery of multiple copies in central locations (e.g., community centers.)</li> </ul> </li> </ul> <p>(NOTE: See Appendix 13-5 for a comprehensive listing of situations that require notification.)</p> <p>Verify that when a public water system violates a NPDWR or has a situation requiring public notification, each public notice includes the elements listed in Appendix 13-4.</p> <p>(NOTE: See Appendix 13-5 for a comprehensive listing of situations that require notification.)</p> <p>Verify that the owner of a public water system, within ten days of completing the public notice requirements of this section for the initial public notice and any repeat notices, submits to the Division a completed Delivery Certification Form,</p>

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<p>Sections 4.2.1.4 and 4.3.2.7) [Added December 2002; Citation Revised January 2007].</p> <p><b>WQ.30.10.DE.</b> Public water systems must meet notification requirements for new billing units (DE 40 700 016, Section 4.2.3.2) [ Added December 2002; Citation Revised January 2007].</p> <p><b>WQ.30.11.DE.</b> Posted public notices must be protected (DE 40 700 016, Section 4.2.3.3) [Added December 2002; Citation Revised January 2007].</p> <p><b>WQ.30.12.DE.</b> Public notification requirements must be met for failures to comply with MCLs or MRDLs, and for unregulated contaminants ( DE 40 700 016, Sections 4.1.4, 4.2.5, and 4.2.6) [ Added December 2002; Citation Revised January 2007].</p>	<p>certifying when and how the public notice was delivered and that they have complied with the public notice regulations.</p> <p>Verify that the owner includes with this certification a copy, as delivered, of each type of notice distributed, published, posted, and made available to the persons served by the system and to the media.</p> <p>Verify that copies of public notices and certifications made to the Division are kept for five years after issuance.</p> <p>(NOTE: See Appendix 13-5 for a comprehensive listing of situations that require notification.)</p> <p>Verify that community water systems give a copy of the most recent public notice for any outstanding violation of any MCL, or any treatment technique requirement, or any variance or exemption schedule or monitoring violation to all new billing units or new hookups prior to or at the time service begins.</p> <p>Verify that non-community water systems continuously post the public notice in conspicuous locations in order to inform new consumers of any continuing violation, variance or exemption, or other situation requiring a public notice for as long as the violation, variance, exemption, or other situation persists.</p> <p>Verify that all posted public notices remain readable and are protected by glass, plastic or some other suitable covering and remain in place until such time that the violation or failure has terminated.</p> <p>(NOTE: See Appendix 13-5 for a comprehensive listing of situations that require notification.)</p> <p>Verify that if a CWS or NTNCWS fails to comply with an applicable MCL or MRDL level, or fails to comply with requirements of any schedule prescribed pursuant to a variance or exemption, the water supplier notifies persons served by the system.</p> <p>(NOTE: See Appendix 13-5 for exact reporting requirements: Tier level, frequency, etc.)</p> <p>Verify that the owner of a community water system or non-transient,</p>

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<p><b>WQ.30.13.DE.</b> Public water systems must meet certification requirements for all public notifications (DE 40 700 016 , Section 4. 1.7) [Added December 2002; Citation Revised January 2007].</p>	<p>noncommunity water system required to monitor under CFR 141.40 notifies persons served by the system of the availability of the results of such sampling no later than 90 days after the monitoring results are known, and that the form and manner of the public notice follows the requirements for a Tier 3 public notice.</p> <p>Verify that the public water system, within 10 days of completing the public notification requirements under Section 22.41 of these regulations for the initial public notice and any repeat notices (see checklist items in WQ.30.DE.), submits to the Division a certification that it has fully complied with the public notification regulations, and include a representative copy of each type of notice distributed, published, posted, and made available to the persons served by the system and to the media.</p>

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<p><b>COMMUNITY WATER SYSTEMS</b></p> <p><b>WQ.35. Standards</b></p> <p><b>WQ.35.1.DE.</b> Community water systems must meet inorganic P MCL and secondary MCL requirements (DE 40 700 016, Section 6.1) [Revised December 1998 ; Citation Revised January 2007].</p> <p><b>WQ.35.2.DE.</b> [Deleted December 1998].</p> <p><b>WQ.35.3.DE.</b> [Deleted December 1998].</p>	<p>Verify that systems meet the PMCLs and secondary MCLs, in Appendix 13-1, for inorganic contaminants.</p> <p>(NOTE: Equivalent to the Federal.)</p> <p>(NOTE: Equivalent to the Federal.)</p>



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<p><b>COMMUNITY WATER SYSTEMS</b></p> <p><b>WQ.40. Monitoring/ Sampling</b></p> <p><b>WQ.40.1.DE.</b> [Deleted December 1998].</p> <p><b>WQ.40.2.DE.</b> Community water systems must meet sampling and analytical requirements for fluoride (DE 40 7 00 0 16, Section 6.1.3) [Citation Revised December 1998; Citation Revised January 2007].</p> <p><b>WQ.40.3.DE.</b> Community water systems must meet sampling and analytical requirements for sodium (DE 40 7 00 0 16, Section 6.1.4) [Citation Revised December 1998; Citation Revised January 2007].</p>	<p>(NOTE: These requirements are substantially equivalent to the Federal.)</p> <p>Verify that systems add fluoride to provide a concentration within the range of 0.8 to 1.2 mg/L where fluoridation has been or will be instituted and the fluoride content of a water supply is &lt;0.8 mg/L.</p> <p>Verify that defluoridation of water is provided when the concentration of fluoride exceeds 1.8 mg/L.</p> <p>Verify that fluoridated and defluoridated water supplies are sampled daily by the supplier of water at a representative point of the water supply system and fluoride levels reported to the Division.</p> <p>Verify that suppliers of water collect and analyze one sample per plant at the entry point of the distribution system for sodium concentration levels.</p> <p>Verify that samples are collected and analyzed annually for systems utilizing surface water sources in whole or in part and at least every 3 yr for systems utilizing solely groundwater sources.</p> <p>Verify that the minimum number of samples taken by the system is based on the number of treatment plants used by the system.</p> <p>(NOTE: Multiple wells drawing raw water from a single aquifer may be considered one treatment plant for determining the minimum number of samples, with the Division's approval.)</p> <p>(NOTE: The supplier of water may be required by the Division to collect and analyze water samples for sodium more frequently in locations where the sodium content is variable.)</p> <p>Verify that the supplier of water reports to the Division the results of analyses for sodium (see WQ.30.1.DE.).</p> <p>Verify that the supplier of water notifies appropriate local and state public health</p>

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	<p>officials of the sodium levels by written notice by direct mail within 3 mo and that a copy of each notice is sent to the Division within 10 days of its issuance.</p> <p>(NOTE: The supplier of water is not required to notify appropriate local and state public health officials of the sodium levels where the Division provides the notices in lieu of the supplier.)</p> <p>Verify that analysis for sodium is performed by the flame photometric method.</p>
<p><b>WQ.40.4.DE.</b> [Deleted December 1998].</p>	<p>(NOTE: These requirements are substantially equivalent to the Federal.)</p>
<p><b>WQ.40.5.DE.</b> [Deleted December 1998].</p>	<p>(NOTE: These requirements are substantially equivalent to the Federal.)</p>
<p><b>WQ.40.6.DE.</b> [Deleted December 1998].</p>	<p>(NOTE: These requirements are substantially equivalent to the Federal.)</p>
<p><b>WQ.40.7.DE.</b> Community water systems must meet corrosivity monitoring requirements (DE 40 700 016, Section 7.2) [Citation Revised January 2007].</p>	<p>Verify that suppliers of water for community water systems collect samples from a representative entry point to the water distribution system.</p> <p>Verify that water suppliers utilizing surface water wholly or in part collect one sample during mid-winter and one sample during mid-summer.</p> <p>Verify that water suppliers utilizing groundwater sources only collect one sample per plant per year.</p> <p>Verify that the minimum number of samples required to be taken by the system is based on the number of treatment plants used by the system.</p> <p>(NOTE: Multiple wells drawing raw water from a single aquifer may be considered one treatment plant for determining the minimum number of samples.)</p> <p>Verify that the system includes measurements of the following when determining corrosivity characteristics:</p> <ul style="list-style-type: none"> <li>- pH</li> <li>- calcium hardness</li> <li>- alkalinity</li> </ul>

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	<ul style="list-style-type: none"> <li>- temperature</li> <li>- total dissolved solids (total filterable residue)</li> <li>- calculation of the <i>Langelier Index</i>.</li> </ul> <p>Verify that only 2 samples per plant, for surface water, and one sample per plant, for groundwater sources, are used in determining corrosivity characteristics.</p> <p>(NOTE: The Division may require additional or more frequent monitoring.)</p> <p>Verify that the supplier of water reports the results of the analyses for corrosivity characteristics to the Division (see WQ.30.1.DE. through WQ.30.3.DE.).</p> <p>Verify that the system analyses for corrosivity using methods from the following:</p> <ul style="list-style-type: none"> <li>- Standard Methods for the Examination of Water and Wastewater</li> <li>- AWWA Standard for Asbestos-Cement Pipe, 4 in. through 24 in. for Water and Other Liquids</li> <li>- Methods for Chemical Analysis of Water and Wastes</li> <li>- Annual Book of ASTM Standards</li> <li>- any alternate analytical technique approved by the Division.</li> </ul>
<b>WQ.40.8.DE.</b> [Deleted December 1998].	(NOTE: These requirements are substantially equivalent to the Federal.)
<b>WQ.40.9.DE.</b> [Deleted December 1998].	(NOTE: These requirements are substantially equivalent to the Federal.)
<b>WQ.40.10.DE.</b> [Deleted December 2003].	(NOTE: Regulation revised.)
<b>WQ.40.11.DE.</b> [Deleted January 2007].	(NOTE: Deleted January 2007; equivalent to Federal.)

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<p><b>COMMUNITY WATER SYSTEMS</b></p> <p><b>WQ.45. Notification and Reporting Requirements</b></p> <p><b>WQ.45.1.DE.</b> [Deleted December 1998].</p> <p><b>WQ.45.2.DE.</b> [Deleted December 1998].</p>	<p>(NOTE: Regulations revised, and are now substantially equivalent to the Federal.)</p> <p>(NOTE: Moved to WQ.30.3.DE.; this requirement now applies to all PWS.)</p>

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<p><b>NONCOMMUNITY WATER SYSTEMS</b></p> <p><b>WQ.60. Standards</b></p> <p><b>WQ.60.1.DE.</b> Noncommunity water systems must meet inorganic PMCL and secondary MCL requirements (DE 40 700 016, Sections 6.1 and 8.1) [Revised December 1998 ; Citation Revised January 2007].</p>	<p>Verify that systems meet the PMCLs and secondary MCLs in Appendix 13-1 for inorganic contaminants.</p>

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<p><b>NONCOMMUNITY WATER SYSTEMS</b></p> <p><b>WQ.65. Monitoring/ Sampling</b></p> <p><b>WQ.65.1.DE.</b> [Deleted December 1998].</p> <p><b>WQ.65.2.DE.</b> Noncommunity water systems must meet sampling and analytical requirements for fluoride ( DE 40 70 001 6, Section 6.1.3) [ Citation Revised December 1 998; Revised January 2007].</p>	<p>(NOTE: Regulations revised, and are substantially equivalent to the Federal.)</p> <p>Verify that systems add fluoride to provide a concentration within the range of 0.8 to 1.2 mg/L (not to exceed 2.0 mg/L) where fluoridation has been or will be instituted and the fluoride content of a water supply is &lt;0.8 mg/L.</p> <p>Verify that defluoridation of water is provided when the concentration of fluoride exceeds 2.0 mg/L.</p> <p>Verify that fluoridated and defluoridated water supplies are sampled daily by the supplier of water at a representative point of the water supply system and fluoride levels reported to the Division.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>NONCOMMUNITY WATER SYSTEMS</b></p> <p><b>WQ.75. Notification and Reporting Requirements</b></p> <p><b>WQ.75.1.DE.</b> [Deleted December 1998].</p>	<p>(NOTE: Regulation revised, and is now substantially equivalent to the Federal.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WQ.90.</b></p> <p><b>DRINKING WATER WELLS</b></p> <p><b>WQ.90.1.DE.</b> Well drillers must be licensed (DE 7300 7302, Section 4 ) [Added December 1999 ; Revised December 2003 ; Citation Revised January 2006 ; Citation Revised January 2007; Citation Revised December 2008 ; Citation Revised January 2010].</p>	<p>(NOTE: Repeated in WQ.100.1.DE.)</p> <p>Verify that who engage in the business of contracting for drilling, boring, coring, driving, digging, construction, installation, removal or repair of a well in the State of Delaware are licensed by the Department as a water well contractor.</p> <p>Verify that who engage in the business of contracting for the installation, maintenance or repair of pumps and pumping equipment in and for wells in the State of Delaware are licensed by the Department as a pump installer contractor or a water well contractor.</p> <p>Verify that all persons who engage in any of the following activities in the State of Delaware are licensed by the Department as a well driller or well driver or are under the direct on-site supervision of a licensed well driller or well driver while engaged in such activities:</p> <ul style="list-style-type: none"> <li>- the drilling, boring, coring, driving, digging, construction, installation, removal or repair of a well</li> <li>- the drilling, boring, coring, driving, digging, construction, installation, or removal of any excavation other than a well, to a depth greater than twenty (20) feet from the natural ground surface, where the depth is greater than the width and where the saturated zone is intercepted</li> <li>- the installation, maintenance or repair of water well pumps or pumping equipment in or for wells.</li> </ul> <p>Verify that all persons who engage in the installation maintenance or repair of water well pumps and pumping equipment in and for wells in the State of Delaware are licensed by the Department as a pump installer, well driller, or well driver, or are under the direct on-site supervision of a licensed plumber, pump installer, well driller or well driver.</p> <p>(NOTE: A person owning or leasing land on which he or she is installing maintaining or repairing pumping equipment in or from a well used for the irrigation of crops, for watering livestock or poultry, for aquaculture uses, or for other on-farm purposes where the water is not to be used for human consumption or to service a residential dwelling is exempt from the requirement to hold a pump installer license. A person who holds a Delaware Plumbers License or who is working under the direct on-site supervision of a Delaware licensed plumber, well driller, well driver or pump installer and who installs maintains, or repairs pumps and pumping equipment in and for wells is exempt from the requirement to hold a</p>



