



Department of Energy
Washington, DC 20585
March 25, 2002

Mr. Craig Hooks, Director
Federal Facilities Enforcement Office
(MC-2261A)
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Dear Mr. Hooks:

In response to Administrator Christine Todd Whitman's February 20, 2002, letter to Secretary Spencer Abraham, I am pleased to transmit to you the U.S. Department of Energy (DOE) second annual progress report on Executive Order (EO) 13148, *Greening the Government Through Leadership in Environmental Management*. This report describes the progress that DOE has made in calendar year 2001 pursuant to the EO.

If you have questions or need more information, please contact Ms. Jane Powers of my Office of Environmental Policy and Guidance, RCRA/CERCLA Division, at (202) 586-7301.

Sincerely,

A handwritten signature in cursive script that reads "Beverly A. Cook".

Beverly A. Cook
Assistant Secretary
Environment, Safety and Health

Enclosure

cc: W. Garvey, EPA Office of Federal Facilities Enforcement

EXECUTIVE ORDER 13148

*Greening the Government Through Leadership in
Environmental Management*

Second Annual Progress Report

March 2002



U.S. Department of Energy
Office of Environment, Safety & Health

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I. Introduction

Executive Order (EO) 13148, *Greening the Government Through Leadership in Environmental Management*, was signed by the President on April 21, 2000. EO 13148 establishes new goals and requirements for Federal agencies that complement and enhance many Department of Energy (DOE) initiatives already under way. These goals and requirements affirm DOE's approach to improving environmental performance through the use of management systems and pollution prevention initiatives. DOE experience has shown that the application of a systematic approach to environment, safety, and health management, that includes pollution prevention goals, results in improved environmental performance and significant cost savings.

This report constitutes the Department's second annual progress report to the Administrator of the Environmental Protection Agency (EPA), as directed by section 307 of EO 13148. The report includes information through calendar year 2001 on the progress DOE has made in implementing EO 13148, and on other activities the Department has undertaken in support of the goals and requirements of EO 13148. Toxic chemical releases and waste reduction data are reported for the year 2000, the most recent year for which such information is available

While DOE is fully committed to fulfilling the requirements of EO 13148, the release of priority chemicals covered under section 502 (a) of the Order represents a small portion of DOE's total waste generation profile. Many of DOE's pollution prevention efforts are focused on other, more significant waste streams, including radioactive, hazardous and mixed wastes. In a November 12, 1999, memorandum, the Secretary of Energy demonstrated the Department's continued commitment to pollution prevention by establishing Pollution Prevention and Energy Efficiency Leadership Goals, which cover both priority waste streams and chemicals (see Appendix A).

Under Section 1007 of EO 13148 and EPA's interpretive guidance, pollution prevention is defined to be "source reduction," as defined in the Pollution Prevention Act, and other practices that reduce or eliminate the creation of pollutants through: 1) increased efficiency in the use of raw materials, energy, water, or other natural resources; or 2) protection of natural resources by conservation. The Department has expanded the EO 13148 and EPA definition of pollution prevention to include recycling. This approach is consistent with the definition of pollution prevention used in the 1996 International Organization for Standardization (ISO) Document 14001, *Environmental Management Systems—Specification with Guidance for Use* and by the Council on Environmental Quality.

Pollution prevention is being applied to all DOE pollution-generation activities, including:

- General site operations, including utilities and services;
- Site, facility, equipment and vehicle maintenance;
- Use of ozone-depleting substances;
- Landscaping activities;

- Design and construction activities;
- Procurement of goods and services;
- Waste management activities;
- Transportation of materials and waste;
- Manufacturing and production operations;
- Weapons dismantlement;
- Research, research reviews, development, and demonstration;
- Pollution control activities;
- Environmental monitoring and sampling;
- Deactivation, decommissioning, decontamination and demolition activities;
- Management of legacy waste; and
- Environmental restoration activities.

II. Implementation Progress

A. Interagency Workgroup Activities

During 2001, representatives from DOE's Offices of Environment, Safety and Health (EH) and Science (SC) participated in both the EO 13148 Interagency Work Group meeting activities and in several of the subgroup activities. EH representatives participated in the activities of the Environmental Management Systems (EMS) subgroup and the priority chemical subgroup (to further define the list of priority chemicals targeted for use reductions). SC was the lead in the subgroup that developed recommendations for training.

B. Implementation Strategy and Revisions to DOE Directives, Policies and Documents

Directives. To ensure that EO 13148 is implemented throughout the Department, EH finalized DOE Notice 450.4 (Appendix B) to assign roles and responsibilities for the implementation of EO 13148. Secretary Abraham reviewed and approved the Notice on February 2, 2001. The Notice institutionalizes implementation of the EO 13148 within DOE.

In addition, DOE continues to develop a draft DOE Order 450.1, "Environmental Protection Program." Departmental requirements for Environmental Management Systems and Facility Compliance Audits will be a subset of DOE's Integrated Safety Management System (ISMS) and will be accomplished pursuant to issuance of DOE 450.1.

Budget. DOE has modified its internal Environment, Safety and Health (ES&H) Management Plan requirements to ensure OMB resource data needs in response to EO 13148 are satisfied. Specifically, the Department is utilizing its existing budget processes to identify funding needed for implementation of the *Greening the Government* Executive Orders. The ES&H Supplemental Budget Submission Guidance, part of the Department's annual Unified Field Budget Call to the Departmental elements, has been updated to include the requirements of the various *Greening the Government* Executive

Orders in the ES&H Management Plans for DOE sites (see Appendix C).

Training. DOE's National Nuclear Security Administration's 18th Biannual Pollution Prevention Hands-On Technology Training Workshop was held in Detroit, MI, May 1-3, 2001. As in previous gatherings, this workshop focuses on small groups of DOE workers with specific interest in continual environmental improvement, design for environment, employee awareness, environmental management systems, and waste minimization.

Acquisition. Section 305(c) of the EO 13148 requires that the Federal Acquisition Regulation (FAR) Council develop policies and procedures for Federal contractors and that Agencies include such clauses in all applicable contracts. While the FAR Council's Environmental Committee has developed the draft policy revisions, the rulemaking to amend the FAR has not been completed.

The Office of Procurement and Assistance Policy, Office of Procurement and Assistance Management, has prepared a web-based briefing describing the existing regulations, the new requirements of the EO 13148 and how portions of the requirements will be accomplished through the Directives System and a Contractor Requirements Document. A Policy Flash Notice was issued to all DOE procurement personnel advising appropriate personnel to review the briefing materials so they are aware of the EO requirements and the pending FAR and Directives revisions.

C. Return-on-Investment (ROI) Program

The Department's ROI Program continues to provide waste reduction and cost saving benefits at DOE field operations. From 1994 to 1998, the ROI program funded 262 projects at various DOE sites. With an initial investment of \$19 million, these projects are estimated to produce over \$311 million in life-cycle savings for the Department. In June 2000, the Deputy Secretary of Energy conducted a Pollution Prevention ROI Workshop to review past success of the ROI program and fund worthwhile projects submitted by the field to DOE Headquarters. A total of twenty new ROI projects were selected for funding. Due to budgetary constraints, funds were allocated over Fiscal Years (FY) 2000 and 2001. The twenty projects will provide an estimated life cycle savings of \$110 million.

Two of the last ROI projects to be funded in FY 2001 were the DOE Complex-wide Lead Recycle/Reuse Initiative and the Inductively Coupled Plasma Mass Spectrometer (ICPMS) facility at the Oak Ridge National Laboratory (ORNL). The Lead Recycling Initiative is gathering unused lead from DOE field operations for reuse as shielding at other research facilities versus land disposal as low-level radioactive mixed waste. To date, a total of over 50 metric tons of lead has been transferred for reuse as shielding.

Use of the new ICPMS technology at ORNL has allowed greater analytical performance with less radioactive waste production. The ICPMS will reduce low-level radioactive waste generation by 97% (compared to the older analytical equipment it replaces), decrease labor time by 70%, and reduce employee exposure to hazardous chemicals and

radiation. The new equipment is expected to result in savings that will pay back the initial investment cost in less than two years.

The Office of Science and Technology in the Office of Environmental Management (EM) has begun using the ROI calculations for pollution prevention to evaluate field project proposals for funding. For FY 2002, the Accelerated Site Technology Deployment (ASTD) project criteria include an estimate of the ROI that the project can achieve if funded. Thirteen ROI projects were submitted by EM sites and seven projects, totaling \$7.4 million, were selected for funding.

D. DOE Environmental Management Systems (EMS) Self-Assessment

EO 13148 calls for the development and implementation of EMSs in all appropriate Federal facilities by December 31, 2005. It also requires Federal Agencies to conduct an agency-level EMS self-assessment by October 2001. The Department issued DOE Notice 450.4 in 2001 to implement the requirements of the EO. The Notice directs that EMS requirements be integrated within the Department's existing ISMS. It also assigned EH responsibility for compiling the report on the DOE-wide EMS self-assessment.

ISMS is the Department's umbrella management system for environment, safety, and health. In 1996, the Department issued DOE Policy 450.4, "Safety Management System Policy" that requires implementation of ISMS, and identifies objectives, guiding principles, and core functions. The requirement for ISMS was incorporated into the operating contracts at all DOE sites.

To meet the EO requirement to assess the status of EMS implementation within DOE, a self-assessment questionnaire was provided to Program Secretarial Offices in August 2001 for distribution to their field elements. The EMS self-assessment questionnaire was designed for DOE sites to report the status of their implementation of EMSs and to identify the guidance needed to assist sites in their implementation efforts. (See Appendix D for results of the self-assessment).

