



**Department of Energy**  
Washington, DC

March 1, 2001

Mr. Craig Hooks, Director  
Federal Facilities Enforcement Office  
(MC-2251A)  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, D.C. 20460

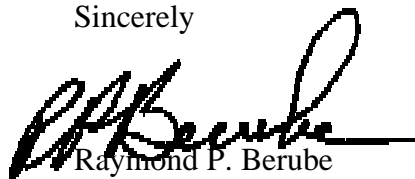
Dear Mr. Hooks:

I am pleased to transmit to you the first annual progress report on Executive Order (E.O.)13148 for the Department of Energy (DOE). This report describes the progress that DOE has made in complying with all aspects of E.O. 13148. We are particularly pleased to incorporate, as an appendix to this report, new DOE requirements established by Secretary Spencer Abraham for implementation of E.O. 13148 requirements by departmental elements.

Responsive to the guidance provided in your letter to me of November 3, 2000, this report addresses prior reporting responsibilities under E.O. 12856, including information submitted by DOE sites to the Toxic Chemical Release Inventory (TRI) for reporting year 1999, and describes some of DOE's source reduction and recycling successes during 1999 through early 2000.

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

  
Raymond P. Berube  
Deputy Assistant Secretary  
For Environment

Enclosure

cc: Will Garvey, Office of Federal Facilities Enforcement, EPA

# **EXECUTIVE ORDER 13148**

*Greening the Government Through Leadership in  
Environmental Management*

First Annual Report

March 2001



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

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## **I. Introduction**

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

This report constitutes the Department's first annual progress report to the Administrator of the Environmental Protection Agency (EPA), as directed by section 307 of E.O. 13148. In accordance with the guidance provided by EPA, the report includes information through calendar year 2000, on the progress DOE has made in implementing E.O. 13148, and other activities the Department has undertaken in support of the goals and requirements of E.O. 13148.

While DOE is fully committed to fulfilling the requirements of E.O. 13148, the release of chemicals covered under section 502 (a) 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 covered under section 502(a) of the Order (see Appendix A).

Under Section 1007 of E.O. 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. Consistent with the 1996 International Organization for Standardization (ISO) Document 14001, *Environmental Management Systems – Specification with Guidance for Use*, the Department has expanded the EPA definition of pollution prevention to include recycling. This approach is also consistent with the Council on Environmental Quality's definition of pollution prevention.

Pollution prevention can be applied to all DOE pollution-generation activities, including manufacturing and production operations; facility operations, maintenance, and transportation; laboratory research; research, development and demonstration; weapons dismantlement; decontamination and decommissioning; and legacy waste and contaminated site cleanup.

## **II. Implementation Progress**

### **A. Interagency Workgroup Activities**

During CY 2000, several departmental elements have participated in both the Executive Order Interagency Work Group meeting activities and in several of the subgroup activities. Representatives from DOE's Offices of Environment, Safety and Health (EH) and Science (SC) participated in the work group sessions and contributed to the development of activities that focused on training, awards, environmental management systems (EMS), and priority chemicals. The DOE National Environmental Training Office developed and presented a proposal for a satellite broadcast on the goals and requirements of E.O. 13148. SC contributed further to the planning of training activities by leading the training subgroup. EH representatives participated in the activities being developed by the EMS subgroup, and with contributions from technical representatives at the Chicago Operations Office and Brookhaven National Laboratory, participated in the priority chemical subgroup to develop a draft list of priority chemicals targeted for use reductions.

DOE personnel also participated in the A-11 subgroup to develop proposed language for the Office of Management and Budget (OMB) Circular A-11 guidance, which outlines specific information each agency must provide in their budget request. DOE is also modifying its internal Environment, Safety and Health (ES&H) Management Plan requirements to ensure OMB data needs in response to E.O. 13148 are satisfied.

### **B. Implementation Strategy and Revisions to Directives, Policies and Documents**

**Directives.** To ensure that E.O. 13148 is fully and completely implemented throughout the Department, EH initiated the development of a formal DOE Notice (Appendix B) to assign roles and responsibilities for the implementation of E.O. 13148. The DOE Notice approval procedure is a formal process under the Department's policy directive system, requiring the review and concurrence of both headquarters and field elements through DOE's Field Management Council. Once all comments were resolved, the Deputy Secretary recommended approval on January 17, 2001. Secretary Abraham also reviewed the Notice and approved it on February 2, 2001. Once approved, the Notice has a binding authority and will institutionalize implementation of E.O. 13148.

In addition, a DOE work group to develop a new DOE Order 450.1 was established. When completed, this Order will replace the Notice and become a permanent part of the DOE Order system.

**Budget.** The Department plans to utilize its existing budget processes to ensure a high priority is placed on obtaining funding for implementation of the *Greening the Government* Executive Orders. The ES&H Supplemental Budget Submission Guidance, that is part of the Department's annual Unified Field Budget Call to the departmental elements, has been updated. This guidance requires all departmental elements to include

the requirements of the various *Greening the Government* Executive Orders in their ES&H Management Plans and to give them appropriate priority. See Appendix C for further discussion of DOE's approach for incorporating pollution prevention priorities into its budget process.

**Training.** Provisions are being made to incorporate E.O. 13148 training requirements into the Supervisory Training Program "Getting Back to Basics."

### **C. Return-on-Investment (ROI) Program**

DOE's ROI program has been successful in reducing waste generation from Departmental operations and cutting the cost of DOE mission activities. The Department's pollution prevention ROI program started in 1994 and was modeled on a successful program at a Dow Chemical Company's Louisiana facility. 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. Since 1998, fewer additional pollution prevention ROI projects have been funded due to budget constraints.

In 1999, a study of the pollution prevention ROI program was conducted by the Center for Life Cycle Analysis at Oak Ridge National Laboratory (*Assessment of Cost Savings of DOE's Return-on-Investment Programs*, ORNL-TM-1999-155). This study reviewed the cost and waste reduction from 13 ROI projects at Hanford and Oak Ridge. A major finding of the study was that the average ROI achieved for the 13 projects was actually greater than the original savings estimate (661% versus 558%).