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<p><b>WQ.90.2.DE.</b> Permit requirements must be met for well construction (DE 7 7300 7301, Sections 3.1, 3.2, 3.11, 3.13, and 3.20) [Adopted January 2006 ; Citation Revised January 2007 ; Revised December 2008; Revised January 2010].</p>	<p>pump installer license.)</p> <p>(NOTE: Repeated in WQ.100.2.DE.)</p> <p>Verify that a permit is obtained for the use of all wells.</p> <p>Verify that the Department has issued a well construction permit to the applicant or the water well contractor prior to the construction of the well.</p> <p>(NOTE: A well permit is not required for the construction of piezometers with a hand auger or hand operated driver or for the construction of wick drains in the unconfined aquifer.)</p> <p>(NOTE: A well permit is not required if an existing well requires only repair or rehabilitation and the location and physical dimensions of the well are not changed. A change in physical dimensions, such as deepening, enlarging the length or diameter of the screen and/or well casing requires an application for a well permit.)</p> <p>Verify that, if an emergency well permit number is given verbally for installation of a well, a well application and well completion report including the permit number is submitted to the Department.</p> <p>Verify that a copy of the signed well permit or, in the case of verbal permits, the permit number is available at the drilling site.</p> <p>Verify that a well driller or well driver is physically present to conduct or supervise the actual on-site work of constructing a water well.</p> <p>(NOTE: Well permits are issued for construction and use, except:</p> <ul style="list-style-type: none"> <li>- a water allocation permit is required for any well located on a tract of land owned by the same person where the total estimated yield or use is greater than 50,000 gallons per day, with the exception of non-potable wells constructed and used for fire protection purposes only</li> <li>- approval for use is obtained from the Division of Public Health for all miscellaneous public, industrial, and public wells prior to their use.)</li> </ul>
<p><b>WQ.90.3.DE.</b> Well caps and the upper terminus of wells must meet specific requirements (DE 7 7300 7301, Section 4.10) [Adopted January 2006 ; Citation Revised January 2007 ;</p>	<p>(NOTE: Repeated in WQ.100.3.DE.)</p> <p>Verify that the well casing, pitless adaptor or pitless unit does not terminate less than 8 inches above the finished ground surface or pump house floor for domestic, commercial and agricultural wells.</p> <p>Verify that all other wells with the exception of monitor, observation and closed</p>

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<p>Revised December 2008; Citation Revised January 2010].</p> <p><b>WQ.90.4.DE.</b> The maintenance and repair of wells must meet specific requirements ( DE 7300 7301, Section 8) [ Added January 2006 ; Citation Revised January 2007 ; Revised December 2008; Citation Revised January 2010].</p> <p><b>WQ.90.5.DE.</b> Well abandonment must meet specific requirements ( DE 7300 7301, Section 9.1 and 9.3) [ Added January 2006 ; Citation Revised January 2010].</p>	<p>loop heat pump wells and piping systems, terminate not less than 12 inches above ground surface.</p> <p>Verify that all wells are covered with a secure well cap.</p> <p>Verify that vented capping devices are screened so as to be insect and vermin proof.</p> <p>Verify that the well cap is locked or incapable of being removed without the use of tools.</p> <p>(NOTE: The Department may consider approval of alternative methods for capping irrigation and agricultural wells while mobile pumping equipment is in use.)</p> <p>(NOTE: Use of buried well seals, or other devices, including buried "sanitary well seals" to cap wells below the ground surface and provide access for electrical cable and water pipe are prohibited unless prior approval has been granted by the Department.)</p> <p>Verify that pump pits (see definition) are prohibited.</p> <p>(NOTE: Repeated in WQ.100.4.DE.)</p> <p>Verify that all materials used in the maintenance, replacement, modification, or repair of any well meet the requirements for new installation.</p> <p>Verify that broken, punctured or otherwise defective or unserviceable casing, screen, fixtures, seals, or any part of the well head is repaired and replaced, or the well is properly abandoned and sealed.</p> <p>Verify that repair of any well having a well head terminating below ground includes the extending of the well casing above the land surface as specified in WQ.90.3.DE.</p> <p>Verify that the repair of any industrial well includes the installation of a water level access port and tube.</p> <p>(NOTE: Repeated in WQ.100.5.DE.)</p> <p>Verify that all wells for which a replacement well permit has been issued and which are accessible are abandoned within 60 days of completion of the replacement well.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>2007; Revised December 2008; Citation Revised January 2010].</p> <p><b>WQ.90.6.DE.</b> Wells must have level access ports and tubes ( DE 7 7300 730 1, Sections 4.11) [ Added December 2008 ; Citation Revised January 2010].</p> <p><b>WQ.90.7.DE.</b> Wells must meet metering and pumping requirements (DE 7 7300 7301, Sections 4.12) [Added December 2008 ; Revised</p>	<p>Verify that wells that are unsuitable for their intended use are abandoned or converted to another classification.</p> <p>Verify that all abandoned wells are sealed only by a well driller.</p> <p>Verify that, within 30 days of abandonment of a well, the contractor submits a well abandonment report to the Department.</p> <p>Verify that, prior to abandonment, all wells are investigated to determine their condition, the details of construction, and whether or not any obstructions exist that will interfere with the filling and sealing process.</p> <p>Verify that any obstructions are, if possible, removed by cleaning out the hole or redrilling before abandonment.</p> <p>(NOTE: Repeated in part in WQ.100.6.DE.)</p> <p>Verify that all wells with a pumping capacity greater than 50,000 gallons per day are constructed with a port and access tube.</p> <p>(NOTE: Irrigation wells are not required to be equipped with an access tube.)</p> <p>Verify that all industrial wells completed in a confined aquifer have an access port equipped with a removable cap or plug and tube through which a water level measurement can be made.</p> <p>Verify that the access port and tube have a minimum inside diameter of 0.5 inch, so that the position of the water level may be determined by measurement with a steel or electric tape.</p> <p>Verify that the access port and tube are equipped with a removable cap or plug.</p> <p>Verify that the access port is installed and plugged in a manner which prevents the entrance of water, dust, insects, or other foreign material, and permits ready access for water level measurements.</p> <p>(NOTE: Air line gauges are not acceptable water level measurement devices.)</p> <p>(NOTE: Repeated in WQ.100.7.DE.)</p> <p>Verify that all wells with a design capacity greater than 50,000 gallons per day are permanently equipped with a meter(s) capable of acquiring instantaneous flow rate and totalized flow measurements accurate to within plus/minus five percent of</p>

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<p>January 2010].</p> <p><b>WQ.90.8.DE.</b> Well completion reports must be submitted to the Department not later than 30 days after completion of any well. (DE 7300 7301, Section 7) [Added December 2008 ; Citation Revised January 2010].</p> <p><b>WQ.90.9.DE.</b> Wells must have identification tags (DE 7300 7301, Section 10) [Added December 2008 ; Citation Revised January 2010].</p>	<p>actual flow rate, unless otherwise approved by the Department.</p> <p>(NOTE: Flow rate indicators may consist of any combination of test dials and direct reading indicators. Elapsed timers are not acceptable flow metering devices except for irrigation wells, agricultural wells, and non-potable wells constructed and used for fire protection purposes only.)</p> <p>Verify that a backflow protection device is installed in a pumping system where the pumping equipment is used to apply wastewater, fertilizers, or chemicals, and where the pumping equipment is also connected to a water well.</p> <p>(NOTE: Repeated in WQ.100.8.DE.)</p> <p>Verify that a well completion report is submitted to the Department, on forms provided by the Department, not later than 30 days after completion of any well.</p> <p>Verify that each completion report is signed by the well driller or well driver in direct on-site supervision of the well construction, unless otherwise approved by the Department, certifying that all information contained on the report is true and correct.</p> <p>Verify that all items on the completion report were completed, making sure to note if a particular item is not applicable (N/A).</p> <p>Verify that, upon completion of the well, the Well Contractor, Driller, Driver or Pump Installer attaches the well identification tag issued by the Department.</p> <p>Verify that the tag is fastened to the well casing approximately 6 inches above finished grade by means of a 1/2 or 3/8 inch stainless steel band or other strapping device approved by the Department.</p> <p>(NOTE: Repeated in WQ.100.9.DE.)</p> <p>Verify that, upon completion of the well and before leaving a site, the Well Contractor, Driller, Driver or Pump Installer attaches the well identification tag issued by the Department.</p> <p>Verify that the tag is permanently fastened to the well casing approximately 6 inches above finished grade by means of a 1/2 or 3/8 inch stainless steel band or other strapping device approved by the Department.</p> <p>Verify that tags for flush mount installations are mounted to the sides of the road boxes or by any method which will permanently display the well permit number.</p>

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<p><b>WQ.90.10.DE.</b> Wells must meet siting criteria ( DE 7300 7301, Section 4. 1) [Added December 2008 ; Citation Revised January 2010].</p>	<p>Verify that tags for well permits issued via fax or under emergency circumstances are affixed to the well casing within 5 working days of the well driller's receipt of the tag.</p> <p>Verify that well tags are returned to the Department within 30 days of cancellation or expiration of an unused permit, or the abandonment of a tagged well.</p> <p>(NOTE: Repeated in part in WQ.100.10.DE.)</p> <p>Verify that all wells, except for monitor, recovery, dewatering, and observation wells meet the following minimum horizontal separation distance requirements:</p> <ul style="list-style-type: none"> <li>- 10 feet from a property line unless prior approval is granted by the Department</li> <li>- a minimum of 50 feet from any boundary of the Agricultural Lands Preservation District</li> <li>- within an y dedicated State of Delaware right-of-way unless written permission is obtained from the right-of-way holder and approved by the Department.</li> <li>- 100 feet from identifiable potential or existing sources of contamination, except that public and industrial water wells have a minimum separation of 150 feet and heat pump closed loop and heat pump recharge wells may be as close as 50 feet to identifiable potential or existing sources of contamination</li> <li>- 50 feet from approved septic tanks, diversion valves or boxes, dosing chambers, holding tanks and grease traps, with the exception of public and industrial water wells where the minimum separation distance is 150 feet</li> <li>- 50 feet from any underground sewage force main</li> <li>- 50 feet from any gravity sewer line</li> <li>- unless otherwise approved by the Department, no industrial or public water well may be constructed within 150 feet of any identifiable potential or existing source(s) of contamination</li> </ul> <p>(NOTE: When any well, with the exception of industrial and public water wells, cannot be physically placed the required isolation distance from identifiable potential or existing sources of contamination as specified in this section, the isolation distance may be decreased to no less than 50 feet, but kept to a maximum possible distance, provided the well is screened in a confined aquifer and pressure grouted from at least 10 feet into the confining layer immediately above the source aquifer.)</p> <p>Verify that a well may not be constructed within or under any building other than a separate structure constructed specifically for the housing of pumping equipment, unless otherwise approved in writing by the Department.</p> <p>Verify that the structures are properly marked to indicate the classification of and</p>