Seven DOE field elements have received external recognition of their environmental management systems: Savannah River Site; Kansas City Plant; Waste Isolation Pilot Plant; Brookhaven National Laboratory; Strategic Petroleum Reserve Office; West Valley Demonstration Project and Western Area Power Administration. Of these, five have been registered by third-party registrars as conforming to the ISO 14001 standard. ISO 14001 is an international consensus standard which identifies auditable elements of an environmental management system. Five of these seven sites have also been recognized by the EPA's National Environmental Achievement Track program. This program identifies excellence in the development and implementation of sound EMS frameworks in public and private organizations within the United States.

E. Environmental Compliance and EMS Audit Program

Section 402 of EO 13148 requires agencies to establish environmental auditing programs. The DOE strategy for implementing this section of the EO has two elements. First, the primary responsibility for environmental auditing was assigned to DOE Field Managers who will be responsible for conducting environmental compliance audits or EMS audits at a representative group of operations/facilities for each DOE site not less than once every three years. Currently, DOE field personnel and the contractors that manage most of the Department's facilities perform varying types of reviews pursuant to DOE Policy 450.5, "Line Environment, Safety and Health Oversight."

Secondly, the Office of Environment, Safety and Health Oversight (EH-2) within the Department's Office of Environment, Safety and Health, has been charged with conducting independent oversight of DOE operations, facilities, and programs in the support of its missions through FY 2001. EH-2 conducted routine evaluations and inspections at DOE sites for a variety of ES&H related topics, including focused safety management evaluations, technical inspections, accident investigations, and employee concerns evaluations. A component of the technical inspections were environmental inspections at selected technical areas and sites. Areas of focus generally included circumstances of relatively high technical or regulatory risk, cases of significant program uncertainties, or sites and facilities areas where changes in regulations or site conditions increased the potential for problems in the implementation of effective environmental programs. Additionally, EH-2 was assigned the responsibility of independently evaluating the implementation of EO 13148 requirements within the Department.

During 2001, EH-2 visited three of DOE's facilities to conduct environmental monitoring and surveillance inspections: Savannah River Site, South Carolina; Argonne National Laboratory, Illinois; and Lawrence Berkeley National Laboratory, California.

Effective October 1, 2001, the independent environment, safety and health oversight function within DOE was transferred to the Office of Independent Oversight and Performance Assurance (OA). As a core component of its mission, OA routinely assesses environmental performance as a component of ES&H inspections performed at DOE facilities.

In 2002, EH-2 is continuing to update its technical auditing protocols, which are used by EH-2 personnel to guide the conduct of field support activities to ensure these activities are performed consistently and systematically. Additionally, this Office may, upon request, support DOE field organizations by evaluating the implementation of the EO 13148 requirements during the performance of technical support activities.

F. Internal Agency-wide Awards Program

DOE has had a formal pollution prevention awards program for the past eight years. The program recognizes outstanding performance in the areas of waste reduction and reuse, recycling, and affirmative procurement of materials with recycled content. The DOE Pollution Prevention Awards Program is open to all DOE sites and operations.

For the 2001 awards program, a total of 70 nominations were submitted from across the DOE complex. Fifteen award winners were selected:

Affirmative Procurement

Carpet Purchasing and Recycling Initiative
Headquarters, Office of Administration, Office of Operations

Education and Outreach and Information Sharing

Savannah River Site Pollution Prevention Program Outreach and Information Sharing
Savannah River Operations Office, Savannah River Site

Environmental Management Systems (EO 13148)

Savannah River Site Environmental Management System
Savannah River Operations Office, Savannah River Site

Environmental Preferability

Central Supply Facility
Chicago Operations Office, Argonne National Laboratory-East

Environmental Restoration

Pollution Prevention by Using a Hammer Drill for Horizontal Directional Drilling
Rocky Flats Field Office, Rocky Flats Environmental Technology Site

Excellence in Management

Environmental Management System Principles Leading Change
Chicago Operations Office, Brookhaven National Laboratory

Lifecycle Assessment/Environmental Cost Accounting

Ozone Depleting Substances Minimization
Savannah River Operations Office, Savannah River Site

Model Facility Demonstration/Complex-Wide Achievement

Process Evaluation Project
Chicago Operations Office, Brookhaven National Laboratory

DOE Headquarters Pollution Prevention Program
Headquarters, Office of Administrative Management

Recycling

Teaming to Recycle Surplus Electronics Across the DOE Complex
Oak Ridge Operations Office: Idaho National Engineering and Environmental
Laboratory, Miamisburg Environmental Management Project (formerly known as the
Mound Plant), Fernald Environmental Management, Princeton Plasma Physics
Laboratory, Bettis Atomic Power Laboratory

Return-on-Investment

Significant Waste Site Source Reduction Using a Small-Diameter Geophysical Logging System

Richland Operations Office, Hanford Site

Super Sleever Portable Sleeving Containment Device

Savannah River Operations Office, Savannah River Site

Sowing the Seeds for Change

Digital Signatures for Databases Eliminates Piles of Paper

Idaho Operations Office, Idaho National Engineering and Environmental Laboratory

Implementing a Site-Wide Change through Innovative, Cost-Effective, and Environmentally Sensitive Approaches

Richland Operations Office, Hanford Site

Waste Pollution/Prevention

Kinking the High-Level Hose: Waste Reduction at the Idaho Nuclear Technology Engineering Center (INTEC) Tank Farm

Idaho Operations Office, Idaho National Engineering and Environmental Laboratory

In addition, nine of the twelve DOE categories coincide with the White House Closing the Circle Awards Program categories. DOE submitted 35 nominations to the Closing the Circle Awards Program and won seven of the 25 awards.

G. Toxic Chemical Reduction Goals/Baseline

In 1999, the Secretary of Energy issued Pollution Prevention and Energy Efficiency Leadership Goals that included a new release reduction goal for toxic chemicals subject to section 313 reporting under the Emergency Planning and Community Right-to-Know Act (EPCRA). The new goal is to reduce releases of toxic chemicals subject to Toxic Release Inventory (TRI) reporting by 90% by 2005, using 1993 release levels as a baseline. The 90% reduction goal applies to the total TRI releases to the environment as reported under Section 8.1 of the EPCRA section 313 Form R report. Releases include the amount of toxic chemicals directly discharged to air, water, land, and injected underground at the site, as well as amounts sent off-site for disposal. This goal and baseline are consistent with EO 13148 goals. Thus, DOE will use its own reduction goals for the purposes of section 502(a) of EO 13148.

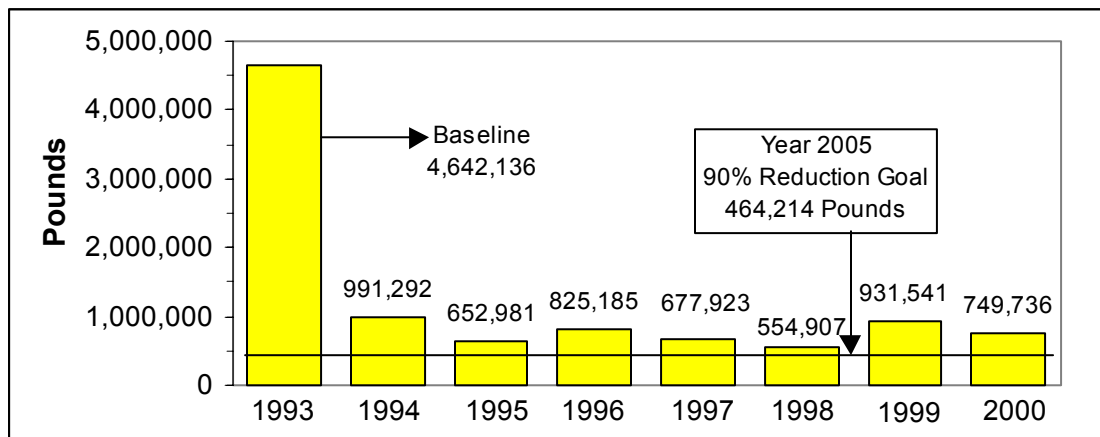
Figure 1. Total DOE TRI Releases (pounds)

Figure 1 shows the total DOE TRI releases for reporting years 1994 through 2000 compared to the 1993 baseline year. Releases have been reduced by 84% since 1993. To reach the 90% reduction goal of 464,214 pounds by December 31, 2005, DOE must achieve an overall 4,177,922 pound reduction in the reported releases of toxic chemicals from the 1993 baseline.

Tables 1 and 2 show the total TRI releases for reporting year 2000, by chemical and site, as compared to the 1993 baseline. The level of reporting activity for reporting year 2000 represents an increase, relative to reporting year 1999, in the number of sites reporting (20 vs. 15), the number of chemicals being reported (29 vs. 24) and the number of Form Rs submitted (74 vs. 57). This is due to reporting year 2000 being the first year in which the lowered reporting thresholds (i.e., 100 lbs) for persistent, bioaccumulative and toxic (PBT) chemicals are applicable. However, the total amount of reported TRI chemicals being released complex wide decreased by 20% between 1999 and 2000. This is explained by the fact that although more sites are submitting TRI reports because of the 100-pound reporting threshold (for manufacture, process and use of a PBT TRI chemical), they have small or no releases to report. For example, the four sites that reported for the PBT chemical dioxin had releases of less than 0.1 pounds, and the four sites that reported for the PBT chemical mercury had either no releases or releases under 25 pounds.

Reported chemical releases from three sites (Oak Ridge Y-12 National Security Complex, Savannah River, and Oak Ridge National Laboratory) in 2000 represented about 84% of the total complex wide releases. The top four TRI chemicals in terms of pounds released (hydrochloric acid, zinc compounds, nitrate compounds and sulfuric acid) represented about 67% of the total reported releases for 2000. To meet the year 2005 chemical release reduction goal, an additional 38% reduction from year 2000 levels will be required.

