

REVIEW DRAFT: October 4, 2007

Recommendation for Meeting Toxic Reduction Requirements of Executive Order 13423,
Strengthening Federal Environmental, Energy, and Transportation Management

I. Summary

Overview: Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (the EO), directs DOE to eliminate or reduce the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of by the Department. EO 13423 is supplemented by Instructions, issued by the Council on Environmental Quality, which require the Department to develop, by January 2008, a plan for identifying and reducing the release and use of these chemicals and materials.

The Chemical Safety Topical Committee (CSTC), which is co-sponsored by the DOE Office of Worker Safety and Health and the Energy Facility Contractors Group (EFCOG), formed a Task Team to evaluate this requirement and make recommendations on its implementation within DOE. This recommendation is being made to the Chief Health, Safety, and Security Officer to provide to the Senior Agency Official as appropriate.

The recommendation is summarized in Section II. A more detailed description of the Task Team's reasoning is provided in Section III, with a conclusion in Section IV. The Task Team members are identified in Section V.

II. Recommended Approach: Site-Specific, Environmental Management System-Based

EO 13423 requires Federal agencies to use Environmental Management Systems (EMSs) as the primary management framework for implementing its requirements. The EO Instructions define EMS as "a set of processes and practices that enable an organization to increase its operating efficiency, continually improve overall environmental performance and better manage and reduce its environmental impacts."

Pursuant to this, the Task Team recommends that the Department take an EMS-focused approach to addressing the toxic reduction requirements of EO 13423. DOE should not attempt to establish corporate reduction goals or develop a list of toxic and hazardous chemicals and materials for its sites to target. Instead, the Department should require sites to undertake reduction or elimination efforts within the framework of their individual EMS and Integrated Safety Management Systems (ISM) systems. Working with the appropriate DOE Field element or program office, sites will determine specific chemicals, reduction goals, and actions, considering the operating conditions, costs, mission requirements, and environment, safety, and health features of the site. Goals and actions to identify and reduce the use and release of toxic and hazardous chemicals and materials are to be established as specific objectives and targets in the site's EMS. Progress in meeting these targets/goals will be reported annually as part of the site's

reporting through HS-20's Pollution Prevention Tracking and Reporting System (PPTRS).

The Task Team recommends implementing this approach in the directives system by updating DOE Order 450.1, *Environmental Protection Program*. DOE O 450.1 should require DOE sites to eliminate or reduce the quantity of toxic and hazardous chemicals and materials acquired, used, released, and disposed of. DOE O 450.1 should also establish reporting expectations to enable the Department to track and assess the effectiveness of its toxic reduction efforts. HS-20, the Office of Nuclear Safety and Environment, circulated a pre-RevCom coordination draft of 450.1A that reflects the Task Team's recommendation on September 13, 2007. The draft language addressing these requirements in draft DOE O 450.1A is found in Attachment 1.

The Task Team further recommends the development, application and sharing of tools designed to make use of non-toxic or less-toxic alternatives more feasible. This effort should be located at DOE Headquarters, with assistance from EFCOG, and its focus should be not just reduction but intelligent execution of the DOE/NNSA mission. The Task Team recognizes that the execution of DOE's complex science and national security missions employs virtually the entire periodic table of elements and combinations of those elements. The intent of this effort is to identify and minimize the potential risk of toxic substances and materials to the environment, the public, and our workers. The Team also recognizes that the control of toxic substances engenders a significant cost to DOE, and its recommendations are intended to assist the Department in conducting its work in a manner that recognizes environmental, safety, and economic factors.

III. Discussion of the Task Team's Recommendation on Implementing the Toxic Chemical Requirements of EO 13423 within DOE

A. EO 13423 Requirements

EO 13423 clearly establishes the expectation for DOE regarding toxic chemical management:

E.O. 13423, Sec. 2(e): ensure that the agency reduces the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of by the agency

The Task Team reads the phrase "acquired, used, or disposed of" as intending to cover the full lifecycle of chemical management. The Team's recommendations are therefore consistent with Volume II of the DOE Chemical Safety Handbook, which emphasizes Chemical Safety and Lifecycle Management.¹ In addition, the recommendations are consistent with the Twelve Principles of Green Chemistry, which emphasize the design

¹ A lifecycle approach to chemical management recognizes the costs and risks associated with toxic and hazardous chemicals and materials from procurement through disposition. For more on Chemical Safety and Lifecycle Management, see Volume 2 of the Chemical Safety Handbook at http://www.hss.energy.gov/healthsafety/wshp/chem_safety/doe-hdbk-1139-2-2006Aug2006.pdf.

of chemical products and processes that reduce or eliminate the use or generation of toxic and hazardous substances.²

The CEQ Instructions provide further direction to Federal agencies, requiring them to develop written goals and support actions to achieve the toxic chemical reduction goals. The Instructions also provide a list of criteria for agencies to consider in identifying the list of toxic chemicals:

[EO Instructions, pp. 19-20] No later than January 24, 2008, each agency, at all appropriate organizational levels including appropriate facilities, organizations, and acquisition activities, shall develop written goals and support actions to identify and reduce the release and use of toxic and hazardous chemicals and materials, including toxic chemicals, hazardous substances, ozone-depleting substances (ODSs), and other pollutants that may result in significant harm to human health or the environment.

