Executive Order 13148

Greening the Government Through Leadership in Environmental Management

Annual Progress Report: 2002

U.S. Department of Energy
Office of Environment, Safety and Health
March 2003

Department of Energy
Washington, DC 20585
March 26, 2003

Mr. John Peter Suarez
Assistant Administrator
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

The Department of Energy (DOE) is pleased to transmit the enclosed annual report in fulfillment of the reporting requirements under Executive Order (EO) 13148, *Greening the Government Through Leadership in Environmental Management*. The report was prepared in accordance with the guidance provided in your letter to Agency Environmental Executives, dated February 25, 2003.

The report provides DOE's performance for 2002 in implementing the EO 13148 environmental leadership requirements. Specifically, it addresses the progress made in 2002 to establish environmental management systems at DOE sites and the Department's progress in meeting pollution prevention goals for reductions in waste generation and environmental releases.

If you or your staff have questions or need more information, please contact Jane Powers or Don Lentzen of my staff at (202) 586-7301 and (202) 586-7428, respectively.

Sincerely,

Beverly A Cook

Beverly A. Cook
Assistant Secretary
Environment, Safety and Health

Enclosure

cc: D. Kling, Director, Federal Facilities Enforcement Office, EPA

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I. INTRODUCTION

A. Background

Executive Order (EO) 13148, *Greening the Government Through Leadership in Environmental Management,* was issued to ensure that Federal agencies integrate environmental accountability into daily decision making and planning in all their activities. The EO, issued in 2000, complemented and reinforced already existing pollution prevention goals and environmental objectives that the Department of Energy (DOE or Department) developed in 1999 and the Department's Agency Environmental Executive (AEE) reiterated in 2002 (see Appendix A).

EO 13148 defines pollution prevention as source reduction and "other practices that reduce or eliminate the creation of pollutants through: (a) increased efficiency in the use of raw materials, energy, water, or other resources; or (b) protection of natural resources by conservation." Source reduction pertains to any practice which reduces the amount of hazardous substances, pollutants, or contaminants entering waste streams or the environment prior to recycling, treatment, or disposal, and the hazards to public health and the environment associated with them. The Department has expanded the EO definition of pollution prevention to include recycling. This expanded definition is consistent with that used in 1996 International Organization for Standardization (ISO) Document 14001, *Environmental Management Systems – Specification with Guidance for Use,* and by the Council on Environmental Quality.

Executive Order 13148 Goals

Federal agencies shall:
- develop and implement environmental management systems;
- establish and implement environmental audit programs;
- prevent or reduce pollution at the source whenever feasible and cost-effective;
- reduce Toxic Release Inventory (TRI) releases and off-site treatment and disposal of toxic chemicals;
- reduce use of selected chemicals, hazardous substances, and pollutants or reduce generation of hazardous and radioactive waste;
- phase out procurement of Class I ozone-depleting substances; and
- implement cost-effective, environmentally sound landscaping practices.

In furtherance of the EO requirement that agencies implement environmental management systems (EMS), the Department developed DOE Order 450.1, *Environmental Protection Program*, that requires all DOE elements to implement an EMS into their existing, DOE-required Integrated Safety Management Systems (ISMS). The Order was issued by DOE's Deputy Secretary on January 15, 2003 (see Appendix B).

B. Report Structure

This is the third annual progress report to the U.S. Environmental Protection Agency (EPA) and the Federal Environmental Executive as required by section 307 of the EO. It covers Departmental activities for calendar year 2002 unless otherwise noted.

Sections II. A and B describe the Department's interagency workgroup activities related to the EO and its EO implementation strategy. They are followed with information on EMS implementation. The remaining sections describe the outcomes of DOE's efforts to reduce pollution in compliance with the EO's and its own waste reduction goals. The appendices contain copies of the Department's pollution prevention goals; DOE Order 450.1, *Environmental Protection Program*; and the data used to generate the findings discussed in the body of the report.

This report does not include information on the Department's affirmative procurement program developed in response to EO 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition.* That information is available in the report *U.S. Department of Energy Resource Conservation and Recovery Act (RCRA)/Executive Order 13101 Agency Summary Report for Fiscal Year 2002,* available at http://tis-nt.eh.doe.gov/oepa/. In the future, DOE plans to merge its EO 13148 and EO 13101 reports.

II. IMPLEMENTATION PROGRESS

A. Interagency Workgroup Activities

As in the previous year, representatives from DOE's Offices of Environment, Safety and Health (EH) and Science (SC) participated in meetings and activities of the EO 13148 Interagency Work Group and its subgroups. DOE involvement included EH and SC participation in drafting Office of Management and Budget (OMB) guidance for budget examiners, reviewing draft environmentally beneficial landscaping guidance, developing EMS guidance as part of the EMS subgroup, and participating in EPA's TRI (Toxic Release Inventory) exemptions pilot evaluation study. EH and SC also served as information conduits between the Work Group and DOE sites for news about the availability of tools and documents to advance the goals of EO 13148 and to gather data on site use of EO priority chemicals and EPA's Waste Minimization Priority Chemicals program.[1]

[1] The Waste Minimization Priority Chemicals program is a voluntary activity in which EPA works with industrial organizations, government agencies, and communities to reduce wastes, especially those containing priority chemicals such as dioxins/furans.

B. Implementation Strategy and Progress on Revisions to Agency Directives, Policies and Documents

Directives

DOE implemented the requirements of EO 13148 in 2002 through DOE Notice 450.4, *Assignment of Responsibilities for Executive Order 13148, Greening the Government Through Leadership in Environmental Management.* Under DOE's Directives System, notices are limited-life requirements documents which need to be replaced by orders to be made permanent. The Notice remained in effect until DOE Order 450.1, *Environmental Protection Program,* was issued on January 15, 2003. The Order calls for integration of EMSs with the overall environment, safety, and health management framework established in 1996 by DOE Policy 450.4, *Safety Management System Policy.* That policy requires DOE sites to establish integrated safety management systems (ISMS) to ensure the protection of workers, the public, and the environment.

Acquisition

DOE's Office of Procurement and Assistance Policy issued Acquisition Letter 2002-05, *Greening the Government Requirements in Contracting*, in July 2002. The Letter establishes Green Acquisition Advocates to serve as procurement experts within each DOE Contracting Activity (see Appendix C). The Office also developed a mandatory, online affirmative procurement training program for all purchase card users and approving officials, and provided comments to the Federal Acquisition Regulation Environment Committee on EO 13148 implementation aspects. In addition, the Office issued several "Headquarters Policy Flashes" to familiarize all procurement personnel with requirements related to the EOs 13148 and 13101.