Table 1: Comparison of 1993 and 2000 DOE TRI Reporting by Toxic Chemical (pounds)

TRI Chemical	1993 EPCRA [Form R (Sec. 8.1)]	2000 EPCRA [Form R (Sec. 8.1)]	1993-2000 % Change
Methanol	3,665,169	59,424	(98%)
Sulfuric Acid	301,703	72,427	(76%)
Dichlorotetrafluoroethane	170,000	--	(100%)
Hydrochloric Acid	146,369	171,323	17%
Nitric Acid	125,978	52,419	(58%)
Ammonia	113,200	--	N/A
1,1,1- Trichloroethane	17,800	--	(100%)
Chlorine	18,003	--	(100%)
Xylene (mixed isomers)	16,644	16,683	0%
Toluene	12,408	12,780	3%
Methyl Ethyl Ketone	9,800	--	(100%)
Methyl Isobutyl Ketone	9,000	--	(100%)
Lead	8,600	10,986	28%
Trichloroethylene	7,600	--	(100%)
Dichloromethane	6,319	--	(100%)
Hydrogen Fluoride	3,519	--	(100%)
Trichlorofluoromethane	1,800	0	N/A
Acetone	1,700	--	(100%)
Methyl Tert-Butyl Ether	1,674	--	N/A
Ethylene Glycol	1,599	8,300	419%
Manganese Compounds	1,300	--	(100%)
1,2,4- Trimethylbenzene	573	0	(100%)
Zinc Compounds	550	170,000	30,809%
Ethylbenzene	400	7,955	1,889%
Benzene	378	10,422	2,657%
Nitrate Compounds	N/A	91,157	N/A
N-Hexane	N/A	12,357	N/A
Copper	N/A	752	N/A
Mercury	N/A	21	N/A
Other TRI Chemicals	50	52,730	105,360%
TOTAL	4,642,136	749,736	(84%)

Table 2: Comparison of 1993 and 2000 DOE TRI Reporting by Site (pounds)

DOE Site	1993 EPCRA [Form R (Sec. 8.1)]	2000 EPCRA [Form R (Sec. 8.1)]	1993-2000 % Change
Naval Petroleum Reserve #1	3,782,920	0	(100%)
Idaho National Engineering Lab	369,000	54,005	(85%)
Portsmouth Gas. Diff. Plant	171,918	4	(100%)
Energy Tech. Engr. Center	101,200	0	(100%)
Savannah River Site	79,155	248,332	214%
Y-12 National Security Complex	74,201	272,920	268%
Pinellas Plant	22,324	0	(100%)
Standford Linear Accelerator	8,300	404	(95%)
Oak Ridge National Lab	7,353	107,947	1,368%
East Tennessee Technology Park	6,388	3,203	(50%)
Brookhaven National Lab	4,600	0	(100%)
Los Alamos National Lab	5,570	21	(100%)
Rocky Flats Plant	3,555	0	(100%)
Fermi Lab	1,872	0	(100%)
Kansas City Plant	1,400	240	(83%)
Naval Petroleum Reserve #3	95	41,783	43,882%
Mound Plant	19	8,300	43,584%
Argonne National Lab-East	7	58	729%
Byran Mound SPR Site	--	4,976	N/A
West Valley Demonstration Proj.	--	5	N/A
Other DOE Sites	2,259	7,538	234%
TOTAL	4,642,136	749,736	(84%)

EO 13148 directs all Federal facilities to comply with the EPCRA reporting requirements for planning for chemical emergencies (Sections 302-303); emergency notification of chemical accidents and releases (Section 304); and reporting of hazardous chemical inventories (Sections 311 and 312). These provisions require DOE to notify state emergency response commissions (SERCs) and local emergency planning committees (LEPCs) of the presence of potentially hazardous substances on their sites and to report on the inventories and environmental releases of those substances. The intent of these requirements is to provide the public with information on hazardous chemicals in their communities, enhance public awareness of chemical hazards, and facilitate development of state and local emergency response plans. Table 3 below provides a summary of DOE site EPCRA reporting for 2000, based on information collected during TRI reporting validation.

Table 3: 2000 EPCRA Reporting by DOE Facilities

Year/Report Type	No. of Sites Reporting	No. of Sites Not Reporting	No. of Sites ¹ Not Req'd to Report
2000			
EPCRA 302-303: Planning Notification	6	0	12
EPCRA 304: EHS Release Notification	2	0	16
EPCRA 311-312: MSDS/Chemical Inventory	15	0	3

H. Hazardous and Radioactive Waste Reduction

Several DOE sites are participating with the EO 13148 Interagency Work Group's priority chemicals subgroup to develop a list of chemicals for targeted use reduction. DOE sites can voluntarily develop site-specific goals for reducing the use of the priority chemicals being developed by the subgroup. The Department intends to address the requirements specified in this section of EO 13148 by implementing the alternative in section 503(d) to reduce the generation of five hazardous and radioactive waste types. For the DOE complex, the primary focus over the next several years will be to reduce the generation of hazardous and radioactive waste from routine operations and from site cleanup, stabilization and decommissioning activities. On an agency-wide basis, DOE established goals to reduce the generation of priority waste types in lieu of use reduction goals for priority chemicals, as provided for under Section 503(d) of the EO. These waste generation reduction goals are included in the Secretary's Pollution Prevention and Energy Efficiency Leadership Goals (see Appendix A). These goals are:

- To reduce waste from routine operations by 2005, using a 1993 baseline, for these waste types:
 - Hazardous 90 percent
 - Low-Level Radioactive 80 percent
 - Low-Level Radioactive and Hazardous (Mixed) 80 percent
 - Transuranic (TRU) 80 percent
- Beginning in 1999, to reduce by ten percent annually, waste resulting from cleanup, stabilization, and decommissioning activities through the application of pollution prevention and waste minimization practices and techniques.²

Based upon a comparison of the year 2000 waste generation to the 1993 baseline, DOE

¹ Did not meet reporting thresholds or did not have extremely hazardous substance releases.

² February 2, 1999, Memorandum, "Clarification of Waste Reduction Goal for Environmental Restoration and Facilities Stabilization Activities," signed by Acting Deputy Assistant Secretaries for Environmental Restoration, Nuclear Material and Facility Stabilization, Waste Management and Environmental Management, and Site Operations Environmental Management.

has achieved the complex-wide goal for routine operations waste reduction for hazardous waste, and is making progress toward achieving the goals for low-level radioactive, low-level radioactive and hazardous (mixed), and transuranic wastes (see Table 4).

Table 4: Comparison of 1993 and 2000 DOE Waste Generation from Routine Operations (Cubic Meters)

Waste Type	1993	2000	Percent Change
Hazardous	12,471	998	(92%)
Low-Level Radioactive	40,842	10,257	(75%)
Low-Level Radioactive And Hazardous (Mixed)	3,321	794	(76%)
Transuranic	708	173	(76%)
TOTAL	57,342	12,222	(79%)

During the year 2000, routine DOE operations generated 12,222 cubic meters of waste in the four waste types targeted for reduction. Waste generated from routine operations decreased 79 percent from 1993 to the year 2000.

The intent of the 10% reduction goal for wastes resulting from cleanup/stabilization (C/S) and decommissioning activities is to achieve additional cost savings and/or time-saving improvements by using pollution prevention to reduce waste disposal volumes. Progress towards this goal is tracked and reported by the Office of Environmental Management (EM). For FY 2000, EM committed to reduce 18,190 cubic meters of waste from C/S activities. The actual waste reduction for FY 2000 was 55,401 cubic meters. Thus, the Department surpassed its C/S goal for FY 2000.

I. Reduction in Ozone Depleting Substances

To meet a requirement in Section 505, DOE Headquarters issued a final document to DOE program and field offices in February 2002 entitled, "A Plan and Guidance to Implement Executive Order 13148 Requirements to Achieve Ozone-Depleting Substance Reductions." This guidance addresses the development and content of DOE site plans to ultimately eliminate the use of these chemicals.³ Guidance is also provided on the disposition of Class I ODS, including meeting the EO requirement to transfer certain, excess ozone-depleting chemicals to the Department of Defense (DoD) for its national security-related uses for which alternative chemicals are not available. Shipments of DOE's excess Class I ODS to DoD began in 2001.

Within the Department, the use of Class I ODS has declined since the early 1990s, and

³Class I ozone-depleting chemicals have been used extensively in the DOE complex for cooling and refrigeration, for fire protection, for laboratory purposes, and as solvents.

additional progress was made in 2001, with replacement of ozone-depleting chemicals with suitable alternatives. In addition to the EO Section 504 requirements, the major drivers directing the Department to move towards discontinuing its use of ODS are EPA's Clean Air Act stratospheric ozone protection rules, and two ODS phaseout goals that are part of DOE's 1999 Pollution Prevention and Energy Efficiency Leadership Goals (see Appendix A):

Goal 9. Retrofit or replace 100% of chillers greater than 150 tons of cooling capacity and manufactured before 1984 that use Class I refrigerants by 2005.

Goal 10. Eliminate use of Class I ODS by 2010, to the extent economically practicable, and to the extent that safe alternative chemicals are available for DOE Class I applications.

J. Other Activities

DOE continued in FY 2001 to promote the goals of the Resource Conservation and Recovery Act (RCRA) section 6002 and EO 13101, *Greening the Government Through Waste Prevention, Recycling and Federal Acquisition*. DOE requires its Federal staff, as well as its site operating contractors and support service contractors, to follow RCRA section 6002 and EO 13101 requirements pertaining to waste prevention, recycling, and affirmative procurement.