In June 2000, the Deputy Secretary of Energy conducted a pollution prevention ROI workshop at DOE Headquarters to review the program's success and consider funding options for worthwhile, but unfunded, ROI projects at DOE sites. The workshop was a major turning point for the Department's pollution prevention program. After the workshop, twenty new ROI projects were funded. The twenty projects are estimated to provide \$110 million in life cycle cost savings. In addition, DOE sites will identify future funding requirements for ROI projects as part of the DOE budget process. The Department is currently evaluating alternative funding mechanisms to establish a sustained funding source for ROI projects in the future.

### **D. Environmental Management Systems (EMS)**

**Self Assessments.** Pursuant to DOE Notice 450.1, "Assignment of Responsibilities for Executive Order 13148, *Greening the Government through Leadership in Environmental Management*," DOE's Office of Environmental Policy and Guidance, EH-41, is developing guidance which includes protocols and lines of inquiry for use by DOE-HQ program offices and field elements (i.e., DOE field operations offices, sites and laboratories), to conduct the one-time EMS self-assessment (gap analysis) called for in E.O. 13148. This guidance will embody the spirit, principles, and key elements of EPA's

Code of Environmental Management Principles for Federal Agencies as well as the framework of ISO 14001, the internationally recognized environmental management system standard. This guidance is planned for distribution throughout DOE in the spring of 2001.

Through its Integrated Safety Management System (ISMS), DOE is committed to conducting its operations efficiently and in a systematic manner that ensures protection of workers, the public and the environment. Over the past three years, DOE has performed verification reviews at its facilities to ensure that ISMS has been successfully implemented throughout the DOE complex. Annual reviews are scheduled at each DOE facility to ensure that ISMS continues to be successfully integrated into management and work practices at all levels of its operations. DOE Notice 450.1 establishes that the EMS self-assessments called for in E.O. 13148 are to be conducted in conjunction with DOE's scheduled ISMS annual reviews.

**Pilot Programs.** In conjunction with ISMS, several DOE facilities have demonstrated and been recognized as having successfully implemented environmental management systems at their sites. Five DOE sites have achieved third party certification to the ISO 14001 standard. These include: the Savannah River Site, the Kansas City Plant, the Waste Isolation Pilot Plant (WIPP), the Strategic Petroleum Reserve (SPRO) and Brookhaven National Laboratory. Brookhaven National Laboratory has achieved ISO 14001 certification for several of its facilities and is pursuing ISO 14000 certification for all of its facilities.

In addition, five DOE sites have been recognized by EPA's National Environmental Performance Track program for having a successful and systematic approach to managing environmental responsibilities. Three of these sites -- Kansas City Plant, WIPP, and SPRO -- are ISO 14001 certified as well. The other two sites are the West Valley Demonstration Project and the Western Area Power Administration. DOE believes that these ISO 14001 certifications and National Environmental Performance Track awards meet E.O. 13148's requirement for the conduct of pilot projects.

## **E. Environmental Compliance and EMS Audit Program**

Section 402 of E.O. 13148 requires agencies to establish environmental auditing programs consisting of environmental compliance auditing or EMS audits. Organizations managing and operating DOE facilities have a long history of self-examination of ES&H programs and performance through the routine conduct of internal assessments.

The DOE strategy for implementing this section of E.O. 13148 has two elements. First, the primary responsibility for environmental auditing is being assigned to DOE Operations/Field Office Managers who will be responsible for conducting, within the DOE Policy 450.5 oversight program, environmental compliance audits or EMS audits at a representative group of operations/facilities for each DOE site under their purview not less than once every three years. Currently, DOE field personnel and the contractors that manage and operate most of the Department's facilities perform varying types of ES&H self-assessments.

Second, EH's Office of Independent ES&H Oversight (EH-2) is charged with conducting independent ES&H reviews of DOE operations and programs. EH-2 has an ongoing program of routine evaluations at DOE sites for a variety of ES&H related topics, including focused safety management evaluations, technical inspections, accident investigations, and employee concerns evaluations. Environmental reviews are a component of the technical inspection program and are targeted at selected technical operations and sites. Areas of focus generally include circumstances of relatively high technical or regulatory risk, cases of significant program uncertainties, or facilities where changes in regulations or site conditions increase the potential for problems in the implementation of effective environmental programs. Additionally, EH-2 has been assigned the responsibility of independently evaluating the implementation of E.O. 13148 requirements within the Department. Accordingly, EH-2 will evaluate implementation of these requirements as part of focused ISMS evaluations at DOE sites.

During 1999 and 2000, EH-2 focused significant resources on conducting independent investigations at DOE Gaseous Diffusion Plants located in Paducah, Kentucky, Portsmouth, Ohio, and Oak Ridge, Tennessee. EH-2 performed these investigations as part of the Secretary of Energy's initiatives to address safety and environmental issues identified at the Department's Gaseous Diffusion Plants. Investigations evaluated both current and historic releases of hazardous substances and radionuclides to the environment. These investigations also included independent sampling of liquid effluents, groundwater contamination, and contaminated sediment migration. The investigation was conducted from August 1999 through September 2000. EH-2 also evaluated environmental aspects of facility operations as part of the focused ISMS evaluation of the Idaho National Environmental and Engineering Laboratory and the independent review of the High Flux Isotope Reactor tritium leak at the Oak Ridge National Laboratory. These and other inspection reports are publicly available on the EH-2 website ([www.eh.doe.gov/oversight](http://www.eh.doe.gov/oversight)).

In 2001, EH-2 is planning to conduct inspections of environmental monitoring and surveillance programs at several DOE sites. These inspections will focus on programs to monitor and control releases of radionuclides and other contaminants to the environment. EH-2 will also conduct a series of focused safety management evaluations at selected DOE sites that will include an evaluation of environmental aspects of site management systems and performance. Finally, during 2001, EH-2 will update its technical auditing protocols, which are used by EH-2 personnel to guide the conduct of oversight activities, to ensure these activities are performed consistently and systematically. Upon completion, the protocols will be distributed throughout the DOE complex to support future facility environmental auditing programs.

#### **F. Internal Agency-wide Awards Program**

The Department of Energy has had an active pollution prevention awards program for the past seven years. The program recognizes outstanding performance in the areas of



pollution prevention and affirmative procurement of materials with recycled content. The awards program is open to all DOE sites and operations. For the FY 2000 awards program, nominations were accepted for twelve categories: Public Outreach, Environmental Preferability, Waste Prevention, Sowing the Seeds for Change, Model Facility Demonstration, Recycling, Affirmative Procurement, Environmental Restoration, Information Sharing, Integrated Planning and Design, Executive Order 12856 Individual Challenge, and Complex-Wide Achievement. A total of 70 nominations were submitted from across the DOE Complex. Nine of the twelve categories were coincidental with the White House Closing the Circle Awards Program categories. DOE submitted the thirty-three best nominations to the Closing the Circle Awards Program and won six of the sixteen available civilian awards.