Furthermore, DOE Order 450.1 established a requirement for DOE sites to implement "centralized procurement and distribution programs (e.g., pharmacy) for purchasing, tracking, distributing, and managing materials with toxic or hazardous content," where appropriate.

Training

Training opportunities for EMS implementation consist of workshops, presentations, and guidance documents that are described in later sections of this report. DOE Order 450.1 and DOE Policy 450.4 are publicly available through the Department's Directives website at http://www.directives.doe.gov/ .

The 19th and 20th Biannual DOE National Nuclear Security Administration (NNSA) Pollution Prevention Hands-on Technology Training Workshops were held January and November 2002, respectively. The Workshops, designed for DOE and contractor personnel actively involved in pollution prevention activities at DOE sites, featured a mix of large group presentations and site visits to local industries who are leaders in pollution prevention.

In addition, NNSA published three issues of ESAVE, Environmental Stewardship and Value Engineering newsletter. ESAVE reports information presented at the training workshops and examples of DOE activities instrumental in greening the environment. The past ESAVE issues are available at http://epic.er.doe.gov/epic/docs/ESAVE%20index.htm .

The Offices of EH, Environmental Management, Management, Budget and Evaluation, and Energy Efficiency and Renewable Energy sponsored additional training activities, including a Greening the Government program presented to personnel at DOE Headquarters and 14 DOE sites and operations offices, as well as the aforementioned training in affirmative procurement for all purchase card users and approving officials. An example of site training is the one-day Leadership in Energy and Environmental Design Green Building Rating System workshop hosted by Lawrence Livermore National Laboratory and the Oakland Operations Office. In addition, three sites participated in an EMS/pollution prevention training program through their involvement in the Federal Network for Sustainability, a voluntary partnership that promotes environmental stewardship.

Other training vehicles include the Environmental Management Systems Primer for Federal Facilities developed jointly with EPA which is available to the DOE complex at http://www.eh.doe.gov/oepa and clicking the "policy and guidance" button. Additional instructional materials are described in the following sections.

C. EMS Implementation

Policy Development

DOE Order 450.1 requires that all DOE elements ensure that site ISMSs include an EMS that:

1. Provides for the systematic planning, integrated execution, and evaluation of programs for:
   a. public health and environmental protection,
   b. pollution prevention, and
   c. compliance with applicable environmental protection requirements;

2. Includes policies, procedures, and training to identify activities with significant environmental impacts, to manage, control, and mitigate the impacts of these activities, and to assess performance and implement corrective actions where needed; and

3. Includes measurable environmental goals, objectives, and targets that are reviewed annually and updated when appropriate.

Identification of "Appropriate Facilities" for EMS Implementation

DOE Order 450.1 requires EMSs to be integrated with ISMS such that all DOE sites required to implement an ISMS are considered "appropriate facilities" for EMS implementation. In addition, some DOE sites exempt from ISMS (e.g., Power Administrations) are also required to implement an EMS.

DOE expects to implement EMSs at approximately 45 sites. Within DOE, the term "site" is used to identify contiguous geographic areas under Departmental ownership. DOE's sites often have numerous facilities and normally a site is managed under a single management system. The Department's November 2001 EMS Self-Assessment reported that 37 sites adopted or are in the process of adopting an EMS. Seven DOE sites have EMSs that have been registered to the ISO 14001 standard. Five sites are members of EPA's National Environmental Performance Track (NEPT) program.[2] (See Appendix D)

Identification of Resources for EMS Implementation

In implementing EMS, DOE is pursuing the same successful approach it took in implementing its ISMS since 1996 whereby all environment, safety and health (ES&H) activities are considered a necessary and important aspect of line management program responsibilities, and are funded as part of the cost of doing business. Resources for implementing ISMSs and EMSs are drawn from line management program budgets rather than a specific or separate ES&H budget line item. To that end, the DOE Unified Budget Call Guidance prepared by the Department's Chief Financial Officer instructs line management to ensure that their program budget submissions include sufficient funding to support ES&H activities.

Guidance for Implementing EMS

Over the past five years, the Department has developed and distributed EMS guidance for DOE and contractor personnel. This guidance includes:

Environmental Management Systems Primer for Federal Facilities (DOE/EH-0573) (December 1997) (developed jointly with EPA);

Environmental Management Systems: Frequently Asked Questions (October 1996);

Environmental Management Systems: Getting Started (March 1998);

[2] The National Environmental Performance Track (NEPT) recognizes sites with EMSs, a record of sustained compliance with environmental regulations, and a commitment to continuous improvement.

Environmental Management Systems: National Technology Transfer and Advancement Act of 1995 (NTTAA) (November 1998);

Environmental Management Systems: Code of Environmental Management Principles (CEMP) December 1997); and

Environmental Management Systems: Institutionalizing Pollution Prevention March 1998).

These guidance documents are available at http://www.eh.doe.gov/oepa/ and clicking the "policy and guidance" button.

In addition to this guidance, the Office of Environmental Policy and Guidance serves as an EMS "clearinghouse" for Headquarters and field-level EMS inquiries.

DOE has outlined plans to develop additional guidance to implement DOE Order 450.1 starting in 2003. It will also be issuing guidance consistent with the EMS Self-Declaration Protocol (issued by the Office of the Federal Environmental Executive in December 2002) to establish consistent criteria and processes for DOE sites which do not seek third-party registration and choose instead to self-declare their EMS by December 2005.

EMS Training for Senior-Level Managers

In February 2003 the Department conducted EMS training as part of a DOE Order 450.1 workshop to familiarize Department managers and operational personnel with the elements that need to be considered in an EMS. This workshop was broadcast from DOE Headquarters to DOE sites across the country and included presenters from the Office of the Federal Environmental Executive and other civilian and defense Federal agencies.

Previously, DOE conducted EMS training courses at Headquarters and at several field sites in 1996-1997. DOE issued an Environmental Management Systems Primer for Federal Facilities (developed jointly with EPA) in December 1997 to assist Departmental personnel in implementing EMSs. DOE conducted extensive training workshops in integrated safety management for DOE and contractor personnel at Headquarters and in the field from 1998 to the present. These training workshops brought together line managers, line workers, and environment, safety, and health support staff from DOE sites, and included sessions on environmental management systems and integrating EMS into ISMS.