In FY 2001, 69% of the Department's purchases contained recovered (recycled/recyclable) content. Another 13% of the Department's material purchases contain justifications that the EPA-designated items were not purchased due to cost, performance, or availability requirements. While these results reflect a modest improvement over FY 2000, when the percentage of recycled/recyclable content items purchased was 66%, it should be noted that the results include 18 new designated items, for which green purchasing requirements began in January 2001 (three months into the fiscal year). For FY 2001, DOE purchased over \$3 million of these new items. About 48% of this total includes purchases with recovered content.

Also, in FY 2001, DOE recycled 112,000 metric tons of solid waste, a slight increase over its FY 2000 recycling total. This is equivalent to the average waste generated by over 150,000 Americans for an entire year, and is particularly significant given that for the last year the Department has placed a suspension on recycling scrap metal coming out of radiological areas.

DOE Headquarters conducted monthly pollution prevention conference calls with field representatives to communicate new activities and progress on ongoing actions.

The DOE TRI Focus Group conducted monthly conference calls to exchange information on TRI reporting, provide field input to proposed TRI regulations, and discuss questions about interpretation of EPA guidance on TRI reporting.

K. Selected Field Activities

The following selected field activities are representative of the activities underway at DOE sites to improve environmental performance through the use of management systems and pollution prevention initiatives.

EPA awarded DOE's Lawrence Livermore National Laboratory (LLNL) a Greening the Government Award for its recycling of materials from decontamination and demolition projects, and recognition and appreciation of individuals and groups that go "above and beyond the call of duty in working to improve the environment." LLNL's Space Action Team reduced costs by helping to consolidate programs and facilities, and has recycled approximately 90 percent of materials from decontamination and demolition projects at the laboratory. In 2001, soil, asphalt, concrete, wood, steel and electromechanical infrastructure and equipment have been recycled during the demolition of 11 buildings and 22 trailers.

At Oak Ridge, TN, the DOE Y-12 National Security Complex's pollution prevention program was awarded the Tennessee Association of Business's 2001 Environmental Excellence Award for their continuous commitment to pollution prevention. Since 1993, Y-12 has reduced overall waste generation by 86 percent and has an additional 40 pollution prevention projects underway.

In support of EO 13148, Part 6, Landscaping Management Practices, the Pacific Northwest National Laboratory (PNNL) has implemented a program to research and test state-of-the-art techniques for use in the development of a long-range, comprehensive plan to rejuvenate PNNL's grounds. The goal of the plan is long-term economic and environmental sustainability, reducing irrigation water use by 50% over time as well as reducing energy use and improving the quality of life, health, and safety of the work staff. Activities include: 1) auditing water use in all areas as a baseline for evaluating water reduction methods, 2) replacement of flood irrigation system and flood control valves with sprinklers on automated times which have reduced water run-time from over 72 to about 42 hours per week, and 3) the replacement of shrubs with less water intensive bunchgrass native to the Pacific Northwest.

The Rocky Flats Environmental Technology Site (RFETS) is the first major DOE site to address contamination beneath buildings as part of its environmental restoration program. Traditionally, a waste-intensive, horizontal directional drilling process is used to characterize under-building contamination. This traditional rotary mud drilling technique requires excessive drilling fluids to fill the entire borehole and would thereby generate 125 drums of drilling mud and cuttings for the five boreholes planned at the site. RFETS chose instead to use a hydraulic hammer method, which generates very little waste in the process. The hydraulic hammer approach eliminated at least 190 cubic meters of low-level-mixed waste for the five boreholes, providing a cost savings of at least \$290,000. This method also minimizes the spread of contamination into other areas, and reduces workers exposure.

In FY 2001, the Savannah River Site's (SRS) pollution prevention program documented completion of 98 pollution prevention projects, avoiding approximately 8,300 cubic meters of radioactive and hazardous waste with a potential annual cost avoidance of approximately \$50 million. Savings come from reduced waste and radioactive laundry management costs, material savings and productivity improvements. Program success is attributed to strong teamwork with DOE Headquarters and the Savannah River Field Office working through the Westinghouse Savannah River Company's solid waste management and generator organizations.

The SRS Chemical Commodity Management Center (CCMC) provides centralized control of on-site chemical inventories, excess chemical management, and review/approval for new chemical purchases. A database was established to allow site employees to search for chemicals currently in inventory on site that are no longer needed and to identify other uses or users for these excess chemicals, resulting in reduced chemical stockpiling and storage issues. The CCMC uses improved procurement techniques, including "just in time" ordering processes, and strategic source agreements, facility de-inventorying, and chemical tracking activities to reduce onsite chemical inventory from approximately 236 million pounds to approximately 68 million pounds. This effort includes reduction in the number and volume of hazardous chemicals used in the Site's industrial processes.

APPENDIX A:

Secretarial Memorandum, Pollution Prevention and Energy Efficiency Leadership Goals



The Secretary of Energy

Washington, DC 20585
November 12, 1999

MEMORANDUM FOR HEADS OF DEPARTMENTAL ELEMENTS

FROM: BILL RICHARDSON *Bill Richardson*

SUBJECT: Pollution Prevention and Energy Efficiency Leadership
Goals for Fiscal Year 2000 and Beyond

The President has unfurled a major, new initiative to build environmental accountability into the daily decision-making process of all Federal activities. By "Greening the Government," Federal agencies can contribute to building a sustainable, environmentally-healthy economy for the next century. Federal facilities that employ pollution prevention and energy efficiency practices will save money by enhancing productivity while reducing their cumulative impact on the environment.

The Department's pollution prevention and energy efficiency leadership program will go beyond compliance requirements and be based on continuous and cost-effective improvements for the following key environmental objectives:

- We will design and operate our facilities using pollution prevention processes that lead to minimal waste generation and lowest life-cycle costs;
- We will diminish our use of environmentally harmful materials, equipment, and processes to minimize releases of toxic chemicals, ozone-depleting substances, and greenhouse gases;
- We will increase the energy efficiency of our buildings, laboratories and production facilities while increasing our use of clean energy sources;
- We will increase our fleet vehicle efficiency and the use of low-polluting alternative fuels, including bio-based fuels and products; and
- We will purchase environmentally preferable products and services that meet our mission needs.

To put us on the path toward environmental leadership, I am laying down a foundation of Pollution Prevention and Energy Efficiency Leadership Goals for 2005 and 2010 (attached). I am directing each Lead Program Secretarial Officer to implement programs that will achieve these objectives at their sites through pollution prevention and resource conservation. These goals will also be incorporated into the Department's Strategic and Annual Performance Plans, starting with performance plans accompanying the FY 2001 budget.

The Department of Energy Environmental Executive will oversee progress toward meeting our environmental and energy efficiency leadership goals and will report to me annually.

Attachment

POLLUTION PREVENTION AND ENERGY EFFICIENCY LEADERSHIP GOALS AT DEPARTMENT OF ENERGY FACILITIES

DOE will strive to minimize waste and maximize energy efficiency as measured by continuous, cost-effective improvements in the use of materials and energy, with the years 2005 and 2010 as interim measurement points.

Reducing Waste and Recycling

1. Reduce waste from routine operations by 2005, using a 1993 baseline, for these waste types:

Hazardous	90 percent
Low Level Radioactive	80 percent
Low Level-Mixed Radioactive	80 percent
Transuranic (TRU)	80 percent
2. Reduce releases of toxic chemicals subject to Toxic Chemical Release Inventory reporting by 90 percent by 2005, using a 1993 baseline.
3. Reduce sanitary waste from routine operations by 75 percent by 2005 and 80 percent by 2010, using a 1993 baseline.
4. Recycle 45 percent of sanitary wastes from all operations by 2005 and 50 percent by 2010.
5. Reduce waste resulting from cleanup, stabilization, and decommissioning activities by 10 percent on an annual basis.

Buying Items with Recycled Content

6. Increase purchases of EPA-designated items with recycled content to 100 percent, except when not available competitively at reasonable price or that do not meet performance standards.

Improving Energy Usage

7. Reduce energy consumption through life-cycle cost effective measures by:
 - 40 percent by 2005 and 45 percent by 2010 per gross square foot for buildings, using a 1985 baseline
 - 20 percent by 2005 and 30 percent by 2010 per gross square foot, or per other unit as applicable, for laboratory and industrial facilities, using a 1990 baseline.

8. Increase the purchase of electricity from clean energy sources:
 - (a) Increase purchase of electricity from renewable energy sources by including provisions for such purchase as a component of our request for bids in 100 percent of all future DOE competitive solicitations for electricity.
 - (b) Increase the purchase of electricity from less greenhouse gas-intensive sources, including, but not limited to, new advanced technology fossil energy systems, hydroelectric, and other highly efficient generating technologies.

Reducing Ozone Depleting Substances and Greenhouse Gases

9. Retrofit or replace 100 percent of chillers greater than 150 tons of cooling capacity and manufactured before 1984 that use class I refrigerants by 2005.
10. Eliminate use of class I ozone depleting substances by 2010, to the extent economically practicable, and to the extent that safe alternative chemicals are available for DOE class I applications.
11. Reduce greenhouse gas emissions attributed to facility energy use through life-cycle cost-effective measures by 25 percent by 2005 and 30 percent by 2010, using 1990 as a baseline.

Increasing Vehicle Fleet Efficiency and Use of Alternative Fuels

12. Reduce our entire fleet's annual petroleum consumption by at least 20 percent by 2005 in comparison to 1999, including improving the fuel economy of new light duty vehicle acquisitions and by other means.
13. Acquire each year at least 75 percent of light duty vehicles as alternative fuel vehicles, in accordance with the requirements of the Energy Policy Act of 1992.
14. Increase usage rate of alternative fuel in departmental alternative fuel vehicles to 75 percent by 2005 and 90 percent by 2010 in areas where alternative fuel infrastructure is available.