In identifying the list of toxic chemicals, hazardous substances, and other pollutants, each agency shall consider:

- *Quantity of the chemical or material in use by the agency.*
- *Human and/or environmental toxicity of the chemical.*
- *Potential for human and/or environmental exposure to the chemical or material.*
- *Potential harm to the environment associated with the use or release of the chemical or material, including impacts to air quality, surface water, groundwater, soils/land, and climate systems.*
- *Persistence of the chemical in the environment.*
- *Availability of controls to manage identifiable risks.*
- *Impacts on mission capability and business costs.*
- *Existing environmental hazard lists such as priority chemicals identified by EPA's Resource Conservation Challenge, and any agency-specific toxic or hazardous chemicals lists.*
- *The available substitutes for ODSs identified by EPA's Significant New Alternatives Policy Program.*
- *Contaminants identified by the U.S. Geological Survey as part of its National Reconnaissance of Emerging Contaminants.*
- *Where appropriate, regional- and watershed-based environmental improvement efforts such as the Chesapeake Bay Prioritized Chemicals of Concern Program, the Great Lakes Bi-national Strategy or local watershed efforts.*

This list of considerations casts a very wide net, but does not suggest any prioritization or decision-making scheme. The Task Team believes that, for DOE sites, relevant criteria

² See <http://www.epa.gov/greenchemistry/pubs/principles.html>. The Twelve Principles of Green Chemistry were introduced by Paul Anastas and John Warner in *Green Chemistry: Theory and Practice* (Oxford University Press: New York, 1998).

would also include high hazard materials, as identified by a National Fire Protection Association (NFPA) 3 and 4 rating, which require analysis under DOE Order 151.1C, *Comprehensive Emergency Management System*. Sites might also consider chemicals reported under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA), or those required for reporting under other state, regional, or local environmental regulations, such as California Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986.

The Task Team recognizes that the terms “release” and “disposal” have multiple meanings in environment and safety. For the purposes of this document, as in DOE Order 450.1, the Task Team understands the term “release” to include disposal. This is consistent with the terminology and definitions used by the Environmental Protection Agency under EPCRA Section 313.³

The Task Team recognizes that reducing the acquisition, use, or release of toxic and hazardous chemicals and materials supports worker safety, cost-reduction, and environmental protection objectives. Consistent with its EMS-based approach to meeting this EO goal, the Task Team recommends that DOE sites consider environmental and workplace hazards associated with toxic and hazardous chemicals and materials at that site. The Task Team believes that the EMS framework, which is embedded into each site’s Integrated Safety Management System, is the most suitable location for determining specific toxic reduction priorities and opportunities. Sites should work through their EMS to determine and implement the actions that will drive the most substantial overall risk reduction at the site.

The Task Team recognizes that many sites house multiple operational divisions, each with different chemical risk factors. If a site places toxic reduction prioritization efforts and activities at an operational or division level, the Task Team recommends that the results of these efforts be tracked and aggregated within the EMS framework.

EO 13423 identifies toxic chemical reduction as a sustainable practice to be managed through the EMS process. As a result, the Task Team recommends revising DOE Order 450.1 to require the following:

- Identify the use of toxic and hazardous chemicals and materials as a significant environmental aspect at the site (or document why this is not appropriate for the site)
- Identify objectives and measurable targets to address reduction or elimination in the acquisition, use, and disposal of toxic and hazardous chemicals and materials
- Identify and implement projects designed to eliminate or reduce the acquisition, use, release and disposal of toxic and hazardous chemicals and materials
- Ensure that site and Departmental budgetary and planning processes support achieving the objectives and targets.

³ See, for example, “The Definition of Release,” EPA Issue Paper (http://www.epa.gov/tri/programs/tdr/0997_issue-p.htm).

Reduction efforts should involve stakeholders, especially the affected line organizations, and such efforts should be undertaken with their active involvement and cooperation. If a Chemical Coordinating Committee exists at the DOE site, it should provide a vehicle for evaluating and prioritizing these reduction and elimination efforts. In addition, DOE sites should ensure that they have appropriate policies, procedures, and chemical inventory and management systems in place to prevent the accumulation of additional legacy chemicals.

B. Relevant DOE Directives and Proposed Changes:

Chemical safety drivers are summarized in Volume 3 of the DOE Chemical Management Handbook, *Consolidated Chemical User Safety and Health Requirements*, and this document will not attempt to cover all these drivers. The Task Team has determined that existing DOE chemical safety drivers, such as *10 CFR 85 - Worker Safety and Health Program*, do not require the toxic reduction goals or actions specified in EO 13423. However, developing such goals and actions is consistent with the intent of many of these existing drivers.

