Department of Defense
INSTRUCTION

July 9, 1987
NUMBER 4120.13

ASD(FM&P)

SUBJECT: Safety Program for Chemical Agents and Weapon Systems

References: (a) DoD Instruction 4120.13, "Safety Program for Chemical Agents and Associated Weapon Systems," April 30, 1970 (hereby canceled)
(b) JCS Pub. 1, "Department of Defense Dictionary of Military and Associated Terms," April 1, 1984, authorized by DoD Directive 5000.9, March 23, 1981
(c) DoD Instruction 6055.1, "DoD Occupational Safety and Health Program," October 26, 1984
(d) DoD Directive 1000.3, "Safety and Occupational Health Policy for the Department of Defense," March 29, 1979
(e) through (i), see enclosure 1

A. REISSUANCE AND PURPOSE

This Instruction reissues reference (a) to update DoD policies and procedures and assigns responsibilities for minimizing the potential and severity of DoD chemical agent accidents through the application of safety management and system safety principles.

B. APPLICABILITY AND SCOPE

This Instruction:

1. Applies to chemical agents and associated weapon systems, including binary chemical agent weapon systems. All such items are hereafter referred to collectively as "chemical weapon systems."

2. Applies to chemical weapon systems research and development, production, storage, decontamination, and demilitarization facilities.

3. Does not apply to riot control or smoke agents, herbicides, or flame generating systems.

4. Applies to Military Departments and Defense Agencies (hereafter referred to collectively as "DoD Components") responsible for any phase in the life cycle of a chemical weapon system.

C. DEFINITIONS

1. Chemical Agent. A chemical substance which is intended for use in military operations to kill, seriously injure, or incapacitate man through its physiological effects. Excluded from consideration are riot control agents, herbicides, smoke, and flame. (This definition is taken from reference (b).)

2. Binary Chemical Agent Weapon System. A weapon system that contains two relatively nontoxic chemicals that combine during functioning of the weapon system to produce a chemical agent for release on target.

D. POLICY

1. DoD Components responsible for any phase in the life cycle of a chemical weapon system shall establish and maintain chemical agent safety programs and procedures as an element of their overall safety and occupational health program under DoD Instruction 6055.1 (reference (c)) to protect:

a. DoD personnel from accidental injury or death during weapons research, development, testing, production, transportation, storage, deployment, and disposal.

b. The public and the environment from adverse effects.

2. Chemical weapon systems shall be given unbiased and periodic system safety reviews.

E. RESPONSIBILITIES

1. The Assistant Secretary of Defense (Force Management and Personnel), in accordance with DoD Directive 1000.3 (reference (d)), is responsible for the DoD Safety and Occupational Health Program, of which chemical agent safety policy is an element.

2. The Assistant Secretary of Defense (Production and Logistics), in accordance with DoD Directive 5100.50 (reference (e)), is responsible for policy and management oversight for environmental issues.

3. The Assistant To The Secretary of Defense (Atomic Energy), in accordance with DoD Directive 5148.2 (reference (f)), is responsible for overall chemical agent matters.

4. DoD Components establishing or maintaining chemical agent safety programs in accordance with this Instruction shall:

a. Evaluate the safety of chemical weapon systems, equipment, facilities, and the adequacy of safety rules and/or procedures and training.

b. Systematically eliminate or control hazards in chemical weapon systems, equipment, and facilities primarily through engineering design and controls and secondarily through procedural controls.

c. Educate personnel on the risks associated with chemical agent operations.

d. Monitor the health and work environment of occupationally-exposed personnel.

e. Obtain or develop in accordance with DoD Directive 5160.5 (reference (g)) protective clothing and equipment, monitoring and/or detection equipment, and decontamination capability necessary to meet the occupational exposure standards under DoD 6055.9-STD (reference (h)).

f. Implement DoD Explosives Safety Board standards (DoD 6055.9-STD, reference (h)).

g. Establish contingency planning to include chemical accident and/or incident (CAI) response and assistance, CAI reporting and investigation in accordance with DoD 6055.9-STD (reference (h)), and public affairs planning.

h. Include chemical weapon systems, chemical agent protective clothing and equipment, monitoring and/or detection equipment, and other equipment and facilities in their system safety program required by DoD Instruction 5000.36 (reference (i)).

i. Ensure that unbiased system safety reviews of their chemical weapon systems are accomplished.