Goals Implementation

The Secretary's Pollution Prevention and Energy Efficiency Leadership Goals are to be achieved on a Department-wide basis. DOE field offices will be responsible for developing appropriate goals for each of their cognizant sites and implementing pollution prevention and energy management site activities that are cost effective to the Department on a life-cycle basis. Field offices will assure goals are achieved by including goal requirements in annual performance plans or established performance agreements with each of their cognizant sites. Appropriate baselines for new sites will be established in performance agreements in cases where proposed baseline years do not apply.

Goals Under Development

The Department will revise or issue additional goals as new pollution prevention and energy efficiency Executive Orders are released. Additional goals to be developed in Fiscal Year 2000 include: (1) the amount of energy generated at Federal facilities from renewable energy technologies; and, (2) water conservation and the methodology for determining the baseline for water consumption.

APPENDIX B:

**Extension of DOE Notice 450.4 and DOE Notice 450.4,
Assignment of Responsibilities for Executive Order
13148, Greening the Government Through Leadership
in Environmental Management**

U.S. Department of Energy
Washington, D.C.

NOTICE

DOE N 450.5

8-24-01

Expires: 9-1-02

SUBJECT: EXTENSION OF DOE N 450.4

This Notice extends DOE N 450.4, ASSIGNMENT OF RESPONSIBILITIES FOR EXECUTIVE ORDER 13148, GREENING THE GOVERNMENT THROUGH LEADERSHIP IN ENVIRONMENTAL MANAGEMENT, dated 2-5-01 until 9-1-02, unless sooner rescinded.

The requirements of the Notice will be incorporated into a new Order and Manual, entitled ENVIRONMENTAL PROTECTION PROGRAM, which will supercede the current DOE 5400.1, GENERAL ENVIRONMENTAL PROTECTION PROGRAM.

Please address questions concerning this Notice to Jane Powers at 202-586-7301.

BY ORDER OF THE SECRETARY OF ENERGY:



FRANCIS S. BLAKE
Deputy Secretary

DISTRIBUTION:

All Departmental Elements

INITIATED BY:

Office of Environment, Safety
and Health

U.S. Department of Energy
Washington, D.C.

NOTICE

DOE N 450.4

Approved: 02-05-01

Expires: 09-01-01

**SUBJECT: ASSIGNMENT OF RESPONSIBILITIES FOR EXECUTIVE ORDER 13148,
*GREENING THE GOVERNMENT THROUGH LEADERSHIP IN ENVIRONMENTAL
MANAGEMENT***

1. **OBJECTIVES.** The Department of Energy (DOE) is committed to leadership in environmental management by integrating environmental accountability into agency day-to-day decision-making and long-term planning processes, across all Departmental missions, activities, and functions. The Department must advance the national policy that, whenever feasible and cost-effective, pollution should be prevented or reduced at the source. DOE must ensure that the goals and requirements of Executive Order 13148, *Greening the Government Through Leadership in Environmental Management*, are incorporated into existing DOE directives, policies, and documents. Such directives, policies, and documents should be written to ensure the most cost-effective implementation of Executive Order 13148 possible. Program secretarial officers (PSOs) and DOE operations/field office managers are responsible and will be held accountable for ensuring implementation of these goals and requirements at their sites.
2. **CANCELLATION.** None.
3. **APPLICABILITY.**
 - a. The provisions of this Notice apply to all DOE elements, including elements of the National Nuclear Security Administration, responsible for oversight of contracts for the management and operation of the Department's facilities.
 - b. DOE Contractors. Contractor requirements are listed in the Contractor Requirements Document (CRD), Attachment 1. Contractors must comply with the requirements listed in the CRD to the extent set forth in their contracts. Contractors are responsible for: (i) compliance with the requirements of the CRD of this Notice regardless of the performer of the work in the contracting chain; and (ii) flowing down the requirements of the CRD of this Notice to subcontracts to the extent necessary to ensure contractors' compliance with the requirements.

DISTRIBUTION:
All Departmental Elements

INITIATED BY:
Office of Environment, Safety and Health

4. REQUIREMENTS.

- a. Implement Environmental Management Systems (EMSs) at DOE facilities as part of DOE's Integrated Safety Management (ISM) System.
- b. Incorporate environmental compliance or EMS audits into the line environment, safety and health oversight program required by DOE P 450.5.
- c. Comply with the Emergency Planning and Community Right-to-Know Act (EPCRA) and the Pollution Prevention Act.
- d. Reduce releases and off-site transfers of toxic chemicals¹
- e. Reduce the use of selected priority chemicals or the generation of selected waste types²
- f. Develop a plan to phase out the procurement of Class I ozone-depleting substances (ODSs) including disposition in coordination with the Department of Defense.³
- g. Promote sustainable management of Federal facility lands.
- h. Use pollution prevention projects and activities to correct and prevent non-compliance with environmental regulatory requirements.

5. RESPONSIBILITIES.

- a. Program Secretarial Officers, Administrator for Nuclear Security, and DOE Operations/Field Office Managers.
 - (1) Request through the budget process, as reflected in their environment, safety, and health (ES&H) management plans, the funding and resources needed for implementing Executive Order 13148, including funding for Return-on-Investment (ROI) programs, as well as funding to address findings and recommendations from oversight activities conducted in accordance with DOE P 450.5

¹ DOE will use the P2E2 Leadership goals issued November 1999 for the toxic release inventory (TRI) goal, the waste reduction goals, and the ozone-depleting substances (ODS) goal, along with the Executive order ODS goal.

² See footnote 1.

³ See footnote 1.

- (2) Ensure that sites under their purview include site-specific goals in the ISMS performance measures to contribute to the DOE Pollution Prevention and Energy Efficiency (P2E2) goals used to meet the requirements of Executive Order 13148.
 - (3) Ensure that sites under their purview provide to the Offices of Environment, Safety and Health and Environmental Management the information needed to prepare the annual progress report for the Department.
 - (4) Ensure that sites under their purview develop and implement a pollution prevention ROI program that uses life-cycle assessment concepts and places the highest value on source reduction.
 - (5) Designate a senior staff point of contact for coordinating implementation of Executive Order 13148.
- b. Program Secretarial Officers and the Administrator for Nuclear Security, in coordination with DOE Operations/Field Office Managers.
- (1) Conduct, in conjunction with the existing ISM annual review, to the extent possible, a one-time EMS self-assessment, as required by Executive Order 13148, of Headquarters programs and their field elements (e.g., operations, site, and laboratory).
- c. DOE Operations/Field Office Managers, in coordination with their reporting sites and Program Secretarial Office.
- (1) Conduct, in conjunction with the existing ISM annual review, to the extent possible, a one-time EMS self-assessment, as required by Executive Order 13148, with their PSOs' field elements (e.g., operations, site and laboratory).
 - (2) Within the DOE P 450.5 oversight program, conduct facility environmental compliance or EMS audits at a representative group of operations/facilities for each site under their purview not less than once every 3 years.
 - (3) Establish a process, or use existing mechanisms, to obtain local community advice and to provide outreach for facilities under their purview relevant to aspects of the *Greening the Government* Executive Orders (Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*; Executive Order 13123, *Greening the Government Through Efficient Energy Management*; Executive Order 13148, *Greening the Government Through Leadership in Environmental Management*; and Executive Order 13149, *Greening the Government Through Federal Fleet and Transportation Efficiency*).

- (4) Incorporate the “Guidance” referenced in Executive Order 13148 and found at 60 *Federal Register* 40837, August 10, 1995, into all new landscaping programs, policies, and practices for facilities under their purview, and implement the landscaping provisions of Executive Order 13148.
 - (5) Determine the feasibility of implementing centralized procurement and distribution (e.g., “pharmacy”) programs at facilities under their purview for tracking, distributing, and managing toxic or hazardous materials; where appropriate, implement such programs.
 - (6) Ensure that contractors with an approved ISMS Description update the ISMS Description to include the environmental management expectations of EO 13148, as implemented through this Notice.
- d. The Assistant Secretary for Environment, Safety and Health, in coordination with other DOE elements.
- (1) Develop or revise existing DOE environmental directives, policies, and documents to—
 - (a) incorporate the goals found in Part 2 of Executive Order 13148;
 - (b) provide instructions through the ES&H Supplemental Budget Guidance for the inclusion of the Executive order requirements in ES&H management plans developed by the lead program secretarial office (LPSO), PSO, and field;
 - (c) update DOE environmental compliance and EMS auditing protocols and procedures;
 - (d) maximize the use of safe alternatives to, evaluate present and future uses of, and disseminate information regarding successful efforts in phasing out ODSs;
 - (e) prepare an annual progress report to EPA on implementation of Executive Order 13148.
 - (2) As part of the independent oversight program’s ISM evaluations, measure the effectiveness of DOE Headquarters and field organizations’ implementation of Executive Order 13148.