In FY 2006, the Deputy Secretary of Energy approved Change 2 to DOE Order 450.1, establishing new performance-based pollution prevention and sustainable environmental stewardship goals. These new performance-based goals included an environmental release reduction goal into which the EO 13423 toxicity reduction goals and measures can be integrated.

DOE Order 450.1 is currently being updated to incorporate the requirements of EO 13423. The Task Team is working closely with HS-20 to ensure that revisions to DOE O 450.1 align with its recommendations, and that the Order will serve as the primary driving mechanism for tracking and ensuring that DOE reduces the quantity of toxic and hazardous chemicals and materials acquired, used, or released (see Attachment 1).

C. Transformational Energy Action Management (TEAM) Initiative:

On August 7, 2007, the Secretary of Energy launched the Transformational Energy Action Management (TEAM) Initiative, which is the Department's primary framework for implementation of EO 13423. The TEAM Initiative has been developed to encompass all of the sustainable practices and requirements of EO 13423, and this recommendation covers all of the toxic reduction components of the TEAM Initiative.

D. Performance Tracking:

DOE Order 450.1 requires that DOE sites annually report their performance in meeting the pollution prevention and sustainable environmental stewardship goals contained in Change 2. HS-20, the Office of Nuclear Safety and Environment, manages the Pollution Prevention Tracking and Reporting System, through which DOE sites report on their progress in meeting the goals and strategies of DOE Order 450.1. The Task Team

recommends modifying the current PPTRS reporting elements and adding additional elements; the recommended revised list of reporting elements is as follows:

- Has the site identified the use and release of toxic chemicals and materials as a significant environmental aspect in its EMS?
- Has the site identified its list of toxic chemicals and materials for which reduction goal will apply?
- Has the site identified its toxic chemical reduction goals (i.e., objectives and targets to reduce/eliminate the use of toxic chemicals and materials) and incorporated them into its EMS?
- Has the site identified the actions it plans to take to meet the toxic chemical reduction goals?
- What progress has been achieved in meeting the site's toxic chemical reduction goals? Include description of the chemicals being targeted, the reduction goals, efforts completed to date, and next steps, if any.
- Does the site participate in a voluntary environmental program such as National Environmental Performance Track or the National Partnership for Environmental Priorities?
 - If yes, identify the toxic chemical reduction goals established under these program(s).

IV. Conclusion

The Department is well positioned to meet the toxic reduction requirements of EO 13423. The Task Team recommends embedding the EO 13423 toxic reduction requirements into DOE Order 450.1, which would in turn require each site to incorporate the EO toxic reduction requirements into its own, site-specific EMS. The Task Team recommends using the Pollution Prevention Tracking and Reporting System to monitor and assess DOE site progress in meeting the requirements. .

V. Membership of the Task Team

This recommendation was prepared under the sponsorship of the joint Department of Energy and Energy Facility Contractors Group (EFCOG) Chemical Safety Topical Committee (CSTC), and was chaired by Josh Silverman of the DOE Office of Health, Safety, and Security (HS-21) The following DOE Offices and EFCOG member sites participated in the drafting of this recommendation:

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Attachment 1: Excerpt from DOE Order 450.1 Revision Draft

[The following text is goal #2 of the pre-RevCom coordination copy of DOE Order 450.1A, dated 12 September 2007]

GOAL

REDUCE THE ACQUISITION, USE, AND RELEASE OF TOXIC AND HAZARDOUS CHEMICALS AND MATERIALS.

OBJECTIVE

Reduce environmental hazards, protect environmental resources, minimize life-cycle cost and liability of DOE programs, and maximize operational capability by eliminating or minimizing the acquisition, use, and associated release of toxic and hazardous chemicals and materials, including hazardous substances, ODS, and other pollutants, that would otherwise require control, treatment, monitoring, and reporting.

SUSTAINABLE PRACTICE STRATEGIES

- Establish OAs, such as pollution prevention opportunity assessments, of activities using toxic chemicals, as objectives and measurable targets in site environmental management systems
- Based on OAs, establish objectives and measurable targets in site environmental management systems for minimizing the acquisition, use, and disposal of toxic and hazardous chemicals and materials to reduce releases of pollutants to the environment (air, water, soil, biota). For example,
 - developing and using more environmentally benign solvents and solvent-less systems that reduce or eliminate the use of hazardous solvents; or
 - designing analytical products and processes that reduce or eliminate the use and/or generation of hazardous substances;
- Where appropriate, ensure implementation of a centralized chemical inventory tracking system that integrates information throughout the entire chemical lifecycle covering procurement, storage, use, transfer/movement, disposition, and final disposal.
- Identify through the annual Department budgetary process, the funding and resources needed to implement this sustainable environmental stewardship goal and site-specific objectives and targets that are not alternatively funded through ESPCs.
- Participate in voluntary environmental partnership programs (e.g., Adopt Your Watershed, Climate Leaders, Green Engineering, National Environmental Performance Track, National Partnership for Environmental Priorities, etc.) where there is a programmatic benefit from doing so (community outreach, technology transfer, regulatory incentives, etc.).