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	<p>the well permit number of the well contained therein.</p> <p>Verify that suction lines from wells are at least 10 feet from all identifiable potential or existing sources of contamination.</p> <p>Verify that, if high water table conditions may submerge the suction pipe during any portion of the year, the suction pipe is at least 50 feet from all identifiable potential or existing sources of contamination unless the suction line is double cased from the well to the pump.</p> <p>Verify that any subsurface pressure water supply line is at least 10 feet removed from any subsurface wastewater disposal area.</p> <p>Verify that all wells are located so as to be accessible for cleaning, treatment, repair, testing, inspection, and any other such work as may be necessary.</p> <p>Verify that all wells are protected from surface water run-off and flooding.</p> <p>(NOTE: The Department may require special location and depth requirements for a proposed water supply well to minimize its exposure to potential or existing sources of contamination or interference with other water supply wells.)</p> <p>Verify that all public water wells within a housing development, subdivision, or strip development are located at least 150 feet within the subdivision or development's outermost property lines.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WQ.100.</b></p> <p><b>MISCELLANEOUS WELLS</b></p> <p><b>WQ.100.1.DE.</b> Well drillers must be licensed (DE 7300 7302, Section 4) [ Added January 2006 ; Citation Revised January 2007 ; Citation Revised December 2008; Citation Revised January 2010].</p>	<p>(NOTE: Repeated in WQ.90.1.DE.)</p> <p>Verify that who engage in the business of contracting for drilling, boring, coring, driving, digging, construction, installation, removal or repair of a well in the State of Delaware are licensed by the Department as a water well contractor.</p> <p>Verify that who engage in the business of contracting for the installation, maintenance or repair of pumps and pumping equipment in and for wells in the State of Delaware are licensed by the Department as a pump installer contractor or a water well contractor.</p> <p>Verify that all persons who engage in any of the following activities in the State of Delaware are licensed by the Department as a well driller or well driver or are under the direct on-site supervision of a licensed well driller or well driver while engaged in such activities:</p> <ul style="list-style-type: none"> <li>- the drilling, boring, coring, driving, digging, construction, installation, removal or repair of a well</li> <li>- the drilling, boring, coring, driving, digging, construction, installation, or removal of any excavation other than a well, to a depth greater than twenty (20) feet from the natural ground surface, where the depth is greater than the width and where the saturated zone is intercepted</li> <li>- the installation, maintenance or repair of water well pumps or pumping equipment in or for wells.</li> </ul> <p>Verify that all persons who engage in the installation maintenance or repair of water well pumps and pumping equipment in and for wells in the State of Delaware are licensed by the Department as a pump installer, well driller, or well driver, or are under the direct on-site supervision of a licensed plumber, pump installer, well driller or well driver.</p> <p>(NOTE: A person owning or leasing land on which he or she is installing maintaining or repairing pumping equipment in or from a well used for the irrigation of crops, for watering livestock or poultry, for aquaculture uses, or for other on-farm purposes where the water is not to be used for human consumption or to service a residential dwelling is exempt from the requirement to hold a pump installer license. A person who holds a Delaware Plumbers License or who is working under the direct on-site supervision of a Delaware licensed plumber, well driller, well driver or pump installer and who installs maintains, or repairs pumps and pumping equipment in and for wells is exempt from the requirement to hold a</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WQ.100.2.DE.</b> Permit and general requirements must be met for well construction (DE 7 7300 7301, Sections 3.1, 3.2, 3.11, 3.13, and 3.20) [Added January 2006 ; Citation Revised January 2007; Revised December 2008; Revised January 2010].</p> <p><b>WQ.100.3.DE.</b> Well caps and the upper terminus of wells must meet specific requirements ( DE 7 7300 7301, Section 4.10) [Added January 2006 ; Citation</p>	<p>pump installer license.)</p> <p>(NOTE: Repeated in WQ.90.2.DE.)</p> <p>Verify that a permit is obtained for the use of all wells.</p> <p>Verify that the Department has issued a well construction permit to the applicant or the water well contractor prior to the construction of the well.</p> <p>(NOTE: A well permit is not required for the construction of piezometers with a hand auger or hand operated driver or for the construction of wick drains in the unconfined aquifer.)</p> <p>(NOTE: A well construction permit is not required if an existing well requires only repair or rehabilitation and the location and physical dimensions of the well are not changed. A change in physical dimensions, such as deepening, enlarging the length or diameter of the screen and/or well casing requires an application for a well construction permit.)</p> <p>Verify that, if an emergency well permit number is given verbally for installation of a well, a well application and well completion report including the permit number is submitted to the Department.</p> <p>Verify that a copy of the signed well permit or, in the case of verbal permits, the permit number is available at the drilling site.</p> <p>Verify that a well driller or well driver is physically present to conduct or supervise the actual on-site work of constructing a water well.</p> <p>(NOTE: Well permits are issued for construction and use, except:</p> <ul style="list-style-type: none"> <li>- a water allocation permit is required for any well located on a tract of land owned by the same person where the total estimated yield or use is greater than 50,000 gallons per day, with the exception of non-potable wells constructed and used for fire protection purposes only</li> <li>- approval for use is obtained from the Division of Public Health for all miscellaneous public, industrial, and public wells prior to their use.)</li> </ul> <p>(NOTE: Repeated in WQ.90.3.DE.)</p> <p>Verify that the well casing, pitless adaptor or pitless unit does not terminate less than 8 inches above the finished ground surface or pump house floor for domestic, commercial and agricultural wells.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>Revised January 2007 ; Revised December 2008; Citation Revised January 2010].</p> <p><b>WQ.100.4.DE.</b> The maintenance and repair of wells must meet specific requirements ( DE 7300 7301, Section 8) [ Added January 2006 ; Citation Revised January 2007 ; Revised December 2008; Citation Revised January 2010].</p> <p><b>WQ.100.5.DE.</b> Well abandonment must meet specific requirements ( DE 7300 7301, Section 9) [Added January 2006 ; Citation</p>	<p>Verify that all other wells with the exception of monitor, observation and closed loop heat pump wells and piping systems, terminate not less than 12 inches above ground surface.</p> <p>Verify that all wells are covered with a secure well cap.</p> <p>Verify that vented capping devices are screened so as to be insect and vermin proof.</p> <p>Verify that the well cap is locked or incapable of being removed without the use of tools.</p> <p>(NOTE: The Department may consider approval of alternative methods for capping irrigation and agricultural wells while mobile pumping equipment is in use.)</p> <p>(NOTE: Use of buried well seals, or other devices, including buried "sanitary well seals" to cap wells below the ground surface and provide access for electrical cable and water pipe are prohibited unless prior approval has been granted by the Department.)</p> <p>Verify that pump pits (see definition) are prohibited.</p> <p>(NOTE: Repeated in part in WQ.90.4.DE.)</p> <p>Verify that all materials used in the maintenance, replacement, modification, or repair of any well meet the requirements for new installation.</p> <p>Verify that broken, punctured or otherwise defective or unserviceable casing, screen, fixtures, seals, or any part of the well head is repaired and replaced, or the well is properly abandoned and sealed.</p> <p>Verify that repair of any well having a well head terminating below ground includes the extending of the well casing above the land surface as specified in WQ.100.3.DE.</p> <p>Verify that the repair of any industrial or public water supply well includes the installation of a water level access port and tube.</p> <p>(NOTE: Repeated in WQ.90.5.DE.)</p> <p>Verify that all wells for which a replacement well permit has been issued and which are accessible are abandoned within 60 days of completion of the</p>

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<p>Revised January 2007 ; Revised December 2008; Citation Revised January 2010].</p> <p><b>WQ.100.6.DE.</b> Wells must have level access ports and tubes ( DE 7 7300 730 1, Sections 4.11) [ Added December 2008 ; Citation Revised January 2010].</p> <p><b>WQ.100.7.DE.</b> Wells must meet metering and pumping requirements (DE 7 7300 7301, Sections 4.12) [ Added December 2008 ; Revised</p>	<p>replacement well.</p> <p>Verify that wells that are unsuitable for their intended use are abandoned or converted to another classification.</p> <p>Verify that all abandoned wells are sealed only by a well driller.</p> <p>Verify that, within 30 days of abandonment of a well, the contractor submits a well abandonment report to the Department.</p> <p>Verify that, prior to abandonment, all wells are investigated to determine their condition, the details of construction, and whether or not any obstructions exist that will interfere with the filling and sealing process.</p> <p>Verify that any obstructions are, if possible, removed by cleaning out the hole or redrilling before abandonment.</p> <p>(NOTE: Repeated in part in WQ.90.6.DE.)</p> <p>Verify that all wells with a pumping capacity greater than 50,000 gallons per day are constructed with a port and access tube.</p> <p>Verify that all public wells which supply a community water system and are completed in a confined aquifer have an access port equipped with a removable cap or plug and tube through which a water level measurement can be made.</p> <p>Verify that the access port and tube have a minimum inside diameter of 0.5 inch, so that the position of the water level may be determined by measurement with a steel or electric tape.</p> <p>Verify that the access port and tube are equipped with a removable cap or plug.</p> <p>Verify that the access port is installed and plugged in a manner which prevents the entrance of water, dust, insects, or other foreign material, and permits ready access for water level measurements.</p> <p>(NOTE: Air line gauges are not acceptable water level measurement devices.)</p> <p>(NOTE: Repeated in WQ.90.7.DE.)</p> <p>Verify that all wells with a design capacity greater than 50,000 gallons per day are permanently equipped with a meter(s) capable of acquiring instantaneous flow rate and totalized flow measurements accurate to within plus/minus five percent of</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p>January 2010].</p> <p><b>WQ.100.8.DE.</b> Well completion reports must be submitted to the Department not later than 30 days after completion of any well. (DE 7300 7301, Section 7) [Added December 2008 ; Citation Revised January 2010].</p> <p><b>WQ.100.9.DE.</b> Wells must have identification tags (DE 7300 7301, Section 10) [Added December 2008 ; Citation Revised January 2010].</p>	<p>actual flow rate, unless otherwise approved by the Department.</p> <p>(NOTE: Flow rate indicators may consist of any combination of test dials and direct reading indicators. Elapsed timers are not acceptable flow metering devices except for irrigation wells, agricultural wells, and non-potable wells constructed and used for fire protection purposes only.)</p> <p>Verify that a backflow protection device is installed in a pumping system where the pumping equipment is used to apply wastewater, fertilizers, or chemicals, and where the pumping equipment is also connected to a water well.</p> <p>(NOTE: Repeated in WQ.90.8.DE.)</p> <p>Verify that a well completion report is submitted to the Department, on forms provided by the Department, not later than 30 days after completion of any well.</p> <p>Verify that each completion report is signed by the well driller or well driver in direct on-site supervision of the well construction, unless otherwise approved by the Department, certifying that all information contained on the report is true and correct.</p> <p>Verify that all items on the completion report were completed, making sure to note if a particular item is not applicable (N/A).</p> <p>Verify that, upon completion of the well, the Well Contractor, Driller, Driver or Pump Installer attaches the well identification tag issued by the Department.</p> <p>Verify that the tag is fastened to the well casing approximately 6 inches above finished grade by means of a 1/2 or 3/8 inch stainless steel band or other strapping device approved by the Department.</p> <p>(NOTE: Repeated in WQ.90.9.DE.)</p> <p>Verify that, upon completion of the well and before leaving a site, the Well Contractor, Driller, Driver or Pump Installer attaches the well identification tag issued by the Department.</p> <p>Verify that the tag is permanently fastened to the well casing approximately 6 inches above finished grade by means of a 1/2 or 3/8 inch stainless steel band or other strapping device approved by the Department.</p> <p>Verify that tags for flush mount installations are mounted to the sides of the road boxes or by any method which will permanently display the well permit number.</p>

