U.S. Army Research, Development and Engineering Command

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Enabling Sustainable NESHAP Compliance for Army Installations

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Outline

- What higher HQ is doing to enable NESHAP compliance
- What regulated sources need to do to take advantage
- What happens next

RDT&E Approach to Compliance: Background (1)

- Sustainable Painting Operations for the Total Army (SPOTA) program to eliminate hazardous air pollutants (HAPs) in coatings
  - Materials developed and tested on lab-scale „03-„07
  - Materials demonstrated in real environments „08-„11
  - Materials approved and implemented throughout
  - Baseline HAP-containing materials phased out after implementation

RDT&E Approach to Compliance:
Background (2)

- Focusing on six major classes of materials used on all families of Army materiel
  - Paints, including the Chemical Agent Resistant Coating (CARC) system
  - Solvents, thinners and cleaners
  - Depainting materials (a.k.a., paint strippers)
  - Rubber-to-metal bonding adhesives
  - Other miscellaneous sealants and adhesives
  - Coatings intended for use on munitions
- Official endorsements from HQDA and numerous PEOs
  - Demonstrations at AMCOM, TACOM, CECOM, JMC, IMCOM sites

RDT&E Approach to Compliance:
Select Products Already Implemented

- HAP-free, water-dispersible CARC topcoat, all types
  - MIL-DTL-64159 specification adopted 2002
  - Type III touch-up kits added 2007
- HAP-free, single component CARC topcoat, type II
  - MIL-DTL-53039 specification revised 2005
  - Type VIII touch-up kits added 2009
- HAP-free enamel for munitions, type II
  - MIL-DTL-11195 specification revised 2003
- HAP-free degreasing solvent
  - MIL-PRF-680 specification revised 2006
- Non-chromate epoxy primers, MIL-PRF-23377 class N and MIL-PRF-85582 class N
  - Developed by NAVAIR, approved by AMCOM 2008
- Non-chromate trivalent chromium pretreatment (TCP)
  - Developed by NAVAIR, approved by AMCOM 2009

RDT&E Approach to Compliance:
Select Products to Look for Near-Term

- HAP-free CARC primers, all types
  - MIL-P-53030 and MIL-P-53022 to be revised
- CARC powder primers
  - New specification to be developed
- Cobalt-free CARC topcoats, all types
  - Green 383 pigment to be replaced by Green 808
  - All specs to be revised
- HAP-free cleaners for wipe, flush and immersion
  - Demonstrations underway, joint specification in development
- HAP-free immersion paint remover
  - One application already demonstrated, others to follow
- HAP-free thinners for paints and adhesives
  - To be incorporated into existing specifications and SOPs
- HAP-free anti-tamper sealant
  - Demonstrated in 2008, implementation to follow

RDT&E Approach to Compliance:
Select Products to Look for Mid-Term

- HAP-free system to replace trichloroethylene vapor degreasers
  - Demonstrations underway for two applications
- CARC powder topcoats
  - New specification to be developed
- HAP-free, non-skid coatings
  - To replace MIL-PRF-24667 and similar products
- HAP-free, high temperature coatings
  - To replace MIL-P-14105 and similar products
- HAP-free, general purpose adhesives
  - To replace MMM-A-121 and similar products
- Non-chromate wash primer
  - To replace DOD-P-15328 and similar products
- HAP-free munitions coatings
  - Numerous different specifications and applications

Enabling DLSME NESHAP Compliance:
Surface Coatings (1)

Anticipated DLSME NESHAP Limit

Numerical HAP content limit on 20 highest use coating specifications

What we are doing

- Demonstrating HAP-free coatings to meet the specifications
- Revising coating specifications to incorporate HAP limits
- Updating qualified product lists to disqualify high-HAP coatings
- Establishing new NSNs for HAP-free coatings, as appropriate
- Cancelling/reassigning existing NSNs for high-HAP coatings
- Changing TMs/DMWRs/TDPs to reference HAP-free coatings
  - Not a short process

Enabling DLSME NESHAP Compliance:
Surface Coatings (2)

Anticipated DLSME NESHAP Limit

Numerical HAP content limit on 20 highest use coating specifications

What you still need to do

- Follow all technical data – failure to do so could be a violation!
- Order coatings through GSA/DLA to ensure they are qualified
- If you buy these coatings directly from a supplier, either:
  - Require they comply with the MOST CURRENT version of the specification, or
  - Insert HAP limits directly into procurement language
- Keep copies of all technical data
  - TMs/DMWRs/TDPs/SOPs
  - Specifications/Standards
  - MSDSs/Product Data Sheets

Enabling DLSME NESHAP Compliance:
Substrate Cleaning and Paint Thinning (1)

Anticipated DLSME NESHAP Limit

HAP-free requirement unless otherwise authorized by technical instructions

What we are doing

- Demonstrating HAP-free solvents in a variety of applications
- Revising MIL-PRF-680 specification to be HAP-free
- Developing new Joint, HAP-free General Cleaning Specification
- Establishing new NSNs for HAP-free solvents, as appropriate
- Cancelling/reassigning existing NSNs for high-HAP solvents
- Revising coating specifications to call out thinning procedures
- Changing TMs/DMWRs/TDPs to reference HAP-free solvents
  - Not a short process