- (3) Prepare guidance for conducting the EMS self-assessment (one-time gap analysis) and prepare the related summary report. Additionally, prepare guidance for the annual progress report required by Executive Order 13148.
- e. The Assistant Secretary for Environmental Management, in addition to his/her PSO responsibilities shown above, accomplish the following, in coordination with other Departmental elements.
 - (1) Coordinate the development of a pollution prevention ROI program throughout the Department, to be implemented, subject to the availability of appropriated funds, by the PSOs.
 - (2) Develop an internal DOE-wide awards program to reward innovative programs and individuals showing outstanding environmental leadership in implementing Executive Order 13148.
 - (3) Collect reports from all DOE sites on waste generation and pollution prevention progress for inclusion in the Department's Executive Order 13148 annual progress report to EPA.
- f. The Director of Management and Administration, in coordination with other DOE elements, develop or revise existing DOE directives, policies and documents to accomplish the following.
 - (1) Amend DOE's personal property management policies and procedures to preclude the Department's disposal of ODSs without prior coordination with the Department of Defense.
 - (2) Include training on the provisions of Executive Order 13148 in the standard senior-level management training for program managers, contracting personnel, procurement and acquisition personnel, facility managers, contractors, and other personnel as appropriate. The National Environmental Training Office (NETO) is also available to provide standardized training on the provisions of Executive Order 13148.
 - (3) Include the successful implementation of pollution prevention, community awareness, and environmental management in the position descriptions and performance evaluations for appropriate Senior Executive Service (SES) and career Headquarters managers and operations office/field office managers.

g. Chief Financial Officer

- (1) Incorporate DOE's Pollution Prevention Energy Efficiency Leadership Goals, found in the Secretarial memo dated November 12, 1999, into the Department's Strategic and Annual Performance Plans required by the Government Performance and Results Act of 1993, starting with performance plans accompanying the FY 2002 budget.
 - (2) Ensure that Executive Order 13148 budget requirements reflected in the LPSO, PSO, and field site's ES&H management plans, or other budget process, are included in the DOE 2003 budget request, and in subsequent budget requests.
- h The Director, Office of Worker and Community Transition, in coordination with other DOE elements. Coordinate disposition of critical Class I ODSs with the Department of Defense.

6. CONTACT. For information about this Notice, call the Office of Environmental Policy and Guidance at 202-586-7301.



SPENCER ABRAHAM
Secretary of Energy

CONTRACTOR REQUIREMENTS DOCUMENT

DOE N 450.4, ASSIGNMENT OF RESPONSIBILITIES FOR EXECUTIVE ORDER 13148, *GREENING THE GOVERNMENT THROUGH LEADERSHIP IN ENVIRONMENTAL MANAGEMENT*

Department of Energy (DOE) contractors are expected to comply with the following requirements:

1. Implement an Environmental Management Systems (EMS) at the DOE facility as part of a Integrated Safety Management System.
2. Incorporate environmental compliance or EMS audits into the contractor line environment, safety and health oversight program required by DOE P 450.5.
3. Comply with the Emergency Planning and Community Right-to-Know Act (EPCRA) and the Pollution Prevention Act.
4. Reduce releases and off-site transfers of toxic chemicals.¹
5. Reduce the use of selected priority chemicals or the generation of selected waste types.²
6. Assist the Department in developing a plan to phase out the procurement of Class I ozone-depleting substances (ODSs) including disposition in coordination with the Department of Defense.³
7. Assist the Department in promoting sustainable management of Federal facility lands.
8. Use pollution prevention projects and activities, as appropriate, to correct and prevent non-compliance with environmental regulatory requirements.

¹ DOE will use the P2E2 Leadership goals issued November 1999 for the toxic release inventory (TRI) goal, the waste reduction goals, and the ozone-depleting substances (ODS) goal, along with the Executive order ODS goal.

² See footnote 1.

³ See footnote 1.

APPENDIX C:

Pollution Prevention Budget Process

Pollution Prevention Budget Process

Budget. The Department of Energy (DOE) utilizes its existing budget processes for implementation of the Greening of the Government Executive Orders. The Environment, Safety and Health (ES&H) Supplemental Budget Submission Guidance that is part of the Department's annual Unified Field Budget Call (UNICALL) to departmental elements has been updated. This guidance directs all departmental elements to include the requirements of the various Greening of the Government Executive Orders in their ES&H Management Plans and to give them appropriate priority.

Two general processes are used by DOE elements to formulate their ES&H Management Plans. These are the ES&H Management Plan Information System (ES&H MPIS) and the Integrated Planning, Accountability, and Budgeting System (IPABS). The ES&H MPIS or an equivalent site business system is currently used by all departmental elements, except for the Office of Environmental Management (EM), to provide the environmental budget requirements. IPABS is the system used by EM to formulate its ES&H Management Plan. IPABS links EM's long range planning, budget formulation, work execution and performance monitoring processes. During the FY 2004 budget cycle, the National Nuclear Security Administration (NNSA) will direct its sites to utilize an NNSA Five-Year ES&H Site Plan to develop its ES&H planning, budgeting and work execution requirements. This process will provide the same level of ES&H information as the existing ES&H MPIS. If in the future other Line Program Secretarial Officers develop their own processes to formulate their ES&H Management Plans, they will also be required to comply with the Department's Environment, Safety and Health Supplemental Budget Submission Guidance in the UNICALL.

Both the current ES&H MPIS and IPABS systems collect project level information on environmental activities and include a prioritization of the activities for senior management decision-making on funding. The following are the major features of each system.

ES&H Management Plan Information System. The ES&H MPIS is used to plan and budget for environmental activities. The basic data document in the ES&H MPIS is an Activity Data Sheet (ADS). The ADS includes the following types of information:

- Site identification;
- Title of the activity;
- Scope description of the activity;
- Whether the activity is an EO 13148 activity (if applicable);
- Description of milestones and accomplishments;
- Primary and secondary drivers for the activity, such as laws, regulations, Executive Orders, DOE orders, or standards;

- Allocation to ES&H functional areas. There are seven Environmental Functional Areas used:
 - Protection of Air Quality (CA)
 - Control of Toxic Substances (CS)
 - Protection of Water Quality (CW)
 - Environmental Restoration (ER)
 - Pollution Prevention and Waste Minimization (PP)
 - Waste Management (WM)
 - Management, Oversight, and Reporting (MR) – this element includes Environmental Management Systems and environmental compliance audits.
- Activity Priority and risk assessment information;
- Funding Information, including the amount, type (e.g. direct, indirect/allocable) and category (e.g. Operating Expense (OE), Capital Equipment (CE), General Plant Projects (GPP), Line Item Projects (LIP)) of funding for the activity,
- The Program Secretarial Officer or NNSA Deputy Administrator responsible for funding the activity; and
- Whether the activity is considered funded at the budget target level, or unfunded.

The ES&H activities are prioritized and risk ranked using a risk-based prioritization methodology and reviewed by Line Management to determine funding priorities given the funding resources anticipated to be available. As a result, the Department will only plan on funding those environmental activities that can be accommodated within the available site funding each year. Target Level Environmental funding for FY 2001 through FY 2003 as provided in the budget information submitted by the Departmental Program Secretarial Officers (PSOs), except EM, are provided in the following Table:

Table 1. FY 2001–2003 DOE Environmental Resource Requirements (\$ Millions)¹

Environmental Functional Area	FY 2001²	FY 2002²	FY 2003²
Protection of Air Quality	\$26.23	\$35.83	\$41.19
Control of Toxic Substances	\$12.57	\$13.81	\$13.72
Protection of Water Quality	\$25.96	\$28.39	\$26.34
Environmental Restoration	\$7.79	\$6.78	\$6.42
Pollution Prevention and Waste Minimization	\$5.36	\$4.95	\$3.92
Waste Management	\$127.25	\$129.90	\$121.89
Management, Oversight and Reporting	\$76.31	\$ 80.54	\$84.72
Total Funding	\$281.48	\$300.21	\$298.19

¹ The Office of Environmental Management (EM) resource requirements are excluded from this table.

² Total environmental funding includes both direct and indirect funds.

Integrate Planning Accountability and Budgeting System (IPABS). IPABS is the system used by the EM to integrate its life cycle planning, budget formulation, budget execution and performance monitoring of its projects. IPABS consists of four basic

interrelated modules: Planning, Budget Formulation, Budget Execution, and Project Execution. Within these modules EM Project Level and Site Level environmental programs are managed.

IPABS Planning and Budget Formulation Modules. The planning module includes basic Cost, Schedule and Scope information from the initial project baseline through the projected end of the project. In contrast, the budget formulation module includes basic Cost, Schedule and Scope information for the Prior Year, the Current Year and the Budget Year. Both modules contain the following information on a project-by-project basis for each EM site:

- Project Narrative Information - This includes Project and Site identification information; Project start, milestone, and completion information; Project Executive Summary Narrative, Purpose, Scope and Technical Approach narrative; FY 2006 Status Narrative; Post-FY 2006 Scope Narrative; a description of the expected Endstate;
- Cost Baseline narrative;
- A description of the Project S&H Hazards; a Safety and Health Work Performance narrative for the project;
- Project Driver Information (Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), Defense Nuclear Facilities Safety Board (DNFSB), DOE Orders, Atomic Energy Act (AEA), Uranium Mill Tailings Radiation Control Act (UMTRCA), State, other);
- Project Manager Information;
- Baseline Verification information;
- Cost Data/Budget Authority Waste Information/ Performance;
- Nuclear Material Information/Performance Spent Nuclear Fuel; Information/Performance Measures;
- Release Sites Cleanup Information/Performance Measures;
- Deactivation Facilities Information/Performance Measures;
- Decommissioning Information/Performance Measures;
- Technology Deployments Information. Technology Needs Information;
- Milestones Information;
- Reconciliation Information; and
- Summary Information – reflecting key project information.

In addition, the Budget Formulation module includes an Integrated Priority List that ranks the various subprojects according to the risk based prioritization methodology used to risk-rank the projects. Pollution Prevention initiatives may either be considered as a separate project or integrated with waste management operations and other programmatic activities at EM sites.

IPABS Project Execution Module

The Project Execution Module contains the basic Cost, Schedule and Scope information for the Prior Year (the Execution Year). The specific types of information that can be viewed on a project-by-project basis for each EM site are:

- Cost/Schedule Information
- Financial Information
- Milestone Information
- Waste Performance
- Nuclear Material Performance Information
- Spent Nuclear Fuel Performance Information
- Release Site Cleanup Performance Information
- Deactivation Facilities Performance Information
- Decommissioning Performance Information
- Technology Deployments Information applicable to the project
- Summary Information.