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<p><b>WQ.100.10.DE.</b> Wells must meet siting criteria ( DE 7300 7301, Section 4. 1) [Added December 2008 ; Citation Revised January 2010].</p>	<p>Verify that tags for well permits issued via fax or under emergency circumstances are affixed to the well casing within 5 working days of the well driller's receipt of the tag.</p> <p>Verify that well tags are returned to the Department within 30 days of cancellation or expiration of an unused permit, or the abandonment of a tagged well.</p> <p>(NOTE: Repeated in part in WQ.90.10.DE.)</p> <p>Verify that all wells, except for monitor, recovery, dewatering, and observation wells meet the following minimum horizontal separation distance requirements:</p> <ul style="list-style-type: none"> <li>- 10 feet from a property line unless prior approval is granted by the Department</li> <li>- a minimum of 50 feet from any boundary of the Agricultural Lands Preservation District</li> <li>- within an y dedicated State of Delaware right-of-way unless written permission is obtained from the right-of-way holder and approved by the Department</li> <li>- 100 feet from identifiable potential or existing sources of contamination, except that public and industrial water wells have a minimum separation of 150 feet and heat pump closed loop and heat pump recharge wells may be as close as 50 feet to identifiable potential or existing sources of contamination</li> <li>- 50 feet from approved septic tanks, diversion valves or boxes, dosing chambers, holding tanks and grease traps, with the exception of public and industrial water wells where the minimum separation distance is 150 feet</li> <li>- 50 feet from any underground sewage force main</li> <li>- 50 feet from any gravity sewer line</li> <li>- unless otherwise approved by the Department, no industrial or public water well may be constructed within 150 feet of any identifiable potential or existing source(s) of contamination.</li> </ul> <p>(NOTE: When any well, with the exception of industrial and public water wells, cannot be physically placed the required isolation distance from identifiable potential or existing sources of contamination as specified in this section, the isolation distance may be decreased to no less than 50 feet, but kept to a maximum possible distance, provided the well is screened in a confined aquifer and pressure grouted from a t least 10 feet in to the confining layer immediately above the source aquifer.)</p> <p>Verify that a well may not be constructed within or under any building other than a separate structure constructed specifically for the housing of pumping equipment, unless otherwise approved in writing by the Department.</p> <p>Verify that the structures are properly marked to indicate the classification of and</p>

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	<p>the well permit number of the well contained therein.</p> <p>Verify that suction lines from wells are at least 10 feet from all identifiable potential or existing sources of contamination.</p> <p>Verify that, if high water table conditions may submerge the suction pipe during any portion of the year, the suction pipe is at least 50 feet from all identifiable potential or existing sources of contamination unless the suction line is double cased from the well to the pump.</p> <p>Verify that any subsurface pressure water supply line is at least 10 feet removed from any subsurface wastewater disposal area.</p> <p>Verify that all wells are located so as to be accessible for cleaning, treatment, repair, testing, inspection, and any other such work as may be necessary.</p> <p>Verify that all wells are protected from surface water run-off and flooding.</p> <p>(NOTE: The Department may require special location and depth requirements for a proposed water supply well to minimize its exposure to potential or existing sources of contamination or interference with other water supply wells.)</p> <p>Verify that all public water wells within a housing development, subdivision, or strip development are located at least 150 feet within the subdivision or development's outermost property lines.</p>

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<p><b>UNDERGROUND INJECTION CONTROL (UIC)</b></p> <p><b>WQ.109. All Wells</b></p>	
<p><b>WQ.109.1.DE.</b> [Deleted January 2010].</p>	<p>(NOTE: DE 7 7000 7102 Section 122.4, 122.7, 122.23, and 122.28 are equivalent to Federal requirements.)</p>
<p><b>WQ.109.2.DE.</b> [Deleted January 2010].</p>	<p>(NOTE: DE 7 7000 7102 Section 122.7 is equivalent to Federal requirements.)</p>
<p><b>WQ.109.3.DE.</b> [Deleted January 2010].</p>	<p>(NOTE: DE 7 70 00 7102 Section 122.7 and 122.11 are equivalent to Federal requirements.)</p>
<p><b>WQ.109.4.DE.</b> [Deleted January 2010].</p>	<p>(NOTE: DE 7 70 00 7102 Section 122.7 and 122.11 are equivalent to Federal requirements.)</p>
<p><b>WQ.109.5.DE.</b> [Deleted January 2010].</p>	<p>(NOTE: DE 7 7000 7 102 S ection 122. 24(a) i s e quivalent t o F ederal requirements.)</p>

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<b>UNDERGROUND INJECTION CONTROL (UIC)</b>	
<b>WQ.110. Class I Wells</b>	
<b>WQ.110.1.DE.</b> [Moved December 2003].	(NOTE: Moved to WQ.109.1.DE.; December 2003.)
<b>WQ.110.2.DE.</b> [Moved December 2003].	(NOTE: Moved to WQ.109.1.DE.; December 2003.)
<b>WQ.110.3.DE.</b> [Moved December 2003].	(NOTE: Moved to WQ.109.1.DE.; December 2003.)
<b>WQ.110.4.DE.</b> [Moved December 2003].	(NOTE: Moved to WQ.109.1.DE.; December 2003.)
<b>WQ.110.5.DE.</b> [Moved December 2003].	(NOTE: Moved to WQ.109.1.DE.; December 2003.)
<b>WQ.110.6.DE.</b> [Deleted January 2010].	(NOTE: DE 7 7000 7102 Sections 146.08 and 146.13 are equivalent to Federal requirements.)
<b>WQ.110.7.DE.</b> [Deleted January 2010].	(NOTE: DE 7 7000 7102 Section 146.10 is equivalent to Federal requirements.)

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WQ.115.</b></p> <p><b>WATER QUALITY STANDARDS</b></p> <p><b>WQ.115.1.DE.</b> [Deleted December 2004].</p> <p><b>WQ.115.2.DE.</b> All surface waters of the State must meet minimum criteria (DE 7 7000 7401, Section 4.1 and 4. 4) [Revised December 2 004; Citation Revised January 2007].</p> <p><b>WQ.115.3.DE.</b> Regulatory mixing zones must meet location, outfall design, and size requirements (DE 7 7000 7401, Section 6.1 and 6. 2) [Revised December 2 004; Revised January 2007].</p>	<p>(NOTE: DE 7 7000 7401, 3 revised to categorize stream basins and designated uses.)</p> <p>Verify that waters are free from substances that are attributable to wastes of industrial, municipal, agricultural, or other human-induced origin including, but not limited to, the following:</p> <ul style="list-style-type: none"> <li>- floating debris, oil, grease, sludge, foam, or other materials on the water surface that may create a nuisance condition or that will in any way interfere with attainment and maintenance of designated uses of the water</li> <li>- settleable solids, sediments, sludge deposits, or suspended particles that coat or cover submerged surfaces and create a nuisance condition or that will in any way interfere with attainment and maintenance of designated uses of the water</li> <li>- any pollutants, including those of a thermal, toxic, corrosive, bacteriological, radiological, or other nature, that interfere with attainment and maintenance of designated uses of the water, impart undesirable odors, tastes, or colors to the water or to aquatic life found there, endanger public health, or result in dominance of nuisance species.</li> </ul> <p>(NOTE: For waters of the Delaware River and Delaware Bay, duly adopted Delaware River Basin Commission (DRBC) Water Quality Regulations are the applicable criteria. If the DRBC has not developed an applicable regulatory standard or criteria for these waters, and Delaware has, Delaware's criteria shall be applicable.)</p> <p>(NOTE: Where complete mixing of effluent and receiving water does not occur at the point of discharge, the Department may allocate a regulatory mixing zone to provide for the mixing of the effluent and the receiving water.)</p> <p>Verify that regulatory mixing zones do not impinge upon areas of special importance including, but not limited to, the following:</p> <ul style="list-style-type: none"> <li>- drinking water supply intakes</li> <li>- nursery areas for aquatic life or waterfowl</li> <li>- approved or conditional shellfish areas</li> <li>- heavily utilized primary contact recreation areas.</li> </ul>





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<p>7000 7401, Sections 4.5.9 and 7.2) [Revised December 2004; Citation Revised January 2007].</p> <p><b>WQ.115.6.DE.</b> Fresh waters must meet temperature and dissolved oxygen water quality criteria (DE 7 7000 7401, Sections 4.5.1.1, 4.5.2.1 and 7.1) [Revised December 2004; Citation Revised January 2007].</p> <p><b>WQ.115.7.DE.</b> All waters must meet pH, alkalinity, and specific substance water</p>	<p>Verify that waters of the state are not acutely or chronically toxic to fish, aquatic life, or wildlife.</p> <p>Verify that waters of the State are maintained to prevent adverse toxic effects on human health resulting from ingestion of chemically contaminated aquatic organisms and drinking water.</p> <p>Verify that waters of the state are meet the specific numeric criteria listed in Appendix 15-6 and 15-7.</p> <p>(NOTE: Water quality criteria for toxic substances do not apply when the freshwater or net advective flow falls below the following values:</p> <ul style="list-style-type: none"> <li>- the harmonic mean flow, for human carcinogens</li> <li>- the flow of 30-day duration with recurrence interval of 5 yr for compounds (30Q5 or Q30-5) for human systemic toxicants and for ammonia fresh water aquatic life chronic toxicity criteria</li> <li>- the flow of 7-day duration with recurrence interval of 10 yr (7Q10 or Q7-10) for compounds having a chronic toxicity criterion</li> <li>- the flow of 1-day duration with recurrence interval of 10 yr (1Q10 or Q1-10) for compounds having an acute toxicity criterion.)</li> </ul> <p>(NOTE: These criteria apply outside approved regulatory mixing zones, unless otherwise specified.)</p> <p>Verify that water temperature does not exceed 5 °F above natural conditions.</p> <p>Verify that no human-induced increase of the true daily mean temperature above 82 °F occurs.</p> <p>Verify that no human-induced increase of the daily maximum temperature above 82 °F occurs.</p> <p>Verify that dissolved oxygen does not fall below a daily average of 5.5 mg/L.</p> <p>Verify that dissolved oxygen does not fall below the 4.0 mg/L minimum.</p> <p>(NOTE: For all waters of the state, all water quality criteria, except those for toxic substances, do not apply at those times when the freshwater flow or net advective flow falls below that value which is equal to the flow of 7-day duration with recurrence interval of 10 yr (generally known as the 7Q10 or the Q7-10).)</p> <p>(NOTE: These criteria apply only outside approved regulatory mixing zones.)</p>

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<p>quality criteria (DE 7 7000 7401, Sections 4.5.3, 4.5.4 and 4.5.5) [Revised December 2004; Citation Revised January 2007].</p> <p><b>WQ.115.8.DE.</b> Streams designated for public water supply use must meet water quality criteria (DE 7 7000 7401, Sections 4.2.1.1 and 7.1) [Revised December 2004; Citation Revised January 2007].</p> <p><b>WQ.115.9.DE.</b> Cold water fisheries (put-and-take) must meet water quality criteria (DE 7 7000 7401, Sections</p>	<p>Verify that pH is within the range of 6.5 to 8.5.</p> <p>(NOTE: Values outside this range are allowed only when caused by natural conditions.)</p> <p>Verify that where pH is below 6.5 or above 8.5 due solely to natural conditions, the pH is not lowered (where below 6.5) or raised (where above 8.5) more than 0.3 standard units due to human-induced changes.)</p> <p>Verify that human-induced change from background does not exceed 0.5 standard units and that human-induced change remains within the range of 6.5 to 8.5.</p> <p>Verify that alkalinity is not less than 20 mg/L CaCO<sub>3</sub>, unless due solely to natural conditions.</p> <p>Verify that, if the alkalinity is below 20 mg/L, no reduction due to human-induced changes is allowed.)</p> <p>Verify that the turbidity measured as Nephelometric or Formazin turbidity units does not exceed natural levels by more than 10 units.</p> <p>(NOTE: For all waters of the state, all water quality criteria, except those for toxic substances, do not apply at those times when the freshwater flow or net advective flow falls below that value which is equal to the flow of 7-day duration with recurrence interval of 10 yr (generally known as the 7Q10 or the Q7-10).)</p> <p>Verify that untreated stream waters designated for public water supply are free from substances, except natural impurities, that, alone or in combination, result in the following:</p> <ul style="list-style-type: none"> <li>- unacceptable levels of taste or odor in the treated water</li> <li>- significant disruption of the treatment processes at the treatment facility</li> <li>- concentrations of toxic substances in the treated water that may be harmful to human health (see Table 2 in Appendix 13-7).</li> </ul> <p>(NOTE: For all waters of the state, all water quality criteria, except those for toxic substances, do not apply at those times when the freshwater flow or net advective flow falls below that value which is equal to the flow of 7-day duration with recurrence interval of 10 yr (generally known as the 7Q10 or the Q7-10).)</p> <p>(NOTE: These criteria apply only outside approved regulatory mixing zones.)</p> <p>Verify that water temperature does not exceed 5 deg F above natural conditions.</p>