Program to Conduct Site Environmental Compliance Audits

Since the mid-1980s, the Department has had a corporate auditing organization whose responsibility includes assessments of sites' ES&H programs. The DOE Office of Independent

Oversight and Performance Assurance, which reports to the Secretary, conducts independent field audits at DOE sites. These audits evaluate the site's ES&H performance, including the adequacy of its ISMS. Recent ISMS Inspections at Argonne National Laboratory-East, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory addressed the environmental compliance component of the management systems at these sites.

This office conducts its independent field inspections using formal procedures and audit plans which it developed. The Department has a formal corrective action process for sites and programs to address findings from these inspections.

In addition to Office of Independent Oversight inspections, DOE Policy 450.5, *Line Environment, Safety and Health Oversight*, establishes a framework for the conduct of management system self-assessments at DOE sites. The new DOE Order 450.1 requires DOE line management to ensure EMSs are effectively implemented. This involves both self-assessments by the contractor responsible for site operations (including environmental compliance) and DOE review of the contractor's management system and its site self-assessment program. DOE sites have corrective action procedures to address findings of management system reviews and self-assessments.

D. DOE and White House Awards Programs

Agency-Wide Awards Program

The DOE pollution prevention awards program is in its ninth year. It recognizes outstanding performance by sites and Departmental operations by granting awards in thirteen categories related to waste reduction and reuse, recycling, and affirmative procurement of materials with recycled content. Seventy-two nominations were submitted with thirteen awards granted in 2002 for pollution prevention activities conducted in 2001. Additional information on these award-winning pollution prevention activities and all nominations is available at http://66.95.12.36/nomination_list.jsp. The thirteen award-winning activities are described below:

> Education and Outreach/Information Sharing: *Creating Jobs and Awareness Through a Native American Recycling Center*
> Los Alamos National Laboratory and the Nambe Pueblo, in partnership with Johnson Controls Northern New Mexico, reduced waste and pollution, built community awareness, and created viable economic opportunities in the region through launching a recycling facility that provides jobs, services recycling needs of surrounding communities, redirects landfill waste and construction debris to alternative uses, and promotes pollution prevention education and outreach.

Affirmative Procurement: *Sandia National Laboratories Dedicated Contracts*
Sandia National Laboratories/New Mexico awarded three dedicated contracts that include specifications and performance criteria for environmentally preferable purchasing. The contracts resulted in $1 million in purchases of recycled content products.

Sowing the Seed for Change: *Institutionalizing Sustainable Design at Sandia National Laboratory/New Mexico*
Sandia National Laboratory/New Mexico implemented a systematic program for review and revision of its Standard Construction Specifications and Design Manual to ensure that sustainable design principles are fully integrated into all aspects of design and construction projects.

Sowing the Seed for Change: *Moving Toward a Pollution-Free Lunch*
Food Services of BWXT supported the Y-12-wide recycling program at the Oak Ridge Reservation by implementing environmental awareness training, green service concepts, recycling cooking grease, replacing plastic utensils with reusable flatware, using biodegradable to-go containers, returning vendor pallets, installing on-demand hot water units installation, and switching to environmentally-friendly detergents and cleaners.

Return-On-Investment: *Closing the Circle on One Problematic Nitrate Waste Stream at Los Alamos National Laboratory (LANL)*
The Actinide Process Chemistry Group at LANL developed an innovative approach to one of the most problematic waste streams in the DOE complex: plutonium-contaminated nitric acid. The Nitric Acid Recovery System (NARS) is a distillation process that recycles acid used for plutonium dissolution and recovery. NARS virtually eliminates this waste stream thereby avoiding discharges of nitrates to the environment. NARS also recycles 100% of residual radioactivity back into the system, generating activity-free product water. The return-on-investment was 128% on a $2 million capital cost.

Return-on-Investment: *Site Waste Manager Solves Closure Site Problem Using Multiple EM (Environmental Management) Resources*
The Rocky Flats TRU (transuranic) Problem Waste Manager, with support from the DOE Office of Environmental Management, the Ohio Field Office and the Mound site conducted a successful treatability test and implemented a polymer oil solidification process to treat TRU oils. Projected cost savings are over $750,000 creating a return-on-investment of greater than 600%.

Environmental Restoration: *Argonne National Laboratory-East Environmental Remediation Project*
Argonne National Laboratory-East (ANL-E) eliminated the excavation of over 20,000 cubic yards of contaminated soil and debris and significantly reduced the level of annual remedial protection and maintenance by using innovative technologies and working closely with regulatory agencies. In addition, ANL-E developed a beneficial re-use for approximately 100,000 cubic yards of lime sludge previously destined for landfill disposal. As a whole, ANL-E's environmental remediation activities resulted in cost savings in excess of $7.7 million.

Waste/Pollution Prevention: *Strategic Petroleum Reserve (SPR) Paint Waste and Paint-related Waste Minimization*
The Strategic Petroleum Reserve (SPR) identified paint waste and paint-related wastes as primary contributors to hazardous waste generation totals. A Continuous Quality Improvement team of maintenance, property management, and environmental personnel from all SPR sites combined paint product substitution, process modification, and waste minimization procedures to reduce SPR paint waste and paint-related wastes.

Excellence in Management: *Excellence in Management – Dr. Vincent Adams*
Under the management of Dr. Vincent Adams, the National Center of Excellence for Metals Recycle, at Oak Ridge Operations, recycled over 54,000 metric tons of materials from 26 DOE sites resulting in a disposal cost avoidance of over $83 million.

Recycling: *DOE's Clearinghouse for Surplus Lead and Lead Products*
The National Center of Excellence for Metals Recycle (NMR) initiated an innovative program for recycling radiologically impacted lead into valuable products. DOE achieved a savings exceeding $1.3 million by recycling over 240 tons of lead within the DOE complex. The NMR has plans in place to process over 700 tons of lead in 2002 that will result in an additional $3.5 million savings.

Environmental Preferability: *Pacific Northwest National Laboratory Greens its Custodial Products*
To expedite purchasing environmentally preferable custodial products, Pacific Northwest National Laboratory formed a team of subject matter experts, developed specifications for a Request for Proposal, evaluated the ingredients in the proposed products against 20 criteria, selected the most environmentally preferable products available, and signed agreements with two vendors to supply and use these "green" products.