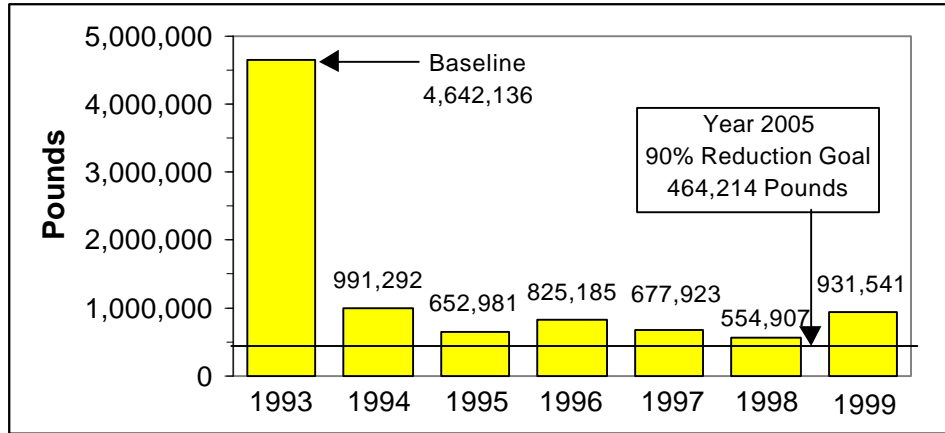
Two of the award categories had individual award recipients. Dr. Karen Hooker, from the Savannah River Site, won the Executive Order 12856 Individual Challenge category for her leadership in the site's completion of 508 pollution prevention/waste minimization projects that avoided the generation of 490,000 cubic feet of solid radioactive and hazardous waste, and saved approximately \$137 million in life cycle cost for waste disposal. Her other accomplishments include the creation of the first DOE performance-based incentive for pollution prevention, the creation of the first sustainable set-aside fee program to tax waste generators and use the revenue for ROI projects, and the first DOE ISO 14001, Environmental Management System, certified site with the Pollution Prevention Program being a key element of achieving certification.

Ms. Donna Merry, from the Hanford Site, won the Model Facility Demonstration category for her role in waste prevention and recycling. Due to her efforts, the waste generation trends for routine waste streams show significant decline. Since 1993, the Hanford Site has reduced low level waste by 86%; mixed low level waste by 76%; hazardous waste by 80%; sanitary waste by 89%; and toxic chemical releases by 100%.

For the FY 2001 awards program, nominations are being accepted for 12 categories and the entire program is being conducted electronically via the Internet. Sites will enter their nominations into the DOE pollution prevention awards website, the field waste minimization coordinators will review and approve the nominations, and the judges will evaluate and select the winners totally through the website.

### **G. Toxic Chemical Reduction Goals/Baselines**

In 1999, the Secretary of Energy issued a new reduction goal for toxic chemicals subject to section 313 reporting under the Emergency Planning and Community Right-to-Know Act (EPCRA) (see Appendix A). The new goal is to reduce the releases of toxic chemicals subject to Toxic Release Inventory (TRI) reporting by 90 percent by 2005, using a 1993 baseline. This goal and baseline are consistent with the spirit and intent of E.O. 13148. Thus, DOE will use this reduction goal for the purposes of section 502(a) of E.O. 13148.



**Figure 1. Total DOE TRI Releases (pounds)**

Figure 1 shows the total DOE TRI releases for reporting years 1994 through 1999 compared to the 1993 baseline year. To reach the 90% reduction goal 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. The 90% reduction goal applies only to the total releases of toxic chemicals to the environment. It does not include off-site transfers for treatment, recycling or energy recovery. Thus, only the releases reported under Section 8.1 of the EPCRA section 313 Form R report are used in measuring progress toward the 2005 reduction goal. Section 8.1 (quantity released) of the Form R report is the amount of toxic chemicals directly discharged to air, water, land, and injected underground at the site. Section 8.1 also includes amounts sent off-site for disposal.

#### **H. Use Reduction/Waste Generation Goals/Baselines**

As discussed in the interagency workgroup activities section of this report (Section A), some individual DOE sites are participating with the priority chemicals subgroup to develop a list of chemicals and chemical uses 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. However, the Department intends to use the alternative in section 503(d), reduction in the generation of five hazardous or radioactive waste types, to address this section of the Order. 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 has 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 order. These waste generation reduction goals are

included in the Secretary's Pollution Prevention and Energy Efficiency Leadership Goals (see Appendix A). These goals are:

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 waste resulting from cleanup, stabilization, and decommissioning activities by 10 percent on an annual basis.

The baseline and new reduction goals were established as a continuation of earlier pollution prevention goals and programs and are consistent with the intent of the executive order.

### **I. Reporting of Materials Accounting Data**

Section 503(f) of E.O. 13148 directs federal agencies to undertake pilot projects at selected facilities to gather and make publicly available materials accounting data related to the toxic chemicals, hazardous substances, and/or other pollutants identified under subsections (b), (c), or (d) of this section. DOE sites have already voluntarily participated in pilot materials accounting/chemical use reporting for TRI chemicals. In response to EPA's request for information contained in the October 1996 Advanced Notice of Proposed Rulemaking on materials accounting/chemical use reporting, the Kansas City Plant and the Los Alamos National Laboratory conducted pilot projects using the state of New Jersey chemical use reporting forms and instructions. These sites used the forms to go through the process of chemical use reporting for EPCRA section 313 chemicals, document the process and any difficulties in collecting required data, and collect information regarding the benefits and burdens. Final reports on these two pilot projects are available at the DOE website (<http://www.eh.doe.gov/oeпа/>) under "Environmental Documents and Reports".