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<p>4.5.1.3, 4.5.2.3, and 7. 1). [Revised December 2004; Citation Revised January 2007].</p> <p><b>WQ.115.10.DE.</b> Marine waters must meet temperature and dissolved oxygen water quality criteria (DE 7 7000 7401, Sections 4.5.1.2, 4.5.2.2 and 7. 1) [Revised December 2004; Citation Revised January 2007].</p> <p><b>WQ.115.11.DE.</b> Harvestable shellfish waters must meet total coliform water quality and sampling criteria ( DE 7 7000 7401, Sections 4.5.7.2 and 7. 1) [Citation Revised December 2004 ; Citation Revised January 2007].</p>	<p>Verify that no human-induced increase of the true daily mean temperature above 75 deg F occurs.</p> <p>Verify that dissolved oxygen does not fall below a daily average of 6.5 mg/L.</p> <p>Verify that dissolved oxygen does not fall below the 5.0 mg/L minimum.</p> <p>(NOTE: For all waters of the state, all water quality criteria, except those for toxic substances, do not apply at those times when the freshwater flow or net advective flow falls below that value which is equal to the flow of 7-day duration with recurrence interval of 10 yr (generally known as the 7Q10 or the Q7-10).)</p> <p>(NOTE: These criteria apply outside approved regulatory mixing zones.)</p> <p>Verify that water temperature does not exceed 4 °F above natural conditions from October through May.</p> <p>Verify that the temperature rise during June through September is limited by the following conditions:</p> <ul style="list-style-type: none"> <li>- no human-induced increase of the true daily mean temperature above 82 deg F occurs.</li> <li>- no human-induced increase of the daily maximum temperature above 87 deg F occurs.</li> </ul> <p>Verify that dissolved oxygen does not fall below an average of 5.0 mg/L.</p> <p>Verify that dissolved oxygen does not fall below the 4.0 mg/L minimum.</p> <p>(NOTE: For all waters of the state, all water quality criteria, except those for toxic substances, do not apply at those times when the freshwater flow or net advective flow falls below that value which is equal to the flow of 7-day duration with recurrence interval of 10 yr (generally known as the 7Q10 or the Q7-10).)</p> <p>(NOTE: Harvestable shellfish waters are waters from which shellfish may be taken and consumed.)</p> <p>Verify that the following total coliform requirements are met:</p> <ul style="list-style-type: none"> <li>- the MPN of the water does not exceed 70/100 mL</li> <li>- no more than 10 percent of the samples have an MPN exceeding 230/100 mL for a 3 decimal dilution test (or 230/100 mL where the 5 tube decimal test is used).</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: January 2010</b>
<p><b>WQ.115.12.DE.</b> [Deleted December 2004].</p> <p><b>WQ.115.13.DE.</b> [Deleted December 2004].</p> <p><b>WQ.115.14.DE.</b> Waters of ERES must meet water quality criteria (DE 7 7000 7401, Section 5.6) [Revised December 2004 ; Citation Revised January 2007].</p> <p><b>WQ.115.15.DE.</b> All primary and secondary contact</p>	<p>Verify that samples are collected from those portions of the shellfish area most likely to be exposed to fecal contamination for those tidal and climatic conditions most likely to result in contamination of the shellfish area</p> <p>(NOTE: For all waters of the state, all water quality criteria, except those for toxic substances, do not apply at those times when the freshwater flow or net advective flow falls below that value which is equal to the flow of 7-day duration with recurrence interval of 10 yr (generally known as the 7Q10 or the Q7-10).).</p> <p>(NOTE: DE 7 7000 7401, Section 11 was repealed.)</p> <p>(NOTE: DE 7 7000 7401, Section 11 was repealed.)</p> <p>(NOTE: Designated exceptional recreational or ecological significance (ERES) waters are accorded a level of protection and monitoring in excess of that provided most other waters of the State. These waters are recognized as special natural assets of the State.)</p> <p>Verify that discharges to ERES waters are avoided to the maximum extent practicable.</p> <p>Verify that where attainment of applicable fresh or marine dissolved oxygen criteria is prevented by natural conditions, reduction of dissolved oxygen levels resulting from human activities does not occur.</p> <p>Verify that all point, and human induced nonpoint sources subject to control through use of best management practices or otherwise, remove nutrients to the extent necessary to prevent excessive growth of photosynthetic organisms.</p> <p>Verify that all point, and human induced nonpoint sources subject to control through use of best management practices or otherwise, remove particulate matter to the extent necessary to minimize turbidity.</p> <p>(NOTE: ERES standards do not apply in excavated waters. All other appropriate criteria shall remain in force for these waters.)</p> <p>Verify that primary and secondary contact recreation waters meet the bacterial</p>

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<p>recreation waters of the state must meet bacterial water quality criteria (DE 7 7000 7401, Sections 4.5.7 and 7.1) [Revised December 2004 ; Citation Revised January 2007].</p> <p><b>WQ.115.16.DE.</b> Discharges into low flow water must meet water quality criteria (DE 7 7000 7401, Section 8.1) [Revised December 2004; Citation Revised January 2007].</p> <p><b>WQ.115.17.DE.</b> The Nanticoke River and Broad Creek must meet water clarity criteria ( DE 7 7000 7401, Section 4.5.6) [ Added December 2004 ; Citation Revised January 2007].</p>	<p>water criteria specified in Appendix 13-8.</p> <p>(NOTE: For all waters of the state, all water quality criteria, except those for toxic substances, do not apply at those times when the freshwater flow or net advective flow falls below that value which is equal to the flow of 7-day duration with recurrence interval of 10 yr (generally known as the 7Q10 or the Q7-10).)</p> <p>(NOTE: A low flow water is one in which the 7Q10 freshwater inflow is less than 0.1 cfs.)</p> <p>(NOTE: Where information is available for the receiving water which indicates that, because of low flow, it would not support designated uses, then the numeric criteria does not apply. The numeric criteria will apply at the downstream point where uses could reasonably be expected to occur.)</p> <p>Verify that discharges do not add any of the following:</p> <ul style="list-style-type: none"> <li>- materials which result in the accumulation of toxic substances in sediment, aquatic life, or food chains at levels that may be harmful to the health of humans or aquatic life</li> <li>- materials in concentrations that may settle to form deposits which smother benthic organisms, may exert significant dissolved oxygen demand, or may create a nuisance condition</li> <li>- floating debris, oil, scum, foam, and other matter in concentrations that may cause a nuisance condition</li> <li>- substances in concentrations that produce color, odor, taste, or turbidity that may lead to significant disruption of public water supply treatment systems, or may cause a nuisance condition</li> <li>- substances in concentrations that may result in a dominance of nuisance species or may affect species diversity.</li> </ul> <p>(NOTE: This checklist applies to the Nanticoke River from the upstream-most limits of the City of Seaford to the Maryland State Line and Broad Creek from the upstream-most limits of the Town of Laurel to the confluence with the Nanticoke River.)</p> <p>Verify that, during the period of April 1 to October 31 the minimum seasonal averaged secchi depth is 1.0 m.</p> <p>Verify that the concentrations of chlorophyll-a in free-floating microscopic aquatic plants (algae) does not exceed levels that result in ecologically undesirable consequences including:</p>

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	<ul style="list-style-type: none"> <li>- reduced water clarity</li> <li>- low dissolved oxygen</li> <li>- food supply imbalances</li> <li>- proliferation of species deemed potentially harmful to aquatic life or humans</li> <li>- aesthetically objectionable conditions</li> <li>- render tidal waters unsuitable for designated uses.</li> </ul>

**Appendix 13-1**

**Inorganic Primary MCL and Secondary MCL**

(Source: DE 40 700 016, Section 6.1)

[Revised December 1998; Revised December 2002; Citation Revised January 2007]

<b>Contaminant</b>	<b>PMCL (mg/L)</b>
Antimony (Sb)	0.006 mg/L
Arsenic (As)	0.05 mg/L
Asbestos	7 MF/L
Barium (Ba)	2 mg/L
Beryllium (Be)	0.004 mg/L
Cadmium (Cd)	0.005 mg/L
Chromium (Cr)	0.10 mg/L
Cyanide (Cn)	0.2 mg/L
Fluoride (F)	1.8 mg/L*
Mercury (Hg)	0.002 mg/L
Nickel (Ni)	0.1 mg/L
Nitrate-Nitrogen (NO <sub>3</sub> -N)	10 mg/L
Nitrite-Nitrogen (NO-N)	1 mg/L
Total Nitrate Nitrogen and Nitrite Nitrogen	10 mg/L
Selenium (Se)	0.05 mg/L
Thallium (Tl)	0.002 mg/L

<b>Contaminant</b>	<b>SMCL (mg/L)</b>
Aluminum	0.05-0.2 mg/L
Chloride (Cl)	250 mg/L
Color	15 color units
Corrosivity	Noncorrosive
Foaming agents	0.5 mg/L
Iron (Fe)	0.3 mg/L
Manganese (Mn)	0.05 mg/L
Odor	3 threshold odor number
pH	6.5 - 8.5
Silver (Ag)	0.1 mg/L
Sulfate (SO <sub>4</sub> )	250 mg/L
Total Dissolved Solids (TDS)	500 mg/L
Zinc (Zn)	5 mg/L

\* When the natural level exceeds 1.8 mg/L of fluoride, defluoridation must be provided.



## Appendix 13-2

### PMCL for Radioactivity

(Source: DE 40 700 016, Section 9.1.1) [Citation Revised January 2007]

Contaminant	PMCL
Combined radium-226 and radium-228 Gross alpha particle activity (including radium-226 but excluding radon and uranium) Beta particle and photon radioactivity	5 pCi/L 15 pCi/L 4 mrem/yr*

\*The average annual concentration of tritium assumed to produce a total body concentration of 4 mrem/yr is 20,000 pCi/L. The average annual concentration of strontium assumed to produce a bone marrow concentration of 4 mrem/yr is 8 pCi/L.

**Appendix 13-3**

**MCL for Specific Substances**  
[Deleted December 2004]

## Appendix 13-4

### Notification Requirements

(Source : DE 40 700 016, Section 4.2.2) [Added December 2002; Citation Revised January 2007]

(NOTE: The original numbering of the regulation is retained to facilitate cross-referencing.)

#### 22.412 Content of a Public Notice

- A. When a public water system violates a NPDWR or has a situation requiring public notification, each public notice must include the following elements:
1. A description of the violation or situation, including the contaminant(s) of concern, and (as applicable) the contaminant level(s);
  2. When the violation or situation occurred;
  3. Any potential adverse health effects from the violation or situation, including the standard language under paragraph (D)(1) or (D)(2) of this section, whichever is applicable;
  4. The population at risk, including subpopulations particularly vulnerable if exposed to the contaminant in their drinking water;
  5. Whether alternative water supplies should be used;
  6. What actions consumers should take, including when they should seek medical help, if known;
  7. What the system is doing to correct the violation or situation;
  8. When the water system expects to return to compliance or resolve the situation;
  9. The name, business address, and phone number of the water system owner, operator, or designee of the public water system as a source of additional information concerning the notice; and
  10. A statement to encourage the notice recipient to distribute the public notice to other persons served, using the standard language under paragraph (D)(3) of this section, where applicable.
- B. Elements that must be included in the public notice for public water systems operating under a variance or exemption.
1. If a public water system has been granted a variance or an exemption, the public notice must contain:
    - a. An explanation of the reasons for the variance or exemption;
    - b. The date on which the variance or exemption was issued;
    - c. A brief status report on the steps the system is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance or exemption; and
    - d. A notice of any opportunity for public input in the review of the variance or exemption.
  2. If a public water system violates the conditions of a variance or exemption, the public notice must contain the ten elements listed in paragraph (A) of this section.
- C. The public notice shall:
1. Each public notice required by this section:
    - a. Must be displayed in a conspicuous way when printed or posted;
    - b. Must not contain overly technical language or very small print;
    - c. Must not be formatted in a way that defeats the purpose of the notice;
    - d. Must not contain language which nullifies the purpose of the notice.
  2. Each public notice required by this section must comply with multilingual requirements, as follows:
    - a. For public water systems serving a large proportion of non-English speaking consumers, as determined by the Division, the public notice must contain information in the appropriate language(s) regarding the importance of the notice or contain a telephone number or address where persons served may contact the water system to obtain a translated copy of the notice or to request assistance in the appropriate language.
    - b. In cases where the Division has not determined what constitutes a large proportion of non-English speaking consumers, the public water system must include in the public notice the same information as in paragraph

(C)(2)(a) of this section, where appropriate to reach a large proportion of non-English speaking persons served by the water system.

