Headquarters U.S. Air Force

Fly - Fight - Win

8280 - Air Force EO 13423 Toxic/Chemical Reduction Efforts

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Overview

- Executive Order (EO) 13423
- Key Elements of the AF Hazardous Chemicals Reduction Plan
- Planned Environment, Safety, and Occupational Health (ESOH)/ Hazardous Materials Management Process (HMMP) Improvements
- AF Toxic and Hazardous Chemical Reduction Goals
- New Policy: Minimizing the Use of Hexavalent Chromium

- Key EO Sections
  - Environmental Management Systems (EMS)
  - Green Procurement
  - Solid Waste Management and Pollution Prevention (P2)
    - Toxic/hazardous chemical reduction plan
    - Recycling goals and metrics
  - Electronic Equipment Procurement, Use, and Disposal
  - Facility Energy Initiatives
  - Non-tactical Vehicles
- Office of the Federal Environmental Executive (OFEE) developed EO implementing guidance

- OSD submitted *DoD Toxic and Hazardous Chemical Reduction Plan*, 1 Feb 08
  - Established a lifecycle framework for describing chemical reduction efforts
  - Required Services to develop chemical reduction goals

- Air Force submitted its plan and reduction goals on 9 Jan 09
  - Provided overview of toxic and hazardous chemical reduction management
  - Established six reduction goals
Key Elements of AF Hazardous Chemicals Reduction Plan

- Integrated approach
  - Utilizes an EMS risk management framework
  - Across the weapon system, facility, and infrastructure life cycle
  - Responding to specific environment, safety, and occupational health (ESOH) impacts

- Air Force Hazardous Materials Management Process (HMMP) is identified as a key part of this approach
  - Air Force has continued to improve the HMMP to reduce ESOH risks
Key Elements of AF Hazardous Chemicals Reduction Plan

- AF HMMP conforms to the processes institutionalized by the *DoD Hazardous Materials Management Business Process Reengineering* effort
  - Installation-level review and authorization of hazardous processes
  - Tracking and reduction of hazardous chemicals
  - Establishment of controls that protect people and the environment
- Key planned improvements to AF HMMP
  - Maturing the enterprise resource planning systems that support it (EESOH-MIS, ECSS, others)
  - Standardized and stewarded product hazard data
  - Enabling better targeting and reporting of hazardous material reductions
**AIR FORCE SIMPLIFIED LIFE-CYCLE HAZMAT MANAGEMENT**

**Legend**
- Data (→)
- Non-digital Info (→)
- Material and data (→)
- Key HAZMAT Management Innovation (→)

**Supply**
- Materiel Research and Selection Assistance (as requested)

**Hazmat Tracking Activity**
- Source Materiel (e.g., place order in Supply System)
- Receive Hazmat
- Receive Hazmat Request and transmit to Supply
- Receive Hazmat in tracking system and associate correct MSDS
- Record Hazmat issued in tracking system
- Place remainder in inventory and manage inventory
- Dispose of Excess/Expired

**Shop**
- Is Shop already Authorized?
- View Authorization w/MSDS and value-added ESOH info
- Request Hazmat
- Review request up-front to ensure shop is ready and to provide value-added ESOH info
- Use HAZMAT in authorized processes
- Advise HAZMAT Tracking Activity, provide additional approvals, as necessary
- 24/7 access to correct MSDS and value-added ESOH info for HAZMAT, tailored to shop, people, and process
- Turn-in excess for free issue, reuse, redistribution

**ESOH Professionals**
- Needs a Hazmat
- Electronically request Authorization
- Authorized
- Review request up-front to ensure shop is ready and to provide value-added ESOH info
- 24/7 visibility of HAZMAT at all locations on installation. Ability to track emissions and exposures (issues minus turn-ins or disposals), by shop; ability to track transfers to HAZWASTE

**STANDARDIZED ESOH TRACKING SYSTEMS**
- Standardized digital MSDS information available through TRACKING SYSTEMS to HAZMAT Handlers, Users/Shops, and ESOH Professionals throughout HAZMAT life cycle
Planned ESOH/HMMP Improvements

- Agree On a Common Data Point
- Build On the Common Framework
- Share Data, Information, Knowledge
- Use Stewarded Data Sets

Applied to ESOH

Work Unit “Process”
Lowest Common Denominator

Driver to Define Process?
“Material Authorization”

Transform From “Material” to Process Authorization

Involve All ESOH Functions In “Process Authorization”

Assign Stewardship to “ESOH Data Sets”
Planned ESOH/HMMP Improvements

- Improve Program Efficiency
  - Focus resources to reduce high ESOH risk and measure results
  - Understand expectations/priorities and measure results
  - Increase confidences in control/evaluations utilizing enterprise evaluations

- Provide standardized process impact/hazard evaluations
  - Maximize enterprise evaluations to better recognize, evaluate, and control non-standard operational conditions
  - Integrate HAZMAT authorization into ESOH evaluations
**AF Toxic and Hazardous Chemical Reduction Goals**

**GOAL 1: Reduction of Lead Content in Desktop Personal Computers (PCs), Laptops, Liquid Crystal Displays (LCDs)**

<table>
<thead>
<tr>
<th>Chemicals</th>
<th>Baseline Year</th>
<th>Baseline Quantity</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead content in desktop PCs, laptops, and LCDs purchased under the Air Force Information Technology Commodity Council (AFITCC) Quarterly Enterprise Buy (QEB)</td>
<td>2005</td>
<td>Estimated 76,798 pounds of lead content installed in AFITCC QEB- purchased desktop PCs, laptops, and LCDs in use across Air Force</td>
<td>By 31 Dec 2009, 99% of all AFITCC QEB- purchased electronics used across the Air Force will be lead-free</td>
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## GOAL 2: Elimination of Lead in Fleet Vehicle Tire Weights