### **J. Reduction in Ozone Depleting Substances**

Since the early 1990s, DOE has been gradually reducing its inventory and use of Class I ozone-depleting substances (ODS) in a cost-effective manner, in order to meet phaseout requirements and recommendations in the Environmental Protection Agency rules implementing the stratospheric ozone protection provisions of the Clean Air Act, and the now-revoked E.O. 12843, "Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances." In 2000, DOE sites reported that over 80 additional large, existing air-conditioning and refrigeration chillers using Class I ODS will be replaced, retrofitted, or removed over the next several years, which will result in the

removal of over 115,000 pounds of Class I refrigerant. This chiller phaseout effectuates a goal established by the Secretary of Energy to replace or retrofit by 2005 large, aging DOE chillers manufactured prior to 1984 that use Class I refrigerants. As a result of these phaseout activities, it is estimated that about half of the Department's 1995 inventory of Class I refrigerants in DOE chillers will be removed from replaced or retrofitted equipment by the year 2005.

In connection with the Secretary's chiller phaseout goal, the Department has issued guidance to its field elements to coordinate the release of surplus Class I refrigerant with the Department of Defense (DoD), as required by Section 505(c) of E.O. 13148. DOE plans to release additional guidance in 2001 to implement other provisions of Section 505, including the release of other surplus Class I ODS to DoD.

### **K. Other Activities**

DOE has conducted several other activities to help promote pollution prevention throughout the complex. For example, the objective of section 701(b) of E.O. 13148 is to determine the feasibility of implementing centralized procurement and distribution (e.g., "pharmacy") programs for tracking, distribution, and management of toxic or hazardous materials. EH, in conjunction with sites that have established chemical management systems (CMSs) in place, developed a series of CMS profiles that described the key elements of each site's system. Each profile provides system information including the types and number of chemicals managed, location-tracking capabilities, how the information is being used, what types of computer hardware and software are used, and points of contact to obtain additional information. Sites that are interested in implementing new or upgrading existing systems can review the profiles to learn what other sites using. The profiles can be viewed at the DOE website ([http://www.eh.doe.gov/web/chem\\_safety/chemprofiles.html](http://www.eh.doe.gov/web/chem_safety/chemprofiles.html)).

In support of the objectives of section 501(d) of E.O. 13148, four DOE sites are conducting pilot projects to review the impact of certain existing regulatory exemptions on TRI reporting. At EPA's request, DOE is collecting information on which exemptions are being used and what chemicals are affected. This report will be sent to EPA this spring and will be available on the DOE website.

In addition, DOE Headquarters conducts monthly pollution prevention conference calls with field representatives to communicate new activities and progress on ongoing actions. A TRI Focus Group has been formed to provide a forum for exchange of information on TRI reporting, provide field input to proposed TRI regulations, and to discuss questions about interpretation of EPA guidance on TRI reporting.

## Appendix A

### The Secretary of Energy

Washington, DC 20585

November 12, 1999

#### MEMORANDUM FOR HEADS OF DEPARTMENTAL ELEMENTS

FROM: 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 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 (See Appendix

B). I am directing each Lead Program Secretarial Officer to implement programs that will achieve these objective 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.

*Department of Energy*  
*Pollution Prevention and Energy*  
*Efficiency Leadership Goals*

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 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.

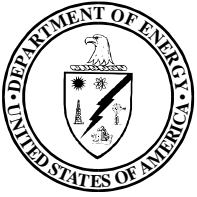
8. Increase the purchase of electricity from clean energy sources:
  - (a) Increase purchase of electricity from renewable energy sources by including provisions for such purchase as a component of our request for bids in 100 percent of all future DOE competitive solicitations for electricity
  - (b)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

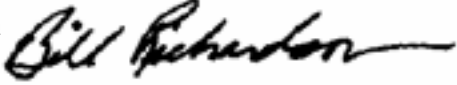
12. Reduce our entire fleet's annual petroleum consumption by at least 20 percent by 2005 in comparison to 1999, including improving the fuel economy of new light duty vehicle acquisitions and by other means.
13. Acquire each year at least 75 percent of light duty vehicles as alternative fuel vehicles, 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.



**The Secretary of Energy**  
Washington, DC

January 19, 2001

MEMORANDUM FOR HEADS OF DEPARTMENTAL ELEMENTS

FROM: BILL RICHARDSON 

SUBJECT: Implementation of Executive Order 13148, *Greening the Government Through Leadership in Environmental Management*

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

The Executive Order complements and reinforces existing DOE programs in that:

- It establishes pollution prevention goals that complement the Pollution Prevention and Energy Efficiency Leadership Goals established for the Department on November 12, 1999.
- It requires the implementation of environmental management systems at our facilities that will strengthen the implementation of Integrated Safety Management at our sites.
- It promotes environmental protection through use of environmental compliance audits or environmental management system reviews.
- It emphasizes that agency policies and environmental compliance audit programs should promote pollution prevention as a means to both achieve and maintain environmental compliance.

The Executive Order also contains several specific new requirements that will have to be incorporated into DOE Directives. Such Directives should be developed or modified to ensure the most cost-effective implementation of EO 13148 as possible. I am assigning responsibility for the implementation of this Executive Order to Departmental Elements as identified in the DOE Notice attached to this memorandum. I encourage implementation of Executive Order 13148 within the framework of Integrated Safety Management.

As we move toward the fulfillment of the goals and requirements of this Executive Order, we will continue to improve DOE's environmental performance while executing our multiple mission programs in a more environmentally sustainable manner.

Attachment

**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***

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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.

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**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 chemicals<sup>1</sup>
- e. Reduce the use of selected priority chemicals or the generation of selected waste types<sup>2</sup>
- 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.<sup>3</sup>
- 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

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<sup>1</sup> 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.

<sup>2</sup> See footnote 1.

<sup>3</sup> 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.<sup>1</sup>
5. Reduce the use of selected priority chemicals or the generation of selected waste types.<sup>2</sup>
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.<sup>3</sup>
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.

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<sup>1</sup> 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.

<sup>2</sup> See footnote 1.

<sup>3</sup> See footnote 1.

## Appendix C

### Pollution Prevention Budget Process

**Budget.** DOE plans to utilize its existing budget processes to ensure a high priority is placed on obtaining funding for implementation of the *Greening the Government* Executive Orders. The ES&H Supplemental Budget Submission Guidance that is part of the Department's annual Unified Field Budget Call to our departmental elements has been updated. This guidance requires all departmental elements to include the requirements of the various *Greening of Government* Executive Orders in their ES&H Management Plans and to give them appropriate priority.