D. Public water systems are required to include the following standard language in their public notice:

1. Standard health effects language for MCL or MRDL violations, treatment technique violations, and violations of the condition of a variance or exemption. Public water systems must include in each public notice the health effects language specified in Sec. 22.412(E) to this subpart corresponding to each MCL, MRDL, and treatment technique violation listed in Sec. 22.413 to this subpart, and for each violation of a condition of a variance or exemption.
2. Standard language for monitoring and testing procedure violations. Public water systems must include the following language in their notice, including the language necessary to fill in the blanks, for all monitoring and testing procedure violations listed in Sec. 22.413 to this subpart: "We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During compliance period, we " did not monitor or test" or "did not complete all monitoring or testing" for contaminant(s), and therefore cannot be sure of the quality of your drinking water during that time."
3. Standard language to encourage the distribution of the public notice to all persons served. Public water systems must include in their notice the following language (where applicable): "Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail."

E. Mandatory Health Effects Language: When providing the information on potential adverse health effects required by (D)(1) of this Section in notices of violations of MCLs or treatment technique requirements, or notices of the granting or the continued existence of exemptions or variances, or notices of failure to comply with a variance or exemption schedule, the owner of a PWS must include the following mandatory language specific to each contaminant:

1. Microbiological Contaminants:

- A. Turbidity: Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
- B. Total Coliforms: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be Present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
- C. Fecal Coliforms/E. coli: Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.
- D. Giardia lamblia, Viruses, Heterotrophic plate count (HPC) bacteria, Legionella, and Cryptosporidium: Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

2 Inorganic Contaminants:

- A. Antimony: Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
- B. Arsenic: Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
- C. Asbestos: Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.

- D. Barium: Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
  - E. Beryllium: Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
  - F. Cadmium: Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
  - G. Chromium: Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
  - H. Copper: Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
  - I. Cyanide: Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.
  - J. Lead: Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
  - K. Mercury (inorganic): Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
  - L. Nickel: Some people who drink water containing nickel well in excess of the MCL over many years could experience heart and liver damage.
  - M. Nitrate: Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
  - N. Nitrite: Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
  - O. Selenium: Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
  - P. Thallium: Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
3. Synthetic Organic Compounds
- A. Acrylamide: Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.
  - B. Aalachlor: Some people who drink water containing aalachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
  - C. Aldicarb: Some people who drink water containing aldicarb in excess of the MCL over many years may suffer damage to their nervous system.
  - D. Aldicarb sulfone: Some people who drink water containing aldicarb sulfone in excess of the MCL over many years may damage to their nervous system.
  - E. Aldicarb sulfoxide: Some people who drink water containing aldicarb sulfoxide in excess of the MCL over many years may suffer damage to their nervous system.
  - F. Atrazine. Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
  - G. Benzo(a)pyrene (PAH). Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
  - H. Carbofuran: Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
  - I. Chlordane: Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.

- J. Dalapon: Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
- K. Dibromochloropropane (DBCP): Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
- L. Dichloromethane: Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
- M. Di(2-ethylhexyl)adipate: Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience general toxic effects or reproductive difficulties.
- N. Di(2-ethylhexyl)phthalate: Some people who drink water containing di (2-ethylhexyl) phthalate in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
- O. Dinoseb: Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
- P. Diquat: Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
- Q. 2,4-D: Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
- R. Endothall: Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
- S. E ndrin: Some people who drink water containing e ndrin in excess of the MCL over many years could experience liver problems.
- T. Epichlorohydrin: Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.
- U. E thylene dibromide (EDB): Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
- V. G lyphosate: Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.
- W. H eptachlor: Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.
- X. Heptachlor Epoxide: Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.
- Y. Hexachlorobenzene: Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
- Z. H exachlorocyclopentadiene: Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
- AA. Lindane: Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
- BB. Methoxychlor: Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
- CC. Oxamyl [Vydate]: Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.
- DD. Pentachlorophenol: Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
- EE. Picloram: Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
- FF. Polychlorinated Biphenyls [PCBs]: Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
- GG. Simazine: Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.

- HH. Toxaphene: Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.
- II. 2,3,7,8-TCDD (Dioxin): Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
- JJ. 2,4,5-TP. [Silvex]: Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
- KK. 1,2,4-Trichlorobenzene: Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
- LL. 1,1,2-Trichloroethane: Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
4. Volatile Organic Compounds:
- A. Benzene: Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
- B. Carbon Tetrachloride: Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
- C. o-Dichlorobenzene: Some people who drink water containing odichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
- D. P ara-dichlorobenzene: Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
- E. 1,2-Dichloroethane: Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
- F. 1,1-Dichloroethylene: Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
- G. Cis-1,2-Dichloroethylene: Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
- H. T rans-1,2-Dichloroethylene: Some people who drink water containing t rans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
- I. 1,2-Dichloropropane: Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
- J. Ethylbenzene: Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
- K. M ethyl tert Butyl Ether (MTBE): Some people who drink water containing MTBE in excess of the MCL over many years may have an increased risk of developing cancer.
- L. Monochlorobenzene Chlorobenzene: Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
- M. Styrene: Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
- N. Tetrachloroethylene: Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
- O. Toluene: Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
- P. 1,1,1-Trichloroethane: Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
- Q. T richloroethylene: Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
- R. V inyl Chloride: Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
- S. Xylenes: Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.
5. Radiological Compounds
- A. B eta/photon emitters: Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.

- B. Alpha emitters: Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
  - C. Combined Radium 226/228: Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
6. Disinfection/Disinfection Byproducts (DBPs), Byproduct Precursors, Disinfection Residuals
- A. Chlorine: Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
  - B. Chloramines: Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
  - C. Chlorine dioxide, where any two consecutive daily samples taken at the entrance to the distribution system are above the MRDL: Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.
    - 1. Add for public notification only: The chlorine dioxide violations reported today are the result of exceedances at the treatment facility only, not within the distribution system which delivers water to consumers. Continued compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to consumers.
  - D. Chlorine dioxide, where one or more distribution system samples are above the MRDL: Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.
    - 1. Add for public notification only: The chlorine dioxide violations reported today include exceedances of the EPA standard within the distribution system which delivers water to consumers. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short-term exposures. Certain groups, including fetuses, infants, and young children, may be especially susceptible to nervous system effects from excessive exposure to chlorine dioxide-treated water.
  - E. Control of DBP precursors (TOC): Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.
  - F. Disinfection byproducts and treatment technique for DBPs: The United States Environmental Protection Agency (EPA) sets drinking water standards and requires the disinfection of drinking water. However, when used in the treatment of drinking water, disinfectants react with naturally-occurring organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA has determined that a number of DBPs are a health concern at certain levels of exposure. Certain DBPs, including some trihalomethanes (THMs) and some haloacetic acids (HAAs), have been shown to cause cancer in laboratory animals. Other DBPs have been shown to affect the liver and the nervous system, and cause reproductive or developmental effects in laboratory animals. Exposure to certain DBPs may produce similar effects in people. EPA has set standards to limit exposure to THMs, HAAs, and other DBPs.
  - F. Bromate: Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
- (Note: The above paragraphs appear to be incorrectly numbered and/or ordered. They are presented in this regulation as they appear in the source document.)
- G. Chlorite: Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
  - H. Haloacetic Acids (HAA): Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.



- I. TTHMs [Total Trihalomethanes]: Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
- F. Public Notification for Fluoride: Notice of violations of the MCL for fluoride, notices of variances and exemptions from the MCL for fluoride, and notices of failure to comply with variance and exemption schedules for the MCL level for fluoride shall consist of the public notice prescribed in this Section, plus a description of any steps which the system is taking to come into compliance. The public notice must contain the following language, including the language necessary to fill in the blanks; "This is an alert about your drinking water and a cosmetic dental problem that might affect children under nine years of age. At low levels, fluoride can help prevent cavities, but children drinking water containing more than 2 milligrams per liter (mg/l) of fluoride may develop cosmetic discoloration of their permanent teeth (dental fluorosis). The drinking water provided by your community water system [name] has a fluoride concentration of [insert value] mg/l. Dental fluorosis, in its moderate or severe forms, may result in a brown staining and/or pitting of the permanent teeth. This problem occurs only in developing teeth, before they erupt from the gums. Children under nine should be provided with alternative sources of drinking water or water that has been treated to remove the fluoride to avoid the possibility of staining and pitting of their permanent teeth. You may also want to contact your dentist about proper use by young children of fluoride-containing products. Older children and adults may safely drink the water. Drinking water containing more than 4 mg/L of fluoride (the U.S. Environmental Protection Agency's drinking water standard) can increase your risk of developing bone disease. Your drinking water does not contain more than 4 mg/l of fluoride, but we're required to notify you when we discover that the fluoride levels in your drinking water exceed 2 mg/l because of this cosmetic dental problem. For more information, please call [ name of water system contact] of [name of community water system] at [phone number]. Some home water treatment units are also available to remove fluoride from drinking water. To learn more about available home water treatment units, you may call NSF International at 1-877-8-NSF-HELP."

**Appendix 13-5**

**NPDWR Violations and Other Situations Requiring Public Notice<sup>1</sup>**

(Source: DE 40 700 016, Section 4.2.3.1) [Added December 2002; Citation Revised January 2007]

Contaminant	MCL/MRDL/TT violations <sup>2</sup>		Monitoring & testing procedure violations	
	Tier of Public Notice Required	Citation	Tier of Public Notice Required	Citation
1. Violations of National Primary Drinking Water Regulations (NPDWR) <sup>3</sup>				
<b>A. Microbiological Contaminants</b>				
1. Total coliform	2	22.51	3	22.50
2. Fecal coliform/E. coli	1	22.51	<sup>4</sup> 1,3	22.50
3. Turbidity MCL	2	22.70	3	22.70
4. Turbidity MCL (average of 2 days samples >5 NTU)	<sup>5</sup> 2, 1	22.701	3	22.702
5. Turbidity (for TT violations resulting from a single exceedance of maximum allowable turbidity level)	<sup>6</sup> 2, 1	22.701	3	22.702
6. Surface Water Treatment rule violations, other than violations resulting from single exceedance of max. allowable turbidity level (TT)	2	22.1004	3	22.1006(D)
7. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. allowable turbidity level (TT)	2	<sup>7</sup> 22.1007	3	22.1010
<b>B. Inorganic Chemicals (IOCs)</b>				
1. Antimony	2	22.601	3	22.206
2. Arsenic	2	22.601	3	22.206
3. Asbestos (fibers >10 microns)	2	22.601	3	22.206
4. Barium	2	22.601	3	22.206
5. Beryllium	2	22.601	3	22.206
6. Cadmium	2	22.601	3	22.206
7. Chromium (Total)	2	22.601	3	22.206
8. Cyanide	2	22.601	3	22.206
9. Fluoride	2	22.601	3	22.206
10. Mercury	2	22.601	3	22.206
11. Nickel	2	22.601	3	22.206
12. Nitrate	1	22.601	<sup>8</sup> 1, 3	22.206
13. Nitrite	1	22.601	<sup>8</sup> 1, 3	22.206
14. Total Nitrate and Nitrite	1	22.601	3	22.206
15. Selenium	2	22.601	3	22.206
16. Thallium	2	22.601	3	22.206
<b>C. Lead and Copper Rule (Action</b>				

Contaminant	MCL/MRDL/TT violations <sup>2</sup>		Monitoring & testing procedure violations	
	Tier of Public Notice Required	Citation	Tier of Public Notice Required	Citation
level for lead is 0.015 mg/L, for copper is 1.3 mg/L)				
1. Lead and Copper rule (TT)	2	22.207	3	22.207
D. Synthetic Organic Chemicals (SOCs)				
1. 2,4 - D	2	22.611(A)	3	22.612
2. 2,4,5 -TP	2	22.611(A)	3	22.612
3. Alachlor	2	22.611(A)	3	22.612
4. Atrazine	2	22.611(A)	3	22.612
5. Benzo(a)pyrene (PAHs)	2	22.611(A)	3	22.612
6. Carbofuran	2	22.611(A)	3	22.612
7. Chlordane	2	22.611(A)	3	22.612
8. Dalapon	2	22.611(A)	3	22.612
9. Di (2-ethylhexyl) adipate	2	22.611(A)	3	22.612
10. Di (2-ethylhexyl) phthalate	2	22.611(A)	3	22.612
11. Dibromochloropropane	2	22.611(A)	3	22.612
12. Dinoseb	2	22.611(A)	3	22.612
13. Dioxin (2,3,7,8 - TCDD)	2	22.611(A)	3	22.612
14. Diquat	2	22.611(A)	3	22.612
15. Endothall	2	22.611(A)	3	22.612
16. Endrin	2	22.611(A)	3	22.612
17. Ethylene Dibromide	2	22.611(A)	3	22.612
18. Glyphosate	2	22.611(A)	3	22.612
19. Heptachlor	2	22.611(A)	3	22.612
20. Heptachlor epoxide	2	22.611(A)	3	22.612
21. Hexachlorobenzene	2	22.611(A)	3	22.612
22. Hexachlorocyclopentadiene	2	22.611(A)	3	22.612
23. Lindane	2	22.611(A)	3	22.612
24. Methoxychlor	2	22.611(A)	3	22.612
25. Oxamyl (Vydate)	2	22.611(A)	3	22.612
26. Pentachlorophenol	2	22.611(A)	3	22.612
27. Picloram	2	22.611(A)	3	22.612
28. Polychlorinated biphenyls (PCBs)	2	22.611(A)	3	22.612
29. Simazine	2	22.611(A)	3	22.612
30. Toxaphene	2	22.611(A)	3	22.612
31. Aldicarb	2	22.611(A)	3	22.612
32. Aldicarb sulfone	2	22.611(A)	3	22.612
33. Aldicarb sulfoxide	2	22.611(A)	3	22.612
E. Volatile Organic Chemicals (VOCs)				
1. Benzene	2	22.611(C)	3	22.614
2. Carbon tetrachloride	2	22.611(C)	3	22.614
3. Chlorobenzene (monochlorobenzene)	2	22.611(C)	3	22.614
4. o-Dichlorobenzene	2	22.611(C)	3	22.614
5. p-Dichlorobenzene	2	22.611(C)	3	22.614
6. 1,2-Dichloroethane	2	22.611(C)	3	22.614