Model Facility Demonstration/Complex-wide Achievement: *Savannah River Site High Level Waste Division Models P2 Excellence*
The Savannah River Site High-Level Waste Division (HLWD) exceeded the waste savings objective not only for its division, but also the waste reduction objective for the entire site for the last two years. In FY01, the HLWD initiated projects that reduced DOE's waste generation by 156,800 cubic feet per year resulting in a life-cycle cost avoidance of $53 million.

Environmental Management Systems (EO 13148): *Integrated Systems for Radiological Waste Minimization*
Using techniques demonstrated to be effective during low-risk pilots, the Savannah River Site integrated significant waste minimization strategies into daily operations to drive continuous improvement above compliance. Low-level waste generation has been reduced by 99% in select plutonium operations and by 85% in select high-level waste operations using integrated radiological control practices. Cost savings for FY01 from the cumulative documented activities total over $7.9 million.

White House Awards Program

Several of the White House Closing the Circle Awards for Federal employees and facilities making significant contributions in the areas of waste prevention, recycling, and affirmative procurement overlap with the DOE awards program categories. Thirty-four nominations for DOE awards were submitted to the Closing the Circle Awards program and four were selected for recognition in 2002 for pollution prevention activities conducted in 2001.

The four DOE Closing the Circle Award winners include three projects described above, Sandia National Laboratories Dedicated Contracts, Pacific Northwest National Laboratory Greens its Custodial Products, and Closing the Circle on One Problematic Nitrate Waste Stream at LANL. The fourth Closing the Circle Award winner was the Hanford Site Pollution Prevention Outreach and Education Program.

The Hanford project included local business pollution prevention opportunity assessments, participation in Earth Day, Safety Expos, and recycling efforts that provide a sound basis for the pollution prevention outreach program. Through cooperation among the site, community, and businesses the outreach program estimated savings of $3,000,000 while reaching 35,000 people in the local community.

E. Toxic Chemical Reduction Goals/Baselines and Achievements

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 is consistent with the EO 13148 TRI goals. Accordingly, DOE uses its own release reduction goals for the purposes of meeting the goals of Section 502(a) of EO 13148.

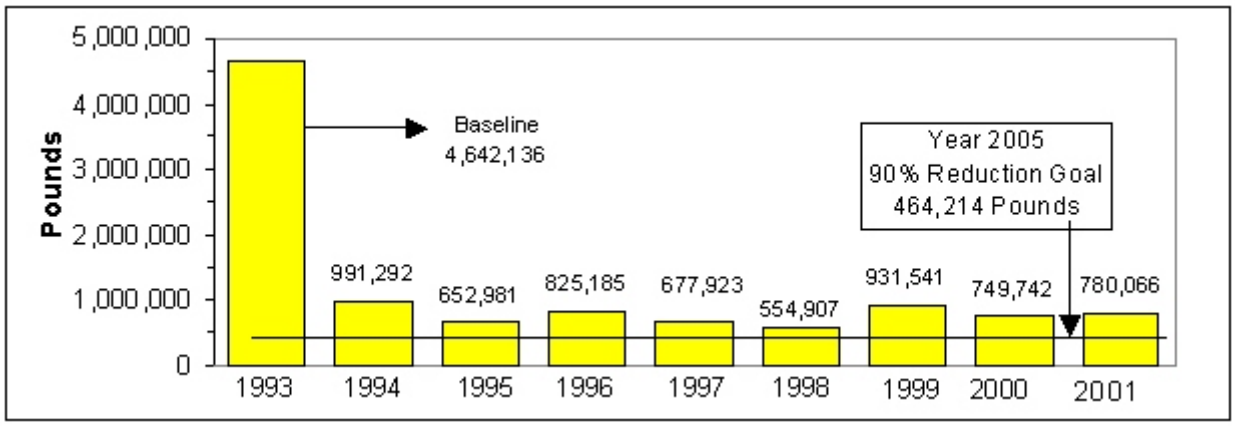


Figure 1. Total DOE TRI Releases (in pounds)

Figure 1 shows the total DOE TRI releases for reporting years 1994 through 2001 compared to the 1993 baseline year. Reporting year 2001 releases (reported in July 2002) are the most current TRI data available. Releases have been reduced by 83% since 1993. To reach the year 2005 goal of 464,214 pounds of reported toxic chemical releases, DOE must further reduce releases by 315,852 pounds (40%) from reporting year 2001 levels.

Tables 1 and 2 show the total TRI chemical releases for reporting year 2001, by chemical and site, as compared to the 1993 baseline. The level of reporting for year 2001 represents a decrease, relative to reporting year 2000, in the number of sites reporting (19 vs. 20), the number of chemicals and chemical compounds being reported (24 vs. 29), and the number of Form Rs submitted (49 vs.74) due to changes in reporting thresholds and/or changes in site activities. However, the total amount of reported TRI chemicals being released complex-wide increased by 30,324 pounds (4%) between year 2000 and 2001. The increase in releases reported for 2001 is largely the result of increased reporting requirements for lead and lead compounds resulting from regulatory requirements lowering the lead reporting threshold.

Table 1: Comparison of 1993 & 2001 DOE TRI Reporting by Toxic Chemical (pounds)

TRI Chemical	1993 EPCRA Form R (Sec. 8.1)	2001 EPCRA Form R (Sec. 8.1)	1993-2001 % Change
Methanol	3,665,169	22,209	(99%)
Sulfuric Acid	301,703	44,221	(85%)
Dichlorotetrafluoroethane	170,000	0	(100%)
Hydrochloric Acid	146,369	102,357	(30%)
Nitric Acid	125,978	11,006	(91%)
Ammonia	113,200	0	(100%)
1,1,1- Trichloroethane	17,800	0	(100%)
Chlorine	18,003	0	(100%)
Xylene (mixed isomers)	16,644	1,000	(94%)
Toluene	12,408	7,100	(43%)
Methyl Ethyl Ketone	9,800	0	(100%)
Methyl Isobutyl Ketone	9,000	0	(100%)
Lead	8,600	304,290	34,382%
Trichloroethylene	7,600	0	(100%)
Dichloromethane	6,319	0	(100%)
Hydrogen Fluoride	3,519	0	(100%)
Trichlorofluoromethane	1,800	0	(100%)
Acetone	1,700	0	(100%)
Methyl Tert-Butyl Ether	1,674	0	(100%)
Ethylene Glycol	1,599	0	(100%)
Manganese Compounds	1,300	1,800	38%
1,2,4- Trimethylbenzene	573	0	(100%)
Zinc Compounds	550	158,000	28,627%
Ethylbenzene	400	313	22%
Benzene	378	0	(100%)
Nitrate Compounds	N/A	83,001	N/A
Chromium Compounds	N/A	17,100	N/A
Freon 113	N/A	16,530	N/A
Other TRI Chemicals	50	11,139	22,178%
TOTAL	**4,642,136**	**780,066**	**(83%)**