Two 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 is currently used by all departmental elements, including the National Nuclear Security Administration (NNSA), 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. If in the future other Line Program Secretarial Officers or the NNSA develop their own processes to formulate their ES&H Management Plans, they will also be required to comply with the Department's ES&H 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 E.O. 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. These are:
  - 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. Identifies 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 Line Program Secretarial Officer or Deputy Administrator NNSA responsible for funding the activity; and
  - Whether the activity is considered funded at the budget target level, or unfunded.

The ES&H ADSs 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 and FY 2002 as provided in the budget information submitted by the Departmental Line Program Secretarial Officers, except EM, and the NNSA, are provided in the following Table:

**Table 1. FY 2000–2002 DOE Environmental Resource Requirements (\$ Millions)<sup>1</sup>**

<b>Environmental Functional Area</b>	<b>FY 2000<sup>2</sup></b>	<b>FY 2001<sup>2</sup></b>	<b>FY 2002<sup>2</sup></b>
Protection of Air Quality	\$25.0	\$24.1	\$25.9
Control of Toxic Substances	\$10.7	\$10.3	\$11.0
Protection of Water Quality	\$42.0	\$37.3	\$30.1
Environmental Restoration	\$7.1	\$9.3	\$8.9
Pollution Prevention and Waste Minimization	\$8.3	\$8.5	\$7.4
Waste Management	\$145.3	\$152.0	\$162.0
Management, Oversight and Reporting	\$104.9	\$ 90.3	\$86.5
<b>Total Funding</b>	<b>\$343.3</b>	<b>\$331.8</b>	<b>\$331.8</b>

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

<sup>2</sup> Total environmental funding includes both direct and indirect funds.

**Integrate Planning Accountability and Budgeting System (IPABS).** IPABS is the system used by 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 (CERCLA, RCRA, DNFSB, DOE Orders, AEA, 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.
- 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 are normally considered a separate project at each EM site.

### **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.

Again, 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 2000 through FY 2002 as provided in the budget information submitted by the Office of Environmental Management is provided in the following Table.

**Table 2. FY 2000–2002 DOE Environmental Resource Requirements (\$ Millions)  
Office of Environmental Management <sup>1</sup>**

<b>Office of Environmental Management All Appropriations</b>	<b>FY 2000 Final Approp.</b>	<b>FY 2001 Current Approp</b>	<b>FY 2002 Request at Target</b>
Office of Environmental Management	\$5,931.21	\$6,262.49	TBD <sup>2</sup>

1. Includes the entire EM program budget.
2. The FY 2002 EM budget target has still not been finalized as of 02/26/01.

## Appendix D

### **E.O. 12856 Reporting Information – Close-out**

In accordance with the guidance provided by EPA for the preparation of this report, DOE is providing information that was collected to address prior reporting responsibilities under E.O. 12856 *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*.

#### **A. Toxic Chemical Reduction Goals & Baseline**

The Department's *1996 Pollution Prevention Program Plan* committed DOE to the 50% reduction goal for releases of toxic chemicals to the environment and transfers of toxic chemicals for treatment and disposal across the DOE complex by December 31, 1999, as directed by E.O. 12856. To assist in the Department-wide effort, the DOE site pollution prevention plans addressed site-level goals for reducing their releases and transfers of listed toxic chemicals.

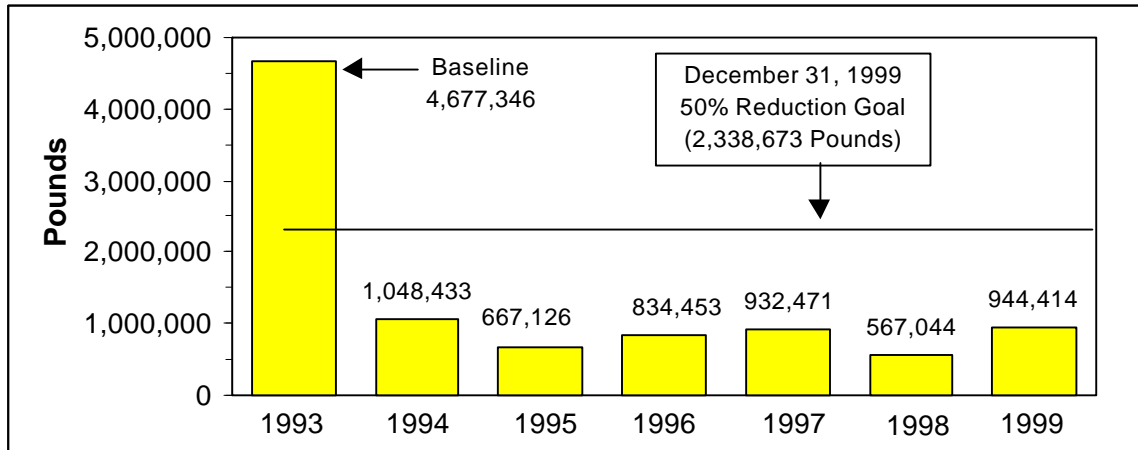
Further, E.O. 12856 explicitly stated that the baseline year for measuring progress toward the December 1999 goal shall be no later than the 1994 reporting year. Due to the Department's early commitment to voluntary TRI reporting and pollution prevention activities, DOE established 1993 as its baseline year for measurement, one year ahead of all other federal agencies, and one year ahead of the E.O. 12856 requirement.

For the purpose of measurement, the Department's baseline is defined by the 23 DOE sites reporting 28 listed toxic chemicals on the 83 TRI Form R reports filed with EPA for the 1993 reporting year. This 1993 baseline is fixed and is amended only in the event that a site submits revised Form R reports for 1993. Future measurement against the 1993 baseline included all sites reporting listed toxic chemicals for each reporting year regardless of whether they reported in the baseline year. Therefore, if a site which did not report in 1993 initiated reporting with the 1994 reporting year, that site's data was included in the DOE total releases and transfers to be compared against the 1993 baseline. Likewise, the baseline remained unchanged if a site, which reported in the 1993 baseline, ceased to report in 1994, or thereafter.

The 50% reduction goal specified in Executive Order 12856 applies only to the total releases of toxic chemicals to the environment and off-site transfers of toxic chemicals for treatment. It does not include off-site transfers for recycling and energy recovery. Thus, only the releases and off-site transfers reported under Sections 8.1 and 8.7 of the annual Form R report were used in measuring progress toward the 1999 reduction goal. Section 8.1 (quantity released) of the Form R report is the amount of toxic chemicals directly discharged to air, water, land, and injected underground at the site. Section 8.1 also includes amounts sent off-site for disposal. Section 8.7 (quantity treated off-site) of the Form R report is the amount of toxic chemicals sent off-site to be treated, including quantities sent to publicly owned treatment works.