Contaminant	MCL/MRDL/TT violations <sup>2</sup>		Monitoring & testing procedure violations	
	Tier of Public Notice Required	Citation	Tier of Public Notice Required	Citation
7. 1,1-Dichloroethylene	2	22.611(C)	3	22.614
8. cis-1,2,-Dichloroethylene	2	22.611(C)	3	22.614
9. trans-1,2-Dichloroethylene	2	22.611(C)	3	22.614
10. Dichloromethane	2	22.611(C)	3	22.614
11. 1,2-Dichloropropane	2	22.611(C)	3	22.614
12. Ethylbenzene	2	22.611(C)	3	22.614
13. Styrene	2	22.611(C)	3	22.614
14. Tetrachloroethylene	2	22.611(C)	3	22.614
15. Toluene	2	22.611(C)	3	22.614
16. 1,2,4-Trichlorobenzene	2	22.611(C)	3	22.614
17. 1,1,1-Trichloroethane	2	22.611(C)	3	22.614
18. 1,1,2-Trichloroethane	2	22.611(C)	3	22.614
19. Trichloroethylene	2	22.611(C)	3	22.614
20. Vinyl chloride	2	22.611(C)	3	22.614
21. Xylenes (total)	2	22.611(C)	3	22.614
22. Methyl tert Butyl Ether	2	22.611(C)	3	22.614
F. Radioactive Contaminants				
1. Beta/photon emitters	2	22.91	3	22.92
2. Alpha emitters	2	22.91	3	22.92
3. Combined radium (226 & 228)	2	22.91	3	22.92
G. Disinfection Byproducts (DBPs), Byproduct Precursors, Disinfection Residuals. <sup>9</sup>				
1. Total trihalomethanes (TTHMs)	2	<sup>10</sup> 22.611(B)	3	22.613
2. Haloacetic Acids (HAA5)	2	22.611(B)	3	22.613
3. Bromate	2	22.611(B)	3	22.613
4. Chlorite	2	22.611(B)	3	22.613
5. Chlorine (MRDL)	2	22.803	3	22.804
6. Chloramine (MRDL)	2	22.803	3	22.804
7. Chlorine dioxide (MRDL), where any 2 consecutive daily samples at entrance to the distribution system only are above MRDL	2	22.803	<sup>21</sup> 1, 3	22.804
8. Chlorine dioxide (MRDL), where sample(s) in distribution system the next day are also above MRDL	<sup>12</sup> 1	22.803	1	22.804
9. Control of DBP precursors -- TOC (TT)	2	22.807	3	22.807(C)
10. Benchmarking and disinfection profiling	N/A	N/A	3	22.1008
11. Development of monitoring plan	N/A	N/A	3	22.1008
H. Other Treatment Techniques				
1. Acrylamide	2	22.62(C)	N/A	N/A

Contaminant	MCL/MRDL/TT violations <sup>2</sup>		Monitoring & testing procedure violations	
	Tier of Public Notice Required	Citation	Tier of Public Notice Required	Citation
2. Epichlorohydrin	2	22.62(C)	N/A	N/A
II. Unregulated Contaminant Monitoring <sup>13</sup>				
A. Unregulated contaminants	N/A	N/A	3	CFR 141.40
III. Public Notification for Variances and Exemptions				
A. Operation under a variance or exemption	N/A	<sup>14</sup> 22.204	3	N/A
B. Violation of conditions of a variance or exemption	N/A	<sup>15</sup> 22.204	3	N/A
IV. Other Situations Requiring Public Notice				
A. Fluoride secondary maximum contaminant level (SMCL) exceedance	3	22.603	N/A	N/A
B. Exceedance of nitrate MCL for noncommunity systems, as allowed by Division	1	22.602(K)	N/A	N/A
C. Availability of unregulated contaminant monitoring data	3	CFR 141.40	N/A	N/A
D. Waterborne disease outbreak	1	22.1	N/A	N/A
E. Other waterborne emergency <sup>16</sup>	1	N/A	N/A	N/A
F. Other situations as determined by Division	<sup>17</sup> 1,2,3	N/A	N/A	N/A

- 1 Violations and other situations not listed in this table (e.g., reporting violations and failure to prepare Consumer Confidence Reports) do not require notice, unless otherwise determined by the Division. The Division may, at their option, also require a more stringent public notice tier (e.g., Tier 1 instead of Tier 2 or Tier 2 instead of tier 3) for specific violations and situations listed in this Table, as authorized under CFR 141.202(a) and CFR 141.203(a).
- 2 MCL - Maximum Contaminant Level, MRDL -- Maximum Residual Disinfectant Level, TT -- Treatment Technique
- 3 The term Violations of National Primary Drinking Water Regulations (NPDWR) is used here to include violations of MCL, MRDL, treatment technique, monitoring, and testing procedure requirements.
- 4 Failure to test for fecal coliform or E. coli is a Tier 1 violation if testing is not done after any repeat sample tests positive for coliform. All other total coliform monitoring and testing procedure violations are Tier 3
- 5 Systems that violate the turbidity MCL of 5 NTU based on an average of measurements over two consecutive days must consult with the Division within 24 hours after learning of the violation. Based on this consultation, the Division may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the Division in the 24-hour period, the violation is automatically elevated to Tier 1.
- 6 Systems with treatment technique violations involving a single exceedance of a maximum turbidity limit under the Surface Water Treatment Rule (SWTR) or the Interim Enhanced Surface Water Treatment Rule (IESWTR) are required to consult with the Division within 24 hours after learning of the violation. Based on this consultation, the Division may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the Division in the 24-hour period, the violation is automatically elevated to Tier 1.
- 7 Most of the requirements of the IESWTR (63 FR 69477) (CFR 141.170 - 141.171, 141.173, 141.174) become effective January 1, 2002 for Subpart H systems (surface water systems and groundwater under the direct influence of surface water) serving at least 10,000 persons. However, CFR 141.172 has some requirements that become

- effective as early as April 16, 1999. The SWTR remains in effect for systems serving at least 10,000 persons even after 2002; the IESWTR adds additional requirements and does not in many cases supersede the SWTR.
- 8 Failure to take a confirmation sample within 24 hours for nitrate or nitrite after an initial sample exceeds the MCL is a Tier 1 violation. Other monitoring violations for nitrate are Tier 3.
  - 9 Subpart H community and non-transient non-community systems serving > 10,000 must comply with new DBP MCLs, disinfectant MRDLs, and related monitoring requirements beginning January 1, 2002. All other community and nontransient non-community systems must meet the MCLs and MRDLs beginning January 1, 2004. Subpart H transient noncommunity systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. Subpart H transient non-community systems serving fewer than 10,000 persons and using only groundwater not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.
  - 10 CFR 141.12 will no longer apply after January 1, 2004.
  - 11 Failure to monitor for chlorine dioxide at the entrance to the distribution system the day after exceeding the MRDL at the entrance to the distribution system is a Tier 2 violation.
  - 12 If any daily sample taken at the entrance to the distribution system exceeds the MRDL for chlorine dioxide and one or more samples taken in the distribution system the next day exceed the MRDL, Tier 1 notification is required. Failure to take the required samples in the distribution system after the MRDL is exceeded at the entry point also triggers Tier 1 notification.
  - 13 Some water systems must monitor for certain unregulated contaminants listed in CFR 141.40
  - 14 This citation refers to §§ 1415 and 1416 of the Safe Drinking Water Act. §§ 1415 and 1416 require that "a schedule prescribed for a public water system granted a variance or exemption shall require compliance by the system."
  - 15 In addition to §§ 1415 and 1416 of the Safe Drinking Water Act, 40 CFR 142.307 specifies the items and schedule milestones that must be included in a variance for small systems.
  - 16 Other waterborne emergencies require a Tier 1 public notice under § 141.202(a) for situations that do not meet the definition of a waterborne disease outbreak given in 40 CFR 141.2 but that still have the potential to have serious adverse effects on health as a result of short-term exposure. These could include outbreaks not related to treatment deficiencies, as well as situations that have the potential to cause outbreaks, such as failures or significant interruption in water treatment processes, natural disasters that disrupt the water supply or distribution system, chemical spills, or unexpected loading of possible pathogens into the source water.
  - 17 Primacy agencies may place other situations in any tier they believe appropriate, based on threat to public health.

## Appendix 13-6

### Numeric Aquatic Life Criteria

(Source: DE 7 7000 7401, Section 4.5.9.3.1) [Added December 2004; Citation Revised January 2007]

#### 4.5.9.3.1 Aquatic Life Criteria:

4.5.9.3.1.1 Aquatic Life Criteria for Aluminum, Iron, and Selenium in Table 1 are expressed on a total recoverable basis. Criteria for Cyanide in Table 1 are expressed as free cyanide at the lowest pH occurring in the receiving water, or cyanide amenable to chlorination. Criteria for all other metals in Table 1 are expressed on a total dissolved basis. For toxic substances where the relationship of toxicity is defined as a function of pH or hardness, numerical criteria are presented as an equation based on this relationship. Appropriate pH or hardness values for such criteria shall be determined on a case-by-case basis by the Department.

4.5.9.3.1.2 Specific numerical acute criteria as presented in Table 1 are applied as one-hour average concentrations not to be exceeded more than once in any three-year period. Specific numerical chronic criteria as presented Table 1 are applied as four-day average concentrations not to be exceeded more than once in any three-year period.

4.5.9.3.1.3 For toxic substances for which specific numerical criteria are not listed in Table 1, concentrations shall not exceed those which are chronically toxic (as determined from appropriate chronic toxicity data or calculated as 0.1 of LC50 values) to representative, sensitive aquatic organisms, except as provided in Section 6, Regulatory Mixing Zones, Section 7, Critical Flows, or Section 8, Criteria for Low Flow Waters. Concentrations so determined shall be applied as four-day average concentrations not to be exceeded more than once in any three-year period.