Table 2: Comparison of 1993 & 2001 DOE TRI Reporting by Site (pounds)

DOE Site	1993 EPCRA Form R (Sec. 8.1)	2001 EPCRA Form R (Sec. 8.1)	1993-2001 % Change
Naval Petroleum Reserve #1	3,782,920	0	(100%)
Idaho National Engineering Lab	369,000	65,865	(82%)
Portsmouth Gas. Diff. Plant	171,918	246	(100%)
Energy Tech. Engr. Center	101,200	0	(100%)
Savannah River Site	79,155	246,490	211%
Y-12 National Security Complex	74,201	200,004	170%
Pinellas Plant	22,324	0	(100%)
Stanford Linear Accelerator	8,300	26	(100%)
Oak Ridge National Lab	7,353	45,037	512%
East Tennessee Technology Park	6,388	9,027	41%
Brookhaven National Lab	4,600	31,288	580%
Los Alamos National Lab	5,570	11,319	103%
Rocky Flats Plant	3,555	0	(100%)
Fermi Lab	1,872	3,649	95%
Kansas City Plant	1,400	310	(78%)
Naval Petroleum Reserve #3	95	0	(100%)
Mound Plant	19	0	(100%)
Argonne National Lab-East	7	141,230	N/A
Other DOE Sites	2,259	25,575	1,032%
TOTAL	**4,642,136**	**780,066**	**(83%)**

The top five TRI chemicals in terms of pounds released (lead and lead compounds, zinc compounds, hydrochloric acid, nitrate compounds, and sulfuric acid) represented about 89% of the total reported releases. Lead and lead compounds were the single largest category with 15 out of the total 49 Form Rs submitted reporting a total of 304,290 pounds being released, which is about 39% of the total reported releases. In contrast, for reporting year 2000, 5 Form Rs for lead were submitted reporting a total of 10,986 pounds being released.

The increased reporting for lead is largely the result of two factors. First, at sites that had previously reported for lead, there was an increase in the amount being sent to land disposal. Second, there was more reporting due to the lowering of the reporting year 2001 thresholds for lead from 25,000 pounds for manufacture or process and 10,000 pounds for otherwise use to 100 pounds for manufacture, process or use. The lower reporting threshold was the result of lead being listed as a persistent, bioaccumulative and toxic (PBT) chemical starting in reporting year 2001 under the EPA rulemaking process. As a consequence, the lowering of the reporting threshold for lead to100 pounds resulted in eight new sites reporting lead releases of approximately 174,000 pounds that would not have been reported under the prior, higher reporting thresholds.

With the exception of lead, most of the large quantity chemical releases in reporting year 2000 decreased in year 2001. Hydochloric acid fell by 40%, sulfuric acid was down by 39%, methanol decreased by 62% and 79% less nitric acid was reported.

Recycling of TRI chemicals continued during reporting year 2001. Twelve sites reported a total of 1,459,527 pounds of TRI chemicals being recycled. Lead recycling was reported by eleven sites, for a total of 858,704 pounds. Lead represented approximately 59% of the total amount of materials recycled. Tables presented in Appendix E provide additional chemical and site specific TRI information for reporting year 2001.

EO 13148 encourages Federal facilities to use computerized software for the electronic submission of TRI reports. Information collected during the validation of reporting year 2001 data indicated that 16 out of 19 reporting sites used either the TRI-ME (Toxics Release Inventory – Made Easy) or Automated TRI Reporting Software (ATRS) reporting software.

EO 13148 directs all Federal facilities to comply with the EPCRA reporting requirements for planning for chemical emergencies (Section 302-303); emergency notification of chemical accidents and releases (Section 304); and reporting of hazardous chemical inventories (Section 311 and 312). These provisions require DOE sites to notify state emergency response commissions and local emergency planning committees 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. Based on information collected during the validation of reporting year 2001 TRI data, thirteen sites met the planning notification requirements and submitted reports, while seventeen sites were not required to report. One of thirty sites subject to release notification requirements had a release that required submission of a notification report. Twenty-seven sites met the requirements for and submitted reports on hazardous chemical inventories. Table 3 below provides a summary of DOE site EPCRA reporting for 2001.

Table 3: 2001 EPCRA Reporting by DOE Facilities

Report Type	Number of Sites Reporting	Number of Sites Not Reporting	Number of Sites Not Required to Report[3]
EPCRA 302-303: Planning Notification	13	0	17
EPCRA 304: EHS Release Notification	1	0	29
EPCRA 311-312: MSDS/Chemical Inventory	27	0	3

[3] Did not meet reporting thresholds or did not have extremely hazardous substance releases.

F. Reduction in the Generation of Hazardous, Radioactive, Radioactive Mixed, and Sanitary Waste

In 1999 the Department established pollution prevention goals for routine generation of hazardous, radioactive, radioactive mixed and sanitary wastes. The goals are to be achieved in 2005, using a 1993 baseline. This section describes progress made toward meeting those goals. Additional data are contained in Appendix F.

The DOE sites have gathered and reported data on waste generation and reduction and site-specific pollution prevention accomplishments including quantity of material recycled/reused. Waste generation data are available at http://www.eh.doe.gov/p2 by reporting site, waste type, and year (1996 through 2002). Pollution prevention accomplishment data, including waste reduction and material recycled/reused, are also available by reporting site, waste type, and year (1996 through 2002). Annual report data are analyzed to assess DOE's overall progress toward achieving its Pollution Prevention Leadership Goals.