In 1996, site revisions, withdrawals, and validation with EPA's Toxic Release Inventory System (TRIS) resulted in a small adjustment to the baseline. The previously reported baseline of 4,677,836 pounds was amended to 4,677,346 pounds.

To reach the 50% reduction goal by December 31, 1999, DOE had to achieve an overall 2,338,673 pound reduction in the reported releases of toxic chemicals to the environment and transfers of toxic chemicals for treatment and disposal. Figure 1 shows the total DOE TRI releases and transfers for the 1994 through 1999 reporting years compared to the 1993 baseline year.



**Figure 1. Total DOE Releases and Transfers (in pounds)**

**B. 1999 TRI Reporting**

For 1999, 15 DOE sites filed a total of 63 TRI Form Rs for 24 listed TRI chemicals. Five sites submitted a total of six Form A's. The total number of Form Rs submitted was 57 by 14 DOE sites. One location, the Paducah site, which met reporting requirements in 1998, did not meet reporting thresholds for any TRI chemicals in 1999. Three sites, Bryan Mound SPR, Los Alamos National Laboratory and the Mound Plant did not meet reporting thresholds for any TRI chemicals in 1998, but did in 1999. The Naval Petroleum Reserve #1 was sold in early 1998 and therefore no longer reports as a DOE facility. Tables 1 and 2 show the 1999 total of releases and transfers for treatment and disposal (Form R sections 8.1 plus 8.7) as compared to the 1993 baseline by chemical and by site.

Several sites submitted new, revised or withdrew Form Rs for prior reporting years. New Form Rs for 1995, 1996 and 1997 were submitted from Oak Ridge National Laboratory, Oak Ridge Y-12 Plant and East Tennessee Technology Park. As a result of new guidance from EPA regarding the coincidental manufacture of nitrate compounds during the treatment of wastewater, each of these facilities submitted new Form R's for the nitrate compounds category totaling 72,030 pounds in 1995, 93,875 pounds in 1996, and 87,327 pounds in 1997. In addition, for 1997, East Tennessee Technology Park, Oak Ridge Y-12 Plant, and the Oak Ridge National Laboratory withdrew previously submitted Form R's for copper compounds and manganese compounds. For 1998 the Oak Ridge Y-12

Plant submitted a revised Form R for nitrate compounds totaling 7,030 pounds. Also for 1998, NPR#3 submitted revisions to their previous Form R submissions for xylene mixed isomers, toluene, ethylbenzene and benzene. These changes are all reflected in the annual totals presented in Figure 1.

**Table 1: Comparison of 1993 & 1999 DOE TRI Reporting by Toxic Chemical (in pounds)**

TRI Chemical	1993 EPCRA Form R (Sec. 8.1+8.7)	1999 EPCRA Form R (Sec. 8.1+8.7)	1993-1999 % Change
Methanol	3,665,979	31,086	(99%)
Sulfuric Acid	311,903	82,519	(100%)
Dichlorotetrafluoroethane	170,000	--	(100%)
Hydrochloric Acid	154,745	191,214	24%
Nitric Acid	126,268	58,480	(54%)
Ammonia	113,350	--	(100%)
1,1,1- Trichloroethane	20,405	--	(100%)
Chlorine	18,003	--	(100%)
Xylene (mixed isomers)	16,644	17,520	5%
Trichloroethylene	15,900	--	(100%)
Toluene	12,408	13,869	12%
Methyl Ethyl Ketone	9,800	--	(100%)
Dichloromethane	9,289	--	(100%)
Methyl Isobutyl Ketone	9,004	--	(100%)
Lead	8,666	125,841	1352%
Hydrogen Fluoride	3,519	--	(100%)
Ethylene Glycol	2,808	6,458	130%
Acetone	1,930	--	(100%)
Trichlorofluoromethane	1,800	0	(100%)
Methyl Tert-Butyl Ether	1,674	--	(100%)
Manganese Compounds	1,300	--	(100%)
1,2,4- Trimethylbenzene	573	821	44%
Zinc Compounds	550	200,029	36,269%
Ethylbenzene	400	11,950	2,888%
Benzene	378	12,742	3271%
Nitrate Compounds	--	99,275	N/A
N-Hexane	--	47,275	N/A
Copper	--	1,847	N/A
Asbestos (Friable)	--	1,000	N/A
Mercury	--	876	N/A
Other TRI Chemicals	600	41,612	83,124%
<b>TOTAL</b>	<b>4,677,346</b>	<b>944,414</b>	<b>(80%)</b>

For 1999, the DOE complex-wide total of releases and transfers for treatment was 944,414 pounds. This was an increase of 377,370 pounds from 1998. Most of this increase can be attributed to a few sites and chemicals. For 1999, the Savannah River Site reported increased releases over 1998 of approximately 200,000 pounds for zinc compounds and 32,000 pounds for chromium compounds. The Bryan Mound SPR site did not report in 1998, but reported for n-hexane in the amount of 46,835 pounds in 1999. Idaho National Engineering and Environmental Laboratory reported 21,158 pounds of lead releases in 1998 and 101,000 pounds in 1999, representing an increase of about



80,000 pounds. In addition, the Oak Ridge Y-12 and Oak Ridge National Laboratory reported about 82,000 additional pounds of sulfuric acid releases in 1999 versus 1998, and an additional 43,000 pounds of hydrochloric acid releases between the two years. Counteracting these increases, the Savannah River Site reported a decrease of 85,000 pounds of nitrate compounds released between 1998 and 1999.

The 1999 total releases and transfers represent an 80% (about 3.7 million pounds) reduction from the 1993 baseline. Thus, DOE exceeded the 50% reduction goal of E.O. 12856. However, a large part of this reduction was not achieved through source reduction methods. Approximately 3.3 million pounds of the reduction in methanol releases is due to the NPR-1's implementation, in 1994, of better measurement practices for underground injection of methanol. Deletions of acetone and non-aerosol forms of sulfuric acid, and non-aerosol forms of hydrochloric acid from the TRI list of chemicals are largely the reason for reported reductions in these chemicals. If the NPR-1 methanol reports and all sulfuric acid, acetone, and hydrochloric acid reports are excluded, DOE has increased its reported releases and transfers complex-wide from 594,864 pounds in 1993 to 670,681 pounds in 1999, an increase of 13%.