5. Each DoD Component responsible for development of a chemical weapon system shall:

a. Establish a system safety review process.

(1) For chemical weapon systems being developed, a system safety study shall be conducted during each materiel acquisition phase and shall be available 90 days before each milestone review and scheduled deployment (see enclosure 2). These studies shall assess the safety of the weapon system and its compliance with safety standards; shall identify findings and make recommendations. The recommendations shall be used to assist decision-makers on whether or not to continue system development and what further development and system changes are required to meet established chemical agent safety standards, consistent with operational requirements. The recommendations also should address what safety and health information is necessary for any follow-on study, and desirable system changes to optimize safety characteristics. Study recommendations also should address what safety issues should be briefed at milestone reviews. The Production and Deployment Study also shall include recommendations for safety rules necessary to minimize hazards that might not be eliminated by design.

(2) Following operational experience with chemical weapon systems currently being developed, and for chemical weapon systems currently accepted for Service use (for which no previous system safety studies exist), a one-time Special Study shall be conducted. In either case, these studies shall evaluate the safety of the weapon systems during all remaining phases of their life cycles. The results shall be quantitative in nature, and shall include conclusions for the overall safety of the systems and specific recommendations that address all identified problem areas. They also shall document the safety lessons learned for application to future weapon systems development.

(3) Additional Special Studies should be conducted for all deployed chemical weapon systems, as required, to evaluate the impact on safety of changes in system design; production, maintenance, transportation, storage, use, or disposal methods; or other parameters.

(4) On completion, chemical weapon system safety studies and updates shall be provided to the Assistant to the Secretary of Defense (Atomic Energy) and to the Assistant Secretary of Defense (Force Management and Personnel).

b. Formally document in subsequent system safety studies each management decision to accept the risks associated with an identified hazard.

F. EFFECTIVE DATE AND IMPLEMENTATION

This Instruction is effective immediately. Forward one copy of implementing documents to the Assistant Secretary of Defense (Force Management and Personnel) within 180 days.

David J. Armor
Acting Assistant Secretary
of Defense (Force Management
and Personnel)

Enclosures - 2
1. References
2. System Safety Study Milestone Guide

REFERENCES, *continued*

(e) DoD Directive 5100.50, "Protection and Enhancement of Environmental Quality," May 24, 1973
(f) DoD Directive 5148.2, "Assistant to the Secretary of Defense (Atomic Energy), " February 4, 1986
(g) DoD Directive 5160.5, "Responsibilities for Research, Development, and Acquisition of Chemical Weapons and Chemical and Biological Defense," May 1, 1985
(h) DoD 6055.9-STD, "DoD Ammunition and Explosives Safety Standards," July 1984, authorized by DoD Directive 6055.9, November 25, 1983
(i) DoD Instruction 5000.36, "System Safety Engineering and Management," April 14, 1986

SYSTEM SAFETY STUDY MILESTONE GUIDE

Timing of System Safety Studies for Chemical Weapon Systems Relative to Life Cycle Milestone Reviews

CONCEPTUAL STUDY
Conducted during the first stages of concept exploration and throughout research and development. Safety in all future phases of the life cycle should be considered during this and subsequent studies. Completed at least 90 days before Milestone I.

DEMONSTRATION AND VALIDATION STUDY
Builds on Conceptual Study, preliminary design and engineering, trade-off proposals, etc. Completed at least 90 days before Milestone II.

FULL-SCALE DEVELOPMENT STUDY
Builds on previous studies and safety data from advanced engineering, fabrication, and testing. Completed at least 90 days before Milestone III and system is accepted for service use.

PRODUCTION AND DEPLOYMENT STUDY
Builds on previous studies, results of production testing and evaluation, impact of preplanned product improvements, etc. Completed at least 90 days before scheduled deployment.

SPECIAL STUDY
Conducted after operational experience with chemical weapon systems and on current systems to determine whether system is safe for all aspects of remaining life cycle. Documents lessons learned for application to future systems development.
and
Conducted on all chemical weapon systems, as required to evaluate impact on safety of changes in system design; production, maintenance, transportation, storage, use, or disposal methods; or other parameters.