The Department tracks both its routine and non-routine waste generation. "Routine" wastes are those associated with on-going site missions and activities (i.e., newly generated waste). "Non-routine" wastes are those related to activities such as facility decommissioning and site remediation (i.e., cleanup and stabilization of legacy contamination). Through its cleanup and stabilization activities, DOE reduced its legacy (non-routine) waste inventory by 887,700 metric tons (mt) in 2002. These non-routine wastes generated in 2002 reflect a 27% increase from the previous year as the Department continues to aggressively clean up and stabilize legacy contamination in compliance with environmental protection requirements.

Routine waste generation totaled about 55,000 mt this year (see Table 5). This tonnage is less than a third of the amount generated in 1993, the year of the baseline measurement. Sanitary waste, at 38,263 mt, constitutes the largest segment of the total, accounting for roughly 69%. Low-level radioactive waste accounted for about 22%, 5% was high-level radioactive waste, hazardous waste was about 2%, and the remainder was low-level mixed waste and transuranic waste.

Table 4 lists the DOE pollution prevention goals for 2005 for routine transuranic, low-level radioactive, low-level mixed, hazardous, and sanitary wastes. The table also includes the 1993 DOE baseline for these wastes, 2002 waste volumes, and the status of the Department’s progress toward achieving the 2005 goal.

Table 4: DOE Progress Toward Meeting Pollution Prevention Goals

Waste Type	1993 Volume*	2002 Volume*	2002 Status Relative to Goal	2005 Goal
Transuranic	709	175	75%	80%
Low-Level Radioactive	40,874	12,167	70%	80%
Low-Level Mixed	3,325	476	86%	80%
Hazardous	12,456	1,368	89%	90%
Sanitary	113,104	38,263	66%	75%

** metric tons (assumes 1 metric ton = 1 cubic meter)*

Table 5 includes amounts generated for each of these routine waste types for the years 1993 through 2002. Data spikes from year-to-year reflected in Table 5 can be attributed to programmatic needs such as the initiation or termination of research projects or site stockpiling of wastes from year-to-year until an opportunity arises for safe, cost-effective recycling, reuse or disposal in compliance with enviromental protection requirements.

Table 5: Complex-Wide Routine Waste Generation from Base Year to Reporting Year *

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
High-Level Rad	1,707	2,071	2,496	2,670	1,994	2,237	2,373	1,859	2,990	2,907
TRU	709	546	339	303	267	172	167	173	137	175
Low-Level Rad	40,874	31,870	21,895	15,051	16,533	13,653	11,105	10,257	10,640	12,167
Low-Level Mixed	3,325	3,133	1,333	1,372	1,369	1,198	807	794	968	476
Hazar-dous	12,456	12,516	4,098	3,054	2,875	2,061	1,036	998	1,194	1,368
Totals without Sanitary	58,980	50,136	30,160	22,450	23,037	19,321	15,488	14,080	15,930	17,093
Sanitary	113,104	107,996	96,999	89,183	61,867	48,568	48,224	38,529	36,879	38,263
Totals	**172,084**	**158,132**	**127,159**	**111,633**	**84,904**	**67,889**	**63,712**	**52,609**	**52,809**	**55,356**

** metric tons (assumes 1 metric ton = 1 cubic meter)*

Transuranic Waste

Transuranic waste contains alpha-emitting radionuclides with an atomic number greater than 92 (heavier than uranium). It is primarily generated through production of nuclear weapons but non-defense research activities can also result in transuranic waste generation. Achieving the Department's goal of reducing the routine generation of transuranic waste by 80% requires a reduction from 709 cubic meters in 1993 to 142 cubic meters in 2005. In 2002, DOE generated 175 cubic meters; 75% of the 2005 goal.

Please note that all graphs are in different scales.

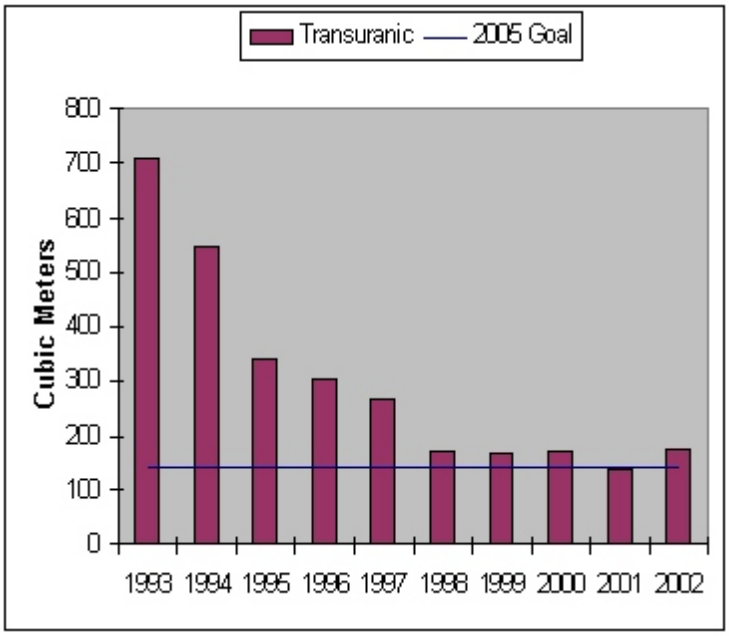


Figure 2. Routine Transuranic Waste

Low-level Radioactive Waste

Low-level radioactive waste is generated from the use of radioactive materials in research or production.

The Department's goal of reducing the routine generation of low-level radioactive waste by 80% requires reductions from producing 40,874 cubic meters in 1993 to 8,175 in 2005. In 2002, 12,167 cubic meters of routine low-level radioactive wastes were generated achieving 70% of the 2005 goal.