**Table 1 -- Water Quality Criteria for Protection of Aquatic Life**

(All Values Are Listed or Calculated in Micrograms Per Liter)

Parameter	Fresh Acute Criterion	Fresh Chronic Criterion	Marine Acute Criterion	Marine Chronic Criterion
Aldrin	3	-	1.3	-
Aluminum pH 6.5 – 9.0	750	87	-	-
Ammonia	Temperature and pH dependent, see formula after this table	Temperature and pH dependent, see formula after this table		
Arsenic (III)	340	150	69	36
Cadmium*	$(1.136672 - \text{LN}(\text{hardness}) * 0.041838) * \text{EXP}^{(1.0166 * \text{LN}(\text{hardness}) - 3.924)}$	$(1.101672 - \text{LN}(\text{hardness}) * 0.041838) * \text{EXP}^{(0.7409 * \text{LN}(\text{hardness}) - 4.719)}$	40	8.8
Chlordane	2.4	0.0043	0.09	0.004
Chlorine	19	11	13	7.5
Chlorpyrifos (Dursban)	0.083	0.041	0.011	0.0056
Chromium (III)*	$0.316 * \text{EXP}^{(0.819 * \text{LN}(\text{hardness}) + 3.7256)}$	$0.86 * \text{EXP}^{(0.819 * \text{LN}(\text{hardness}) + 0.6848)}$	-	-
Chromium (VI)*	16	11	1,100	50
Copper*	$0.96 * \text{EXP}^{(0.9422 * \text{LN}(\text{hardness}) - 1.7)}$	$0.96 * \text{EXP}^{(0.8545 * \text{LN}(\text{hardness}) - 1.702)}$	4.8	3.1
Cyanide l	22	5.2	1	--
DDT and Metabolites (DDD and DDE)	1.1	0.001	0.13	0.001
Demeton	--	0.1	--	0.1
Dieldrin	0.24	0.056	0.71	0.0019

Parameter	Fresh Acute Criterion	Fresh Chronic Criterion	Marine Acute Criterion	Marine Chronic Criterion
Endosulfan	0.22	0.056	0.034	0.0087
Endrin	0.086	0.036	0.037	0.0023
Guthion	--	0.01	--	0.01
Heptachlor	0.52	0.0038	0.053	0.0036
Hexachlorocyclohexane	0.095	0.08	0.16	--
Iron	--	1000	--	--
Lead*	$(1.46203 - \text{LN}(\text{hardness}) * 0.145712) * \text{EXP}^{(1.273 * \text{LN}(\text{hardness}) - 1.460)}$	$(1.46203 - \text{LN}(\text{hardness}) * 0.145712) * \text{EXP}^{(1.273 * \text{LN}(\text{hardness}) - 4.705)}$	210	8.1
Malathion	--	0.1	--	0.1
Mercury (II)*	1.4	0.077	1.8	0.94
Methoxychlor	--	0.03	--	0.03
Mirex	--	0.001	C	0.001
Nickel*	$0.998 * \text{EXP}^{(0.8460 * \text{LN}(\text{hardness}) + 2.255)}$	$0.997 * \text{EXP}^{(0.8460 * \text{LN}(\text{hardness}) + 0.0584)}$	74	8.2
Total PCBs		0.014		0.03
Parathion	0.065	0.013	--	--
Pentachlorophenol	$\text{EXP}^{(1.005 * \text{pH} - 4.869)}$	$\text{EXP}^{(1.005 * \text{pH} - 5.134)}$	13	7.9
Selenium	20	5	290	71
Silver*	$0.85 * \text{EXP}^{(1.72 * \text{LN}(\text{hardness}) - 6.59)}$	--	1.9	--
Toxaphene	0.73	0.0002	0.21	0.0002
Zinc*	$0.978 * \text{EXP}^{(0.8473 * \text{LN}(\text{hardness}) + 0.884)}$	$0.986 * \text{EXP}^{(0.8473 * \text{LN}(\text{hardness}) + 0.884)}$	90	81

Notes:

1 Cyanide measured as free cyanide at the lowest pH occurring in the receiving water, or cyanide amenable to chlorination.

Formulas in the table have been formatted so that they can be copied directly into spreadsheets to calculate criteria. Criteria are calculated to two significant figures.

LN = natural log base e

EXP = e = 2.71828

Hardness is expressed as mg/L as CaCO<sub>3</sub>

pH is expressed as Standard Units

\* Criteria is for total dissolved form



## Appendix 13-7

### Numeric Human Health Criteria

(Source DE 7 7000 7401, Section 4.5.9.3.1) [Added December 2004; Citation Revised January 2007]

#### 4.5.9.3.2 Human Health Criteria

4.5.9.3.2.1 Water quality criteria appearing in Table 2 for pollutants identified as carcinogens have been established at an upper bound worst case risk management level of one excess cancer in a population of one million ( $1 \times 10^{-6}$ ) over a 70 year lifetime. Criteria listed under the columns header "Fish and Water Ingestion" apply only to surface waters of the State designated as Public Water Supply Sources in Section 3 of these Standards. Criteria listed under columns headed "Fish Ingestion Only" apply to all surface waters of the State not designated as Public Water Supply Sources in Section 3 of these Standards.

4.5.9.3.2.2 For compounds in Table 2 which are considered as both systemic toxicants and human carcinogens, criteria based on both human health concerns are presented. In determining pollution control requirements, the more stringent criterion, after consideration of critical (design) flows in Section 7, shall be utilized.

**Table 2 -- Water Quality Criteria for Protection of Human Health**

(All Values Are Listed in Micrograms per Liter)

Chemical	Systemic Toxicants		Human Carcinogens	
	Fish Ingestion	Fish and Water Ingestion	Fish Ingestion	Fish and Water Ingestion
Acenaphthene	990	670		
Acrolein	300	190		
Acrylonitrile			0.25	0.051
Aldrin	0.025	0.025	0.00005	0.000049
Anthracene	40000	8300		
Antimony	1600	6 (MCL)		
Arsenic (inorganic)		10 (MCL)		
Asbestos		7 million fibers/L (MCL)		
Barium		2000 (MCL)		
Benzene	3100	5 (MCL)	14	0.61
Benzidine	140	59	0.00019	0.000086
Benzo(a)Anthracene			0.18	0.038
Benzo(a)Pyrene		0.2 (MCL)	0.018	0.0038
Benzo(b)Fluoranthene			0.18	0.038
Beryllium	420	4 (MCL)	0.024	0.0034
Bis(2-Chloroethyl) Ether			0.53	0.03
Bis (2-Chloroisopropyl) Ether	65000	1400		
Bis (2-Ethylhexyl) Phthalate	620	6 (MCL)	2.2	1.2
Bromoform	9600	650	61	4.1

Chemical	Systemic Toxicants		Human Carcinogens	
	Fish Ingestion	Fish and Water Ingestion	Fish Ingestion	Fish and Water Ingestion
Butylbenzyl Phthalate	1900	1500		
Cadmium	31	5 (MCL)		
Carbon Tetrachloride	150	5 (MCL)	1.6	0.23
Chlordane	0.14	0.14	0.00081	0.0008
Chlorobenzene	7800	100 (MCL)		
Chlorodibromomethane	21000	680	13	0.4
Chloroform	11000	340		
2-Chloronaphthalene	1600	1000		
2-Chlorophenol	150	81		
Chromium (III)	380000	100 (MCL)		
Chromium (VI)	750	92		
Chromium		100 (MCL)		
Chrysene			0.18	0.038
Copper		1300 (MCL)		
Cyanide	80000	200		
DDT and Metabolites (DDD and DDE)	0.037	0.037	0.00022	0.00022
Dibenzo(a,h)Anthracene			0.018	0.0038
1,2-Dichlorobenzene	6500	600 (MCL)		
1,3-Dichlorobenzene	1300	350		
1,4-Dichlorobenzene	1400	75 (MCL)		
3,3'-Dichlorobenzidine			0.028	0.021
Dichlorobromomethane		680	17	0.55
1,2-Dichloroethane		5 (MCL)	37	0.38
1,1-Dichloroethylene	36000	7 (MCL)	1.2	0.056
Dichloromethane	260000	5 (MCL)	590	4.6
2,4-Dichlorophenol	290	77		
2,4-Dichlorophenoxyacetic acid (2,4-D)		70 (MCL)		
1,2 Dichloropropane			15	0.5
1,3-Dichloropropene	63000	1000	42	0.69
Dieldrin	0.043	0.041	0.000054	0.000052
Diethyl Phthalate	44000	17000		
Dimethyl Phthalate	1100000	270000		
2,4-Dimethylphenol	850	380		
Di-n-Butyl Phthalate	4500	2000		
2,4-Dinitrophenol	5300	69		
2,4-Dinitrotoluene	2100	68	3, 4	0.11
2,3,7,8-TCDD (Dioxin) (as TEQ)		0.00003 (MCL)	5.10E-09	5.0 E-09
1,2-Diphenylhydrazine			0.2	0.036
Endosulfan	89	62		

Chemical	Systemic Toxicants		Human Carcinogens	
	Fish Ingestion	Fish and Water Ingestion	Fish Ingestion	Fish and Water Ingestion
Endrin	0.3	0.29		
Endrin Aldehyde	0.3	0.29		
Ethylbenzene	11000	700 (MCL)		
Fluoranthene	140	130		
Fluorene	5300	1108		
Fluoride		4000 (MCL)		
Heptachlor	0.18	0.18	0.000079	0.000079
Heptachlor Epoxide	0.0046	0.0046	0.000039	0.000039
Hexachlorobenzene	0.36	0.35	0.00028	0.00028
Hexachlorobutadiene	2900	68	18	0.44
Hexachlorocyclohexane			0.017	0.0091
Hexachloro-cyclopentadiene	5500	50 (MCL)		
Hexachloroethane	46	20	3.3	1.4
Ideno(1,2,3-cd)pyrene			0.18	0.038
Isophorone	180000	6700	960	35
Lead		15 (MCL)		
alpha-BHC		0.2 (MCL)	0.0048	0.0026
beta-BHC		0.2 (MCL)	0.017	0.0091
gamma-BHC (Lindane)	9.2	0.2 (MCL)	0.23	0.12
Methyl Mercury	0.3mg/kg fish tissue	0.3mg/kg fish tissue		
Methoxychlor		40 (MCL)		
Methyl Bromide	1500	47		
3-Methyl-4-Chlorophenol				
Nickel (soluble salts)	1700	100 (MCL)		
Nitrate		10000 (MCL)		
Nitrobenzene	690	17		
N- Nitrosodimethylamine			3	0.00069
N-Nitrosodi-n-Propylamine			0.51	0.005
N- Nitrosodiphenylamine			6	3.3
Pentachlorophenol	11000	1 (MCL)	3	0.27
Phenol	860000	10000		
Polychlorinated Biphenyls PCBs		0.5 (MCL)	0.000064	0.000064
Pyrene	4000	830		
Selenium	4200	50 (MCL)		
Silver	40000	170		

Chemical	Systemic Toxicants		Human Carcinogens	
	Fish Ingestion	Fish and Water Ingestion	Fish Ingestion	Fish and Water Ingestion
1,1,2,2- Tetrachloroethane			4	0.17
Tetrachloroethylene	1300	5 (MCL)	3.3	0.69
Thallium	18	2 (MCL)		
Total Trihalomethanes (TTHM)		80 (MCL)		80
Toxaphene		3 (MCL)	0.00028	0.00028
1,2-Trans- Dichloroethylene	51000	100 (MCL)		
1,2,4-Trichlorobenzene	350	70 (MCL)		
1,1,1-Trichloroethane		200 (MCL)		
1,1,2-Trichloroethane	3600	5 (MCL)	16	0.59
Trichloroethylene		5 (MCL)	30	2.5
2,4,6-Trichlorophenol			2.4	1.4
2,4,5- Trichlorophenoxy- propionic acid (2,4,5-TP- Silvex)		50 (MCL)		
Vinyl Chloride	10000	2 (MCL)	2.4	0.025
Zinc	26000	7400		

The columns labeled "Fish and Water Ingestion" shall apply only to waters of the State designated Public Water Supply sources in these standards.

The column labeled "Fish Ingestion Only" shall apply to all waters of the State not designated Public Water Supply sources in this document.

\*\* Values shown with "(MCL)" under header "Fish and Water Ingestion" are Primary Maximum Contaminant Levels (MCLs) as given in the State of Delaware Regulations Governing Public Drinking Water Systems that became effective September 10, 2001

### Appendix 13-8

#### Bacterial Water Quality Criteria

(Source: DE 7 7000 7401, Section 4.5.7.1) [Added December 2004; Citation Revised January 2007]

<b>Waterbody Type</b>	<b>Single-Sample Value (Enterococcus Colonies/100ml)</b>	<b>Geometric Mean (Enterococcus Colonies/100ml)</b>
Primary Contact Recreation Fresh Waters	185	100
Primary Contact Recreation Marine Waters	104	35
Secondary Contact Recreation Fresh Waters	925	500
Secondary Contact Recreation Marine Waters	520	175

# REPORT DOCUMENTATION PAGE

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<b>14. ABSTRACT</b> Environmental assessments help determine compliance with current environmental regulations. The U.S. Air Force, U.S. Army, Defense Logistics Agency (DLA), and Corps of Engineers (Civil Works) have adopted environmental compliance programs that identify compliance problems before they are cited as violations by the U.S. Environmental Protection Agency. Since 1984, the U.S. Army Construction Engineering Research Laboratory, in cooperation with numerous Department of Defense (DOD) components, has developed environmental compliance assessment checklist manuals. The Environmental Assessment and Management (TEAM) Guide was developed for use by all DOD components. Currently there are five participating DOD components: the Air Force, Air National Guard, Army, Civil Works, and DLA. These agencies have agreed to share the development and maintenance of this Guide. The Guide combines Code of Federal Regulations and management practices into a series of checklists that show legal requirements and the specific operations or items to review. TEAM Guide is supplemented by DOD component-specific manuals detailing DOD component regulations and policies. The Delaware Supplement was developed to be used in conjunction with the TEAM Guide, using existing Delaware state environmental legislation and regulations as well as suggested management practices.					
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