EM prioritizes and risk ranks its projects using a risk-based prioritization methodology which is reviewed by Line Management to determine funding priorities given the funding resources anticipated to be available. As a result, the Department will only plan on funding those environmental activities that can be accommodated within the available site funding each year. Target Level Environmental funding for FY 2001 through FY 2003 as provided in the budget information submitted by EM is provided in the following Table.

**Table 2. FY 2001–2003 DOE Environmental Resource Requirements (\$ Millions)
Office of Environmental Management¹**

Office of Environmental Management All Appropriations	FY 2001 Final Approp.	FY 2002 Current Approp	FY 2003 Request at Target
Office of Environmental Management	\$6,413.96	\$6,691.36	\$6,714.23

1. Includes the entire EM program budget.

APPENDIX D:
**Environmental Management System Self-Assessment
Responses**



Environmental Management Systems at the Department of Energy: Responses to the EMS Self-Assessment Questionnaire

Introduction

This appendix summarizes responses to the Department of Energy's (DOE) "EMS Self-Assessment Questionnaire." Executive Order (EO) 13148, "Greening the Government Through Leadership in Environmental Management" (April 2000) calls for the development and implementation of environmental management systems (EMSs) in all appropriate Federal facilities by December 31, 2005. The EO also requires Federal Agencies to conduct an agency-level environmental management system (EMS) self-assessment by October 2001. In order to meet the EO's requirement to assess the status of EMS implementation within DOE, a self-assessment questionnaire was provided to Program Secretarial Offices in August 2001 for distribution to their field elements. This report summarizes the responses received from the questionnaire.

The Department issued DOE Notice 450.4 in February 2001 to implement the requirements of EO 13148. The notice directs that EMS requirements be integrated within the Department's existing Integrated Safety Management System (ISMS). It also assigned to the Office of Environment, Safety and Health responsibility for compiling the report on the DOE-wide EMS self-assessment.

ISMS is the Department's umbrella management system for environment, safety, and health. In 1996, the Department issued DOE Policy 450.4 which requires implementation of ISMS and identifies objectives, guiding principles, and core functions. The requirement for ISMS was incorporated into the operating contracts at all DOE sites.

The EMS self-assessment questionnaire was designed for DOE sites to report the status of their implementation of EMS, and to identify the guidance needed to assist them in their implementation efforts. The questionnaire is included as Attachment 1.

In addition to self-reported implementation efforts, seven DOE field elements have received external recognition of their EMSs. Five DOE field elements have been registered, by third-party registrars, as conforming to the ISO 14001 standard. ISO 14001 is an international consensus standard issued in 1996 which identifies auditable elements of an EMS. Five DOE field elements have been recognized by the EPA's National Environmental Achievement Track program. This



Integrated Safety Management

program identifies excellence in the development and implementation of sound EMS frameworks in public and private organizations within the U.S..

The analysis of the survey responses indicates that many DOE field operations are actively working to implement EMS approaches.

What the Questionnaire Asked

The primary purpose of the questionnaire was to comply with the EO's EMS self-assessment requirement, and to determine how many DOE sites are implementing or planning to implement an EMS. Those that reported having an EMS were asked to identify whether their EMS was integrated with an existing management framework (e.g., ISMS), and whether their EMS was based on any third-party standard. Additionally, sites that responded affirmatively were asked to identify whether or not their EMS included nine core elements associated with ISO 14001.

Sites that did not report the implementation of an EMS were asked to provide a schedule for their implementation and a description of existing site environmental audit activities.

Both groups were asked to provide suggestions for future guidance that might assist their EMS implementation efforts.

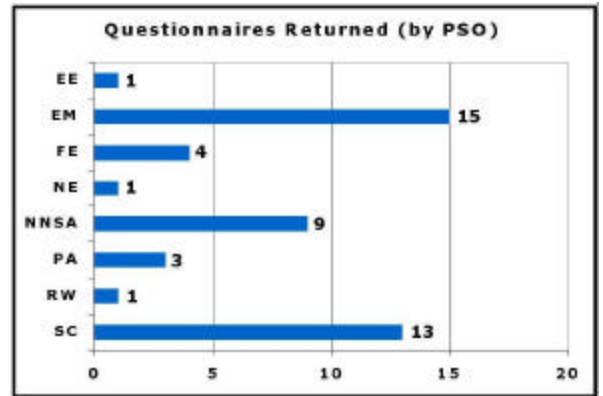
Questionnaires Returned

Forty-seven questionnaires were submitted by DOE sites.

Because of the wide variety of sites within the DOE complex, individual responses to the questionnaire cover facilities, sites or operations that vary significantly in scope. In some cases, one questionnaire may represent more than one site and in others one site may have submitted several questionnaires. Field elements, in coordination with the PSOs, were permitted to choose how individual sites were grouped or split for the purpose of the questionnaires. In one instance, the response to one questionnaire covered four individual sites. The consolidation of multiple sites under a single questionnaire may reflect the degree to which EMS implementation is integrated among multiple sites. In another instance, six questionnaires were received from what are normally considered three sites. If different choices had been made, the same sites might be represented by as few as forty-two or as many as fifty-eight questionnaires. In addition, it is important to recognize that reporting sites vary greatly in size. For example, individual questionnaires represent sites with employee populations from 100 to 14,000.

Questionnaires were received from eight Program Secretarial Offices:

- Energy Efficiency and Renewable Energy (EE)
- Environmental Management (EM)
- Fossil Energy (FE)
- Nuclear Energy, Science and Technology (NE)
- National Nuclear Security Administration (NNSA)
- Power Marketing Administrations (PA)
- Civilian Radioactive Waste Management (RW)
- Science (SC)



The data from this questionnaire provide a general baseline “snapshot” of EMS implementation at DOE field sites, and provide Headquarters with information it needs to issue guidance that will help sites fully integrate an EMS into their existing management framework (e.g., ISMS). These data are self-reported, and have not been externally verified. However, the responses represented below do provide valuable information needed to determine that EMS goals are met.

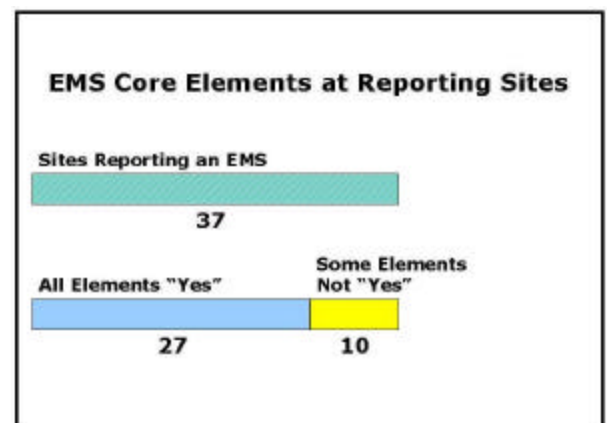
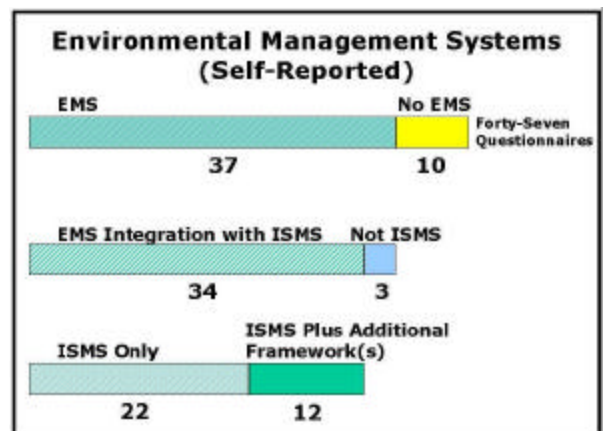
Responses

Forty-seven self-assessment questionnaires were completed. Thirty-seven questionnaires report the implementation of an environmental management system. Ten questionnaires report that an EMS has not been implemented.

Of those thirty-seven sites reporting an EMS, thirty-four report integrating their EMS with an existing Integrated Safety Management System. Twenty-two report that ISMS constitutes the sole management system framework. Twelve sites included additional frameworks, such as ISO 14001 and the EPA's Code of Environmental Management Principles (CEMP), within their ISMS.

Respondents answering that they have implemented an environmental management system were asked to identify whether or not their EMS includes nine core elements:

- Identifies the significant environmental aspects of the activities at the site.
- Identifies legal (regulatory) requirements applicable to activities at the site.
- Sets measurable environmental goals and objectives.



- Sets timeframe for achieving goals and objectives.
- Monitors progress in meeting the established goals and objectives.
- Trains personnel on environmental management system and legal requirements.
- Conducts periodic regulatory compliance audits.
- Conducts periodic environmental management system audits.
- Documents core elements of the site environmental management system.

Of the nine environmental management system elements, the conduct of periodic environmental audits and the documentation of core EMS elements were listed most frequently as elements not being fully implemented. Other EMS elements identified as not being implemented include the creation of a timeframe for achieving goals and objectives, the provision of EMS training for employees, the creation of measurable environmental goals and objectives, and the monitoring of progress toward meeting goals and objectives.



Comments accompanying the nine EMS elements show that EMS audits are frequently taking place during ISMS annual audits. General training is structured according to an ISMS framework, while EMS-specific training is selectively distributed. It appears that many DOE elements consider EMS implementation to be synonymous with the enhancement of the environmental component within ISMS. These comments are listed in Attachment 2.

Twelve respondents report seeking third-party recognition for their EMS. ISO 14001 is the most frequent choice, followed by the EPA's National Environmental Achievement Track.