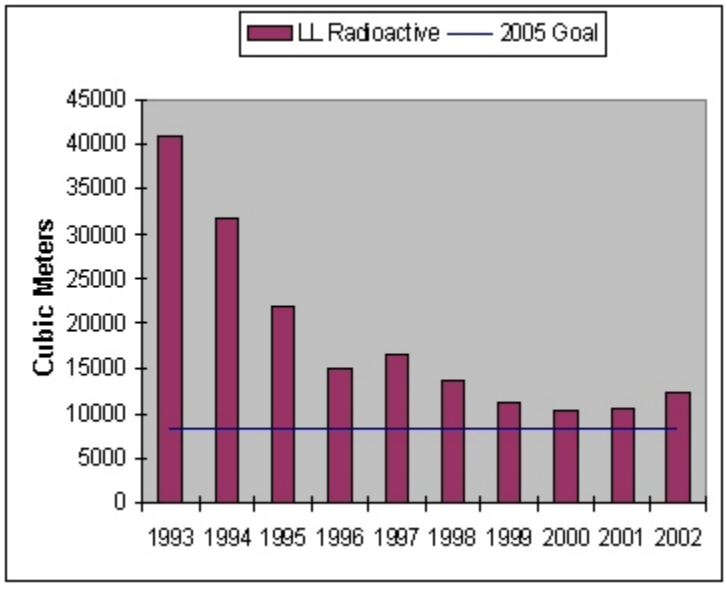


Figure 3. Routine Low-level Radioactive Waste

Low-Level Mixed Waste

Low-level mixed waste is low-level radioactive waste that has become mixed with hazardous wastes subject to the Resource Conservation and Recovery Act (RCRA). The term also includes low-level radioactive waste that has been mixed with wastes regulated by the Toxic Substances Control Act (TSCA). The mixing of these wastes can occur when hazardous solvents are used to clean radioactively contaminated surfaces or through research or production activities.

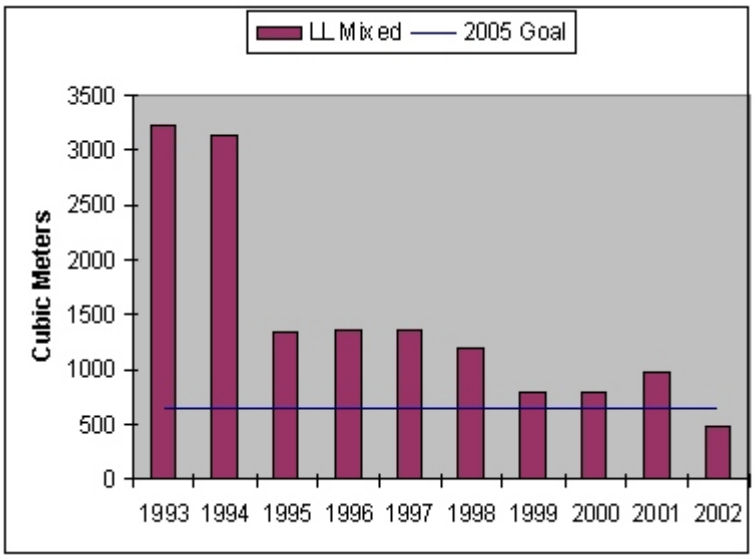


Figure 4. Routine Low-level Mixed Waste

In 2002, 476 cubic meters of routine low-level mixed waste were generated surpassing the Department's 80% reduction goal. The target goal is reduction to 665 cubic meters by 2005.

Hazardous Wastes

Hazardous wastes are those regulated either by RCRA, TSCA, or state laws because of their potentially harmful effect if improperly managed or released into the environment. They are generated from the use of materials such as solvents as part of routine cleaning or production.

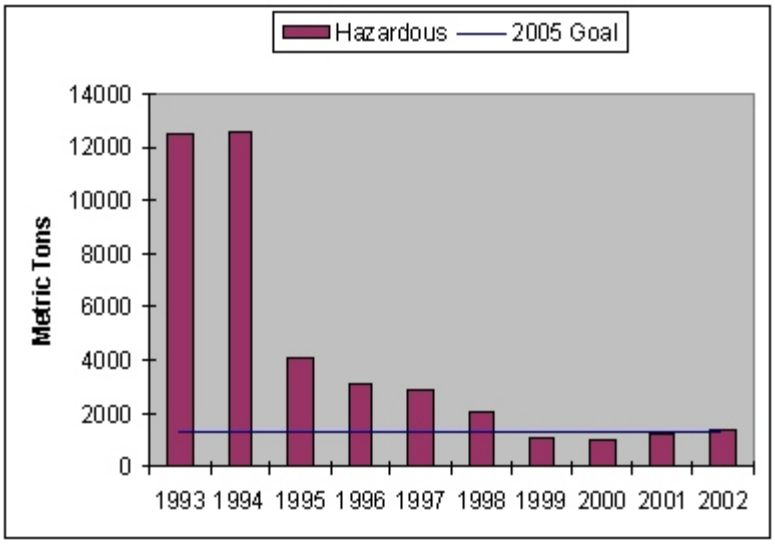


Figure 5. Routine Hazardous Waste

The Department's established goal of a 90% reduction in the routine generation of hazardous wastes requires reductions from the 12,456 metric tons generated in 1993 to 1,246 metric tons by 2005. In 2002, the Department generated 1,368 metric tons, thereby achieving an 89% reduction below the 1993 figure.

Sanitary Wastes

Sanitary wastes are generated through normal operations such as office work, food service operations, and normal housekeeping services. They are neither hazardous nor radioactive and can be recycled or disposed in regular landfills. For purposes of this Report, "sanitary waste" refers to municipal solid waste as defined by EPA and does not include other materials such as construction and demolition debris.

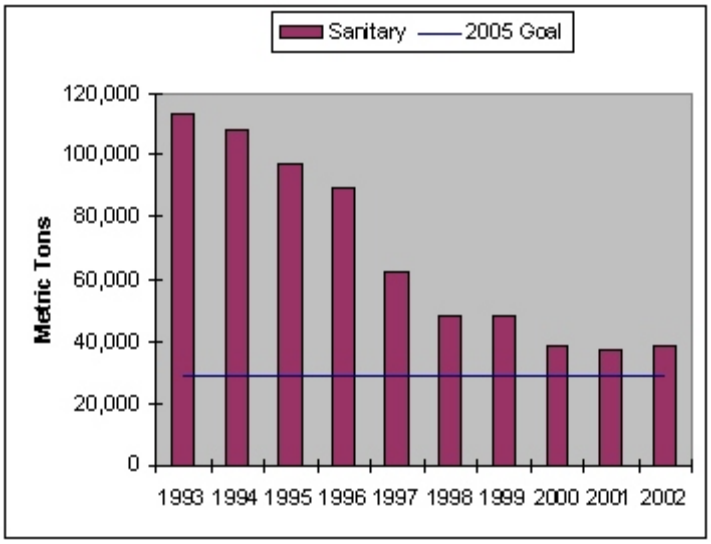


Figure 6. Routine Sanitary Waste

The DOE goal for the reduction of sanitary waste is 28,276 metric tons by 2005; a 75% reduction from the 1993 baseline of 113,104 metric tons. The 2002 generation of sanitary wastes was 38,263 metric tons which equals a 66% reduction from the baseline year.