**Table 2: Comparison of 1993 & 1999 DOE TRI Reporting by Site (in pounds)**

DOE Site	1993 EPCRA Form R (Sec. 8.1+8.7)	1999 EPCRA Form R (Sec. 8.1+8.7)	1993-1999 % Change
Naval Petroleum Reserve #1	3,782,920	--	(100%)
Idaho National Engr. & Environmental Lab	369,454	159,180	(57%)
Portsmouth Gas. Diff. Plant	171,918	4	(100%)
Energy Tech. Engr. Center	101,249	--	(100%)
Savannah River Site	79,372	276,446	248%
Oak Ridge Y-12 Plant	74,201	233,609	215%
Pinellas Plant	45,824	--	(100%)
Stanford Linear Accelerator	12,300	--	(100%)
Oak Ridge National Lab	7,353	158,344	2053%
East Tennessee Technology Park	6,388	4,293	33%
Brookhaven National Lab	5,935	--	(100%)
Los Alamos National Lab	5,570	106	(98%)
Argonne National Lab-East	4,007	--	(100%)
Rocky Flats Plant	3,555	--	(100%)
Fermi National Accelerator	3,157	2,379	(25%)
Kansas City Plant	1,400	335	(77%)
Mound Plant	389	5,900	1,417%
Naval Petroleum Reserve #3	95	53,330	56,036%
Bryan Mound SPR Site	--	47,777	N/A
West Valley Demonstration Proj.	--	11	N/A
Lawrence Livermore National Lab	--	2,700	N/A
Other DOE Sites	2,648	--	(100%)
<b>TOTAL</b>	<b>4,677,346</b>	<b>944,414</b>	<b>(80%)</b>

## C. EPCRA Reporting

E.O. 12856 directs all federal facilities to comply with the EPCRA reporting requirements described below, regardless of Standard Industrial Classification (SIC) code. EPCRA contains four major provisions: planning for chemical emergencies (Sections 302-303); emergency notification of chemical accidents and releases (Section 304); reporting of hazardous chemical inventories (Sections 311 and 312); and toxic chemical release inventory reporting (Section 313).

These provisions require DOE sites 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.

While both E.O. 12856 and DOE policy direct all "covered" facilities to comply with these EPCRA provisions prior to 1995, quantitative information was only available for the "covered"

DOE facilities which reported under EPCRA section 313. Beginning with the DOE required 1995 Annual Site Environmental Reports (ASERs), sites provided more complete information on EPCRA compliance. The information presented in Table 3 and summarized below was collected as part of an internal validation of the 1998 DOE TRI data reported by the 14 DOE sites and some additional information obtained from the 1998 ASERs.

**EPCRA 302-303.** E.O. 12856 directed that federal facilities submit their emergency planning notification to the cognizant SERC and LEPC by March 3, 1994 (EPCRA 302). Additionally, facilities were directed to submit information for the committees to prepare Comprehensive Emergency Response Plans by August 3, 1994 (EPCRA 303). For 1998, 24 DOE sites either submitted the appropriate new or revised information or were not required to submit information because they fulfilled this requirement in a prior year.

**EPCRA 304.** In January 1994, federal facilities were directed to submit emergency notifications of releases of Extremely Hazardous Substances (EHSs) (EPCRA 304). In 1998, 7 DOE sites submitted notifications for EHS releases while 15 sites did not have releases requiring such a notification.

**EPCRA 311-312.** By August 3, 1994, E.O. 12856 directed facilities to submit Material Safety Data Sheets (MSDSs) as required by EPCRA Section 311. Also, by March 1, 1995, federal facilities were to submit an emergency and hazardous chemical inventory form (Tier I/II report) under EPCRA 312. In 1998, 26 DOE sites complied with these requirements, while one reported that it was not required to submit the form.

**EPCRA 313.** By July 1, 1995, federal facilities meeting reporting requirements were to submit TRI Form R and/or Form A reports. In 1998, 14 DOE sites reported while 16 sites were not required to report. Reporting Year 1999 TRI reports were submitted in July 2000 and will be reported in next year's annual report.

**Table 3: Summary of 1993-1998 EPCRA Reporting by DOE Facilities**

	<b>YES</b>	<b>NO</b>	<b>Not Required</b>
<b>1993</b>			
EPCRA 302-303: Planning Notification	14 Sites	0 Sites	12 Sites
EPCRA 304: EHS Release Notification	11 Sites	1 Site	14 Sites
EPCRA 311-312: MSDS/Chemical Inventory	24 Sites	0 Sites	2 Sites
EPCRA 313: TRI Reporting	23 Sites	0 Sites	3 Sites
<b>1994</b>			
EPCRA 302-303: Planning Notification	15 Sites	0 Sites	11 Sites
EPCRA 304: EHS Release Notification	12 Sites	0 Sites	14 Sites
EPCRA 311-312: MSDS/Chemical Inventory	25 Sites	0 Sites	1 Sites
EPCRA 313: TRI Reporting	22 Sites	0 Sites	4 Sites
<b>1995</b>			
EPCRA 302-303: Planning Notification	16 Sites	0 Sites	18 Sites
EPCRA 304: EHS Release Notification	8 Sites	1 Site	27 Sites
EPCRA 311-312: MSDS/Chemical Inventory	34 Sites	0 Sites	6 Sites
EPCRA 313: TRI Reporting	18 Sites	0 Sites	23 Sites
<b>1996</b>			
EPCRA 302-303: Planning Notification	10 Sites	0 Sites	19 Sites
EPCRA 304: EHS Release Notification	7 Sites	1 Site	22 Sites
EPCRA 311-312: MSDS/Chemical Inventory	28 Sites	0 Sites	6 Sites
EPCRA 313: TRI Reporting	19 Sites	0 Sites	16 Sites
<b>1997</b>			
EPCRA 302-303: Planning Notification	16 Sites	0 Sites	18 Sites
EPCRA 304: EHS Release Notification	7 Sites	1 Site	25 Sites
EPCRA 311-312: MSDS/Chemical Inventory	30 Sites	0 Sites	3 Sites
EPCRA 313: TRI Reporting	17 Sites	0 Sites	22 Sites
<b>1998</b>			
EPCRA 302-303: Planning Notification	16 Sites	0 Sites	6 Sites
EPCRA 304: EHS Release Notification	7 Sites	0 Sites	15 Sites
EPCRA 311-312: MSDS/Chemical Inventory	26 sites	0 Sites	1 Site
EPCRA 313: TRI Reporting	15 sites	1 Site	16 Sites

Note: While 1999 TRI data is available, other EPCRA data is not.