Enabling DLSME NESHAP Compliance:
Substrate Cleaning and Paint Thinning (2)

Anticipated DLSME NESHAP Limit

HAP-free requirement unless otherwise authorized by technical instructions

What you still need to do

- Follow all technical data – failure to do so could be a violation!
- When not instructed which solvent to use, ALWAYS select HAP-free
  - Refer to new Joint spec
  - Good idea to tighten hazmat control/pharmacy procedures
- When buying solvents, either:
  - Require they be HAP-free, or
  - Ensure that they are called out by a technical instruction
- Keep copies of all technical data
  - TMs/DMWRs/TDPs/SOPs
  - Specifications/Standards
  - MSDSs/Product Data Sheets

Enabling DLSME NESHAP Compliance:
Paint Equipment Cleanup (1)

Anticipated DLSME NESHAP Limit

Choice of HAP-free solvents or work practice standards

What we are doing

- Demonstrating HAP-free solvents for cleanup of common paint equipment and coatings
  - Investigating dual use as both cleaner and thinner
- Developing new Joint, HAP-free General Cleaning Specification
- Establishing new NSNs for HAP-free solvents, as appropriate
- Cancelling/reassigning existing NSNs for high-HAP solvents

Enabling DLSME NESHAP Compliance:
Paint Equipment Cleanup (2)

Anticipated DLSME NESHAP Limit

Choice of HAP-free solvents or work practice standards

What you still need to do

- Follow all technical data – failure to do so could be a violation!
- Change SOPs to implement either:
  - HAP-free cleanup solvents,
  - Enclosed cleaning system,
  - Disassembled spray gun cleaning in closeable container,
  - Non-atomized discharge into closeable container, or
  - Atomized discharge into vapor capture device
- Keep copies of all technical data
  - TMs/DMWRs/TDPs/SOPs
  - Specifications/Standards
  - MSDSs/Product Data Sheets

Enabling DLSME NESHAP Compliance:
Methylene Chloride (MeCl) Depainting (1)

Anticipated DLSME NESHAP Limit

Work practices and 50% growth cap for large vats; usage cap outside of vats

What we are doing

- Demonstrating HAP-free chemical paint removers in large vats
- Demonstrating HAP-free chemical paint removers outside of vats
- Demonstrating a variety of mechanical depainting methods
- Revising depainting specifications to eliminate MeCl, as appropriate
- Establishing new NSNs for HAP-free removers, as appropriate
- Changing TMs/DMWRs/TDPs to implement demonstrated methods
  - Not a short process

Enabling DLSME NESHAP Compliance:
Methylene Chloride (MeCl) Depainting (2)

Anticipated DLSME NESHAP Limit

Work practices and 50% growth cap for large vats; usage cap outside of vats

What you still need to do

- Follow all technical data – failure to do so could be a violation!
- Change SOPs to incorporate compliant work practice standards
  - May require vat modifications
- When expanding or adding production capability, design for HAP-free depainting methods
- When buying removers, either:
  - Require they be HAP-free, or
  - Buy less than the usage cap
- Keep copies of all technical data
  - TMs/DMWRs/TDPs/SOPs
  - Specifications/Standards
  - MSDSs/Product Data Sheets

Beyond DLSME: A Model for Sustainable NESHAP Compliance (1)

- Allocate funding to **eliminate pollution**, not to:
  - Hunt for loopholes
  - Justify inaction or non-compliance
  - Comply with bare minimum regulatory requirements
- Work **with** EPA, not against them
  - Both sides benefit – DoD gets achievable standards while EPA gets greater emission reductions

Beyond DLSME: A Model for Sustainable NESHAP Compliance (2)

- Adopt an **evolutionary approach** to pollution reduction
  - Establish cooperative agreements between agencies
  - Align EPA regulatory timescale with DoD technology timescale
  - EPA would set initial standards at levels DoD can achieve without having to install pollution control devices
  - DoD would commit to improving the state of the technology to exceed initial standards on a continuous, spiraling basis
  - Emissions levels would be reduced faster and greater than through a traditional NESHAP with 10-year review cycle
  - Upshot: the Maximum Achievable Control Technology (MACT) floor would constantly be lowered until it approaches zero emissions

Coming Down the Pike: Aerospace NESHAP Dilemma (1)

- Promulgated 1995, effective 1998
- DoD has already spent $ millions demonstrating compliance with standards that **DO NOT** eliminate pollution
  - Ex. “Specialty coatings” with no requirements
  - Ex. “Parts normally removed” with unlimited use of MeCl
  - Ex. “Composite vapor pressure” limits on solvents
    - Most HAP solvents are low in vapor pressure !!!
    - Xylene, ethylbenzene, MIBK, toluene all < 45 mm Hg !!!
    - MEK > 45 mm Hg but no longer a HAP !!!
- 10-year review currently underway
  - Aerospace NESHAP not expected to fulfill recent court rulings on Brick, Boiler and Plywood NESHAPs
  - Too many instances of “no control” MACT floors

Coming Down the Pike:
Aerospace NESHAP Dilemma (2)

- How will DoD allocate $ for more stringent Aerospace NESHAP?
  - Fight for loopholes and exemptions?
  - Install pollution control devices?
  - Try to opt into the DLSME NESHAP?

Why not an evolutionary MACT approach???