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<tr>
<td>Lead used in Fleet Vehicle Automobile Tire Weights</td>
<td>2007</td>
<td>At least 10,000 pounds of lead tire weights installed on Air Force fleet-vehicles</td>
<td>100% elimination of installed lead tire weights by 2012</td>
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**AF Toxic and Hazardous Chemical Reduction Goals**

**GOAL 3:** Reduction of the use of chromate conversion coatings as a bare surface treatment in depot-level painting of USAF aircraft

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<td>Chromate conversion coatings (hexavalent chromium, phosphoric acid, hydrofluoric acid, potassium ferricyanide, etc) used as bare surface treatment in depot-level painting of USAF aircraft</td>
<td>2003</td>
<td>49,000 gallons per year</td>
<td>70% reduction in annual procurement and use by 31 Dec 2012</td>
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GOAL 4: Elimination of HCFC-225g usage in cleaning of aircraft oxygen systems and equipment

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<tbody>
<tr>
<td>HCFC-225g used to clean aircraft oxygen systems and equipment</td>
<td>2008</td>
<td>4,542 pounds</td>
<td>100% elimination by 1 Jan 2015</td>
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## AF Toxic and Hazardous Chemical Reduction Goals

### GOAL 5: Reduction in Aerospace Hydraulic Fluid Procurement and Waste Generation

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<tr>
<td>Aerospace Hydraulic Fluids -- Multiple chemicals: oils, esters, polyalphaolefins, glycols, butanol, silicones, aromatic hydrocarbons, etc.</td>
<td>2007</td>
<td>246,219 gallons per year</td>
<td>65% reduction in annual new aircraft hydraulic fluid purchases by 31 Dec 2015</td>
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**AF Toxic and Hazardous Chemical Reduction Goals**

**GOAL 6: Reduction of Greenhouse Gas (GHG) Emissions from Facility Energy**

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<tr>
<td>GHG emission [Combustion-related GHGs (CO2, CH4, N2O)]</td>
<td>2003</td>
<td>Facility energy usage ~ 71,840.70 MMBTU (~8,384,910 MT CO2e)</td>
<td>Reduce GHG emissions through a reduction in energy intensity by 3% annually, or 30% by 2015 relative to 2003</td>
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MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS

SUBJECT: Minimizing the Use of Hexavalent Chromium (Cr⁶⁺)

Cr⁶⁺ is a significant chemical in numerous Department of Defense (DoD) weapons systems and platforms due to its corrosion protection properties. However, due to the serious human health and environmental risks related to its use, national and international restrictions and controls are increasing. These restrictions will continue to increase the regulatory burdens and life cycle costs for DoD and decrease material availability. OSD, DoD Components, and industry have made substantial investments in finding suitable replacements for Cr⁶⁺ for many of the current DoD applications. In particular, a number of defense-related industries are minimizing or eliminating the use of Cr⁶⁺ where proven substitutes are available that provide acceptable performance for the application.

This is an extraordinary situation that requires DoD to go beyond established hazardous materials management processes. To more aggressively mitigate the unique risks to DoD operations now posed by Cr⁶⁺, I direct the DoD Military Departments to take the following actions:

- Invest in appropriate research and development on substitutes.
- Ensure testing and qualification procedures are funded and conducted to qualify technically and economically suitable substitute materials and processes.
- Approve the use of alternatives where they can perform adequately for the intended application and operating environment. Where Cr⁶⁺ is produced as a by-product from use or manufacture of other acceptable chromium oxides, explore methods to minimize Cr⁶⁺ production.
- Update all relevant technical documents and specifications to authorize use of the qualified alternatives and, therefore, minimize the use of materials containing Cr⁶⁺.
- Document the system-specific Cr⁶⁺ risks and efforts to qualify less toxic alternatives in the Programmatic Environment, Safety, and Occupational Health Evaluation for the system. Analyses should include any cost/schedule risks and life cycle cost comparisons among alternatives. Life cycle comparisons should address material handling and disposal costs and system overhaul cycle times/costs due to any differences in corrosion protection.
- Share knowledge derived from research, development, testing and evaluations (RDT&E) and actual experiences with qualified alternatives.
New Policy: Minimizing the Use of Hexavalent Chromium

- “Extraordinary risks” to material availability and health
- Requires Program Executive Officers to provide by-process justifications for continuing to use Cr6+
  - Cost effectiveness
  - Technical feasibility
  - Environment, safety, and occupational health risks associated with Cr6+ or substitute materials
  - Materiel availability of Cr6+ and the proposed alternatives over the projected life span of the system
  - Corrosion performance difference of alternative materials or processes as determined by agency corrosion subject matter experts
- HMMP is going to be key to ID’ing Cr6+ processes and demonstrating reductions in the use of Cr6+
Reinvigorated focus on reducing and managing toxic and hazardous chemicals

- EO 13423 under President Bush
- Continuing under President Obama
- OSD and AF must demonstrate that management practices are in place and reductions are occurring

In the AF, EMS and the HMMP provide the management practices

- HMMP process improvements and tracking system improvements will support
  - Targeting of high-impact toxic and hazardous chemicals
  - Demonstration of reductions
Questions