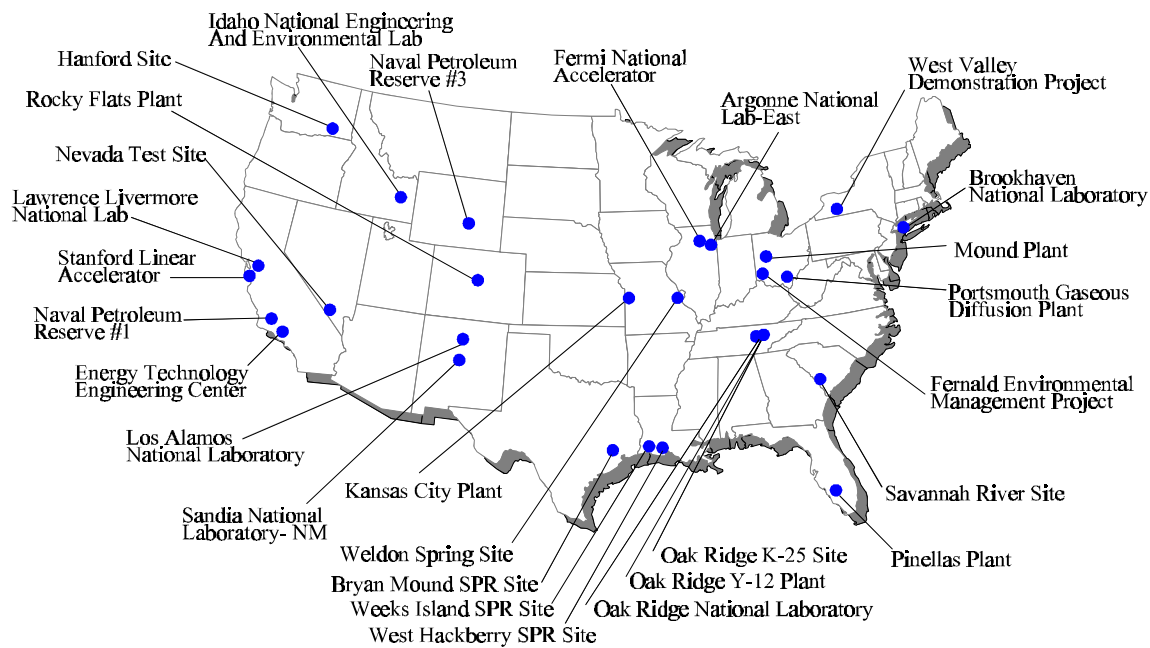
## D. Other P2 Initiatives

### Pollution Prevention Plans

Under Section 3-302(d) of E.O. 12856, every "covered facility" was required to prepare a facility-wide pollution prevention plan no later than the close of 1995. This plan describes how the site intends to help the Department meet the complex-wide 50% reduction goal by December 1999.

Prior to the issuance of the E.O., DOE guidance issued by the Deputy Secretary of Energy established that all DOE waste-generating sites were to prepare a waste minimization program plan and a pollution prevention awareness program plan in accordance with DOE Order 5400.1, *General Environmental Protection Program*.

Figure 3. DOE Sites which reported under EPCRA Section 313 (TRI) for one or more of the 1993-1999 reporting years.



To date, all of the sites identified in Figure 3 that report under EPCRA Section 313 have prepared pollution prevention plans. Additionally, since DOE Order 5400.1 directs all DOE waste-generating facilities to prepare pollution prevention plans, numerous other DOE sites not reporting under EPCRA Section 313 also have such plans in place. Site plans were last updated in 1997. In a February 17, 1997, memorandum, the Under Secretary encouraged sites to use EPA's Code of Environmental Management Principles (CEMP), when developing their pollution prevention plans, as a means of accomplishing the Department's pollution prevention objectives. Copies of the CEMP Implementation Guide were distributed to assist the sites.

DOE sites must update these plans every three years. Many DOE sites have the text portions of their plans available to the public through their Internet Homepage.

## **Examples of Pollution Prevention Projects**

***Non-Lead Ammunition*** – At the Oak Ridge Central Training Facility “Tire House”, a live-fire shoot house, 10,000 rounds of 9mm ammunition are expended annually. This project converted the range to non-lead ammunition for the demonstration of both ES&H, and cost savings for the new non-lead bullet technology. A one-time investment of \$32,000 avoids annual expenditures of \$45,000. The project also eliminated employee exposure to lead during firing practice, and frangible bullets reduce risk associated with ricochet.

***High Explosive Formulation Solvent Recovery*** – High explosive formulation requires using several hazardous chemicals generating significant volumes of hazardous waste. Over 40% of the Pantex Plant’s hazardous waste generation was traced to the high explosive formulation process. Investigation showed that simple distillation of solvent water mixtures would return over 90% of the solvent for reuse in these processes. The wastewater remaining after distillation is substituted for tap water in water filtration air cleaners, making the process zero discharge.

***Recycling of Ozone Depleting Substances*** – The Kansas City Plant conducted a project to reclaim and recycle a class of ozone depleting substances, known as chlorofluorocarbons (CFCs), from a chemical mixture that was no longer needed. A process was developed to recover the CFCs from the chemical mixture, resulting in the recovery of over 30,700 pounds of CFCs.

***Pollution Prevention Information Portal*** – Pollution Prevention information is scattered in many forms (web sites, newsletters, and other paper and electronic documentation), making it very difficult for DOE and other Federal agencies to find the most up-to-date information on pollution prevention. Through a collaborative effort between the EH and SC, up-to-date pollution prevention information is now available on the ES&H Information Portal. The ES&H Information Portal gathers the most dynamic of the links from EPIC, the Department of Energy’s Pollution Prevention Information Clearinghouse, as well as provides access to the award-winning Materials Exchange Broker. This one-stop Information Portal provides users with daily updates on critical P2 information that can be used by the Field Operations Offices and contractors to implement a more cost effective pollution prevention Program.