Those respondents reporting that an EMS has not been implemented were asked to outline their implementation goals, and to describe the structure and frequency of environmental compliance audits. Most respondents are pursuing a combination of approaches to EMS implementation, including hybrid models combining elements of ISO 14001, CEMP, and ISMS. These respondents report that compliance auditing is taking place through both internal and external means. Finally, gap analyses are frequently mentioned as key tools for developing an EMS.

Those responding sites that are not required to implement ISMS (e.g., Naval Reactors and Power Administrations) have adopted, or are in the process of adopting, EMSs. Most follow a hybrid framework that considers elements from ISO 14001 and CEMP, as well as agency directives, maintenance standards, and environmental safety plans.

The questionnaire included a number of open-ended questions that provided respondents the opportunity to share their suggestions and expectations concerning Headquarters' role in facilitating the implementation of EMS throughout the DOE community. These suggestions are summarized in Attachment 3. Overall, the most frequent suggestion is to revise ISMS procedures to specifically include EMS

requirements. A few respondents stated that no additional guidance is needed. Many suggestions point to the importance of providing guidance for integrating these two management systems frameworks. It was also suggested that EMS expectations and requirements should be included into ISMS assessment protocols.

Conclusion

This appendix documents the results of DOE's agency-wide EMS self-assessment as required by EO 13148. Based on questionnaire responses, DOE field elements are rapidly moving toward the full implementation of EMSs. The questionnaire also helps identify how headquarters can assist field elements. The primary assistance suggested was additional guidance on integrating the requirements of an EMS within an existing ISMS framework.

DOE's facilities are complex and diverse. Many already have in place EMSs which are recognized by third-party reviewers. The Department's management framework for environment, safety and health – ISMS – provides a solid framework for management of environmental impacts and activities. Draft Order 450.1, Manual 450.1, and associated guidance address additional detail to assure that EMS requirements are accomplished within the framework of ISMS. DOE's facilities either have EMSs in place, or appear to be on their way to meeting the December 2005 deadline contained in Executive Order 13148.

DOE Environmental Management System Self-Assessment Questionnaire

DOE Site: _____

1. Has an Environmental Management System (EMS) been *implemented* at the site, whereby decisions regarding the protection of the public and natural and cultural resources are integrated into the planning, performance and assessment of site activities:

- YES (go to question #2)
- NO (go to question #5)

2. (If 'yes' to #1) – Please indicate if your EMS is based on one or more of the following standards or models:

- ISO 14001
- EPA Code of Environmental Management Principles (CEMP)
- Incorporation of environmental management system principles into DOE’s Integrated Safety Management System (ISMS)
- Other (identify) _____

3. (If 'yes' to #1) – Is third-party certification or recognition of the system being sought, or been received, and if so, from whom? [*Third-party certification is voluntary, and not a requirement of Executive Order 13148, DOE Notice 450.4, or ISMS.*]

- ISO 14001 certification
 - EPA Environmental Performance Track Recognition
 - Other (identify) _____
- If received, please indicate when: _____

4. (If 'yes' to #1)

Please indicate whether your site environmental management system:	Yes	No
a. Identifies the significant environmental aspects of the activities at the site.		
b. Identifies legal (regulatory) requirements applicable to activities at the site.		
c. Sets measurable environmental goals and objectives.		
d. Sets timeframe for achieving goals and objectives.		
e. Monitors progress in meeting the established goals and objectives.		
f. Trains personnel on environmental management system and legal requirements.		
g. Conducts periodic regulatory compliance audits.		
h. Conducts periodic environmental management system audits.		
i. Documents core elements of the site environmental management system.		

(Optional) You may add any comments or explanation to question #4 here:

5. (If 'no' to #1, i.e., an EMS has *not* been implemented at the site) – Please provide your schedule for implementing an EMS, and please indicate which, if any, of the features listed in question #4 have already been implemented at the site, or are currently being developed:

6. (If 'no' to #1, i.e., an EMS has *not* been implemented at the site) – Please identify whether an environmental compliance audit program is in place at the site, and state how frequently internal audit reviews of site operations are conducted:

7. What DOE-specific policy/guidance needs do you have that would facilitate implementation and/or improvement of an EMS at the site (e.g., issuance of a DOE EMS order, revision of ISMS guides to expand on EMS principles, revision of ISMS Criteria Review and Assessment Documents to incorporate EMS components, etc.)?

Thank you for your assistance.

Operations/Field Office Managers should forward the completed self-assessment questionnaire by September 14, 2001, to the cognizant Program Secretarial Officer, with an information copy to Steven Woodbury, EH-413, (fax 202-586-3915, or e-mail steven.woodbury@eh.doe.gov). PSOs should formally transmit the collected questionnaires to EH-1 by September 28, 2001.

Completed on behalf of the site by: _____
telephone _____ email _____

Attachment 2: Comments from Questions Four and Five

Question Four: Additional comments related to the nine aspects of EMS implementation:

“The core principles of EMS, as an integral element of the [Site] ISMS, are imbedded in the ISMS training.”

“Due to the integration of environmental into the ISMS documents, environmental elements are not singled out with emphasis added.”

“Environment has been in ISM since ISM started at [Site]. The ISM system is the [Site's] EMS. . . The [Site] will continue to improve the E in ISM so that it (1) satisfies all EMS requirements; and (2) improves linkage between institutional and activity level environmental goals, measures, and controls through documentation guidance, and tools.”

Question Five: (If ‘no’ to #1, i.e., an EMS has not been implemented at the site) - Please provide your schedule for implementing an EMS, and please indicate which, if any, of the features listed in question #4 have already been implemented at the site, or are currently being developed:

“The schedule for implementing an EMS began with the ISMS verification in 1998. The ISMS is in the [Site] contract, and ‘environment’ is included in the ISMS definition of ‘safety’. [The Site] is currently conducting three gap analyses comparing the elements.”

Attachment 3: Suggestions for Further Guidance

Question Seven: What DOE-specific policy/guidance needs do you have that would facilitate implementation and/or improvement of an EMS at the site (e.g., issuance of a DOE EMS order, revision of ISMS guides to expand on EMS principles, revision of ISMS Criteria Review and Assessment Documents to incorporate EMS components, etc.)?

“[Site] believes that the incorporation of EMS components into the ISMS process would result in the most effective EMS implementation method. Most of the criteria for EMS parallel the paths already taken for ISMS, but are enhanced to ensure coverage of environmental aspects.”

“Issuance of DOE Order 450.1 [Environmental Protection Program, forthcoming] and associated Manuals and Guidance.”

“Existing DOE guidance is sufficient.”

“No additional DOE specific policy/guidance is needed as there is substantial technical guidance already available in related industry standards.”

“Revision of ISMS guidance to expand on EMS.”

“Recommendation: [Site] recommends that DOE incorporate specific EMS principles into the ISMS Criteria Review and Approach Documents that are used to evaluate ISM implementation. Compliance with the Executive Order would be demonstrated and enhanced through practices already in place.”

“We have successfully integrated our EMS into ISMS through our Work Control Processes. In other words, ISO-14001 our EMS model is satisfying the "E" part of ISMS. Other [sites] could benefit from this approach.”

“DOE guidance should be site specific and negotiated between DOE site office and the site.”

“It may be valuable to expand the [criteria review and approach documents] to more specifically expand upon EMS principles and elements as DOE would evaluate them in a review of an ISM to determine adequacy of the integration of EMS.”

“Effective environmental performance measures (DOE complex wide).”

“Defining sustainability in DOE Order 413.3 [Program and Project Management for the Acquisition of Capital Assets, 10/13/2000].”

“The issuance of a new DOE EMS Order would only be beneficial if it integrates ISM, EMS (e.g., ISO-14001) and waste minimization/pollution prevention initiatives into a single document.”

“Revision of ISMS guidance to expand on EMS.”

“Revision of ISMS guides to expand on EMS principles. Environmental aspects are lost or downplayed under a safety regime. ISMS needs stronger tie to environmental management principles.”

“Unequivocal guidance from HQ mandating that EMS principles be incorporated into ISMS, and revision of ISMS [criteria review and approach documents] to incorporate EMS components, would go a long way toward ensuring that EMS principles are incorporated into DOE Environmental and Safety Programs. Even though it is possible to get there with the current ISMS guidance and [criteria review and approach documents], there is always discussion about the appropriateness of reviewing against what many feel are voluntary criteria.”

“DOE has not included any Orders or requirements into [Site’s] contract. [Site] has implemented EMS as part of their routine Environmental Program . . . Nothing is needed to facilitate implementation.”

“When DOE Order 450.1 [Environmental Protection Program, forthcoming] becomes final, and the contractor requirement document is complete and incorporated into the [Site Contract], it will facilitate ISMS enhancements to meet the elements of an EMS”.

“The annual and long term budgeting processes should give priority to objectives and targets identified in the EMS.”

“The program described in the SMS could be improved in regards to meeting DOE’s intent for implementation of Executive Order 13148 [Greening the Government Through Leadership in Environmental Management, April 2000] (et al.) by completion of the DOE EMS Working Group’s activities leading to provision of a clear set of goals and expectations that are adaptable to an Office of Science laboratory operation.”

“Revised ISMS Guidance, Draft Management Policies that incorporate EMS criteria, Joint ISMS Certification.”

“None Required.”

“Additional guidance for regulatory compliance: endangered species act, floodplains/wetlands, 404 permitting, hazardous materials transportation, P2 planning, etc.”

“Draft NNSA ‘Guide to Implementation: Environmental Management Systems,’ dated June 2001, needs to be finalized.”

“Revision of ISMS guidance to expand on EMS.”

“Issuance of a DOE order, including a Contractor Requirements Document, on EMS would establish consistent expectations for EMS implementation throughout the DOE complex.”