G. Ozone Depleting Substances (ODS) Reduction

Since the early 1990s, DOE has been reducing its inventory and use of Class I ODS in a cost-effective manner. The principal drivers directing the Department's elements to move towards discontinuing the use of ODS are the Section 505 requirements in EO 13148, EPA's Clean Air Act stratospheric ozone protection regulations, and two ODS phaseout goals that are part of DOE's Pollution Prevention Leadership Goals. The ODS-related goals require the retrofit or replacement by 2005 of large, aging chillers that use Class I refrigerants, and the elimination of remaining Class I ODS use by 2010, to the extent economically practicable.

Recent progress in the phaseout of ODS at select DOE sites is reported in Appendix G.

H. Site-specific Accomplishments

DOE sites reported over 800 separate pollution prevention related accomplishments in 2002. Information on the site-specific accomplishments is reported for the year at **http://www.eh.doe.gov/p2/wastemin/accomp.asp**.

APPENDIX A:

Department of Energy
Pollution Prevention Leadership Goals

http://homer.ornl.gov/oepa/guidance/p2/p2leadershipgoals.pdf

APPENDIX B:

DOE Order 450.1
Environmental Protection Program

http://www.eh.doe.gov/oepa/guidance/ems/doeo450.1.pdf

APPENDIX C:

Acquisition Letter 2002-05
Greening the Government Requirements in Contracting

http://professionals.pr.doe.gov/ma5/MA-5Web.nsf/WebAttachments/AL2002-05/$File/AL2002-05.pdf

APPENDIX D:

National Environmental Performance Track

National Environmental Performance Track Program

The purpose of the program, which was initiated by the Environmental Protection Agency in the summer of 2000, is to motivate and reward top environmental performance. "Performance Track" facilities must:

- Have an Environmental Management System (EMS),
- Commit to continuous improvement,
- Commit to public outreach and performance reporting, and
- Achieve a record of sustained compliance.

ISO (International Organization for Standardization) 14001 registration is not required, however the EMS elements are similar. Benefits include:

- Recognition,
- Access to "state-of-the-art" information, and
- Regulatory and administrative flexibility.

The National Environmental Performance Track program is intended to meet Executive Order 13148 requirements for a Federal facility recognition program.

DOE Performance Track Sites

Five DOE sites, the largest number for any public agency, are recognized as charter members of the National Environmental Performance Track. They are:

- Kansas City Plant,
- Strategic Petroleum Reserves,
- Waste Isolation Pilot Plant,
- West Valley Demonstration Project, and
- Western Area Power Administration.

Three of the sites are registered to ISO 14001; one is self-declared.

APPENDIX E:

Toxic Release Inventory Reporting

2001 DOE EPCRA Section 313 TRI Reporting: Form R Sections 5 and 6 Releases (in pounds)

FACILITY NAME	CHEMICAL NAME	SECT. 5.1 NON-POINT AIR RELEASES	SECT. 5.2 POINT AIR RELEASES	SECT. 5.3 WATER RELEASES	SECT. 5.4 UNDER-GROUND INJECTION	SECT. 5.5 LAND RELEASES	TOTAL RELEASES TO THE ENVIRONMENT	SECT. 6.1 TRANSFERS TO POTWs	SECT. 6.2 OTHER OFF-SITE TRANSFERS
ARGONNE NATIONAL LAB-EAST	CHLORODIFLUOROMETHANE	3,910.00	0.00	0.00	0.00	0.00	3,910.00	0.00	0.00
ARGONNE NATIONAL LAB-EAST	LEAD	0.00	0.23	0.00	0.00	0.00	0.23	0.00	137,319.71
BONNEVILLE	MERCURY	3.30	0.00	0.00	0.00	0.00	3.30	0.00	0.00
BROOKHAVEN NATIONAL LAB	LEAD	0.00	6.00	0.00	0.00	0.00	6.00	0.00	25,476.00
BROOKHAVEN NATIONAL LAB	MERCURY	0.00	0.10	0.00	0.00	0.00	0.10	0.00	600.00
E. TENN. TECHNOLOGY PARK (OLD K-25)	HEXACHLOROBENZENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	272.00
E. TENN. TECHNOLOGY PARK (OLD K-25)	HYDROCHLORIC ACID	0.00	25.00	0.00	0.00	0.00	25.00	0.00	0.00
E. TENN. TECHNOLOGY PARK (OLD K-25)	LEAD	0.00	58.00	1.00	0.00	0.00	59.00	0.00	8,395.00
E. TENN. TECHNOLOGY PARK (OLD K-25)	POLYCHLORINATED BIPHENYLS	0.00	0.03	0.00	0.00	0.00	0.03	0.00	306.72
FERMI LAB	COPPER	0.00	0.00	0.00	0.00	0.00	0.00	5.00	209,649.00
HANFORD SITE	LEAD	5.00	0.00	0.50	0.00	11,480.00	11,485.50	0.00	197.90
IDAHO NATL ENGR & ENV LAB (OLD INEL)	ETHYLBENZENE	304.00	9.00	0.00	0.00	0.00	313.00	0.00	19.00
IDAHO NATL ENGR & ENV LAB (OLD INEL)	LEAD	3.44	24.33	0.00	0.00	2,294.00	2,321.77	0.00	221,395.97
IDAHO NATL ENGR & ENV LAB (OLD INEL)	NITRIC ACID	10.00	2,487.00	0.00	0.00	3.00	2,500.00	0.00	3,106.00

FACILITY NAME	CHEMICAL NAME	SECT. 5.1 NON-POINT AIR RELEASES	SECT. 5.2 POINT AIR RELEASES	SECT. 5.3 WATER RELEASES	SECT. 5.4 UNDER-GROUND INJECTION	SECT. 5.5 LAND RELEASES	TOTAL RELEASES TO THE ENVIRONMENT	SECT. 6.1 TRANSFERS TO POTWs	SECT. 6.2 OTHER OFF-SITE TRANSFERS
KANSAS CITY PLANT	LEAD	1.09	0.00	0.00	0.00	0.00	1.09	3.22	662.76
KANSAS CITY PLANT	NITRIC ACID	305.00	0.00	0.00	0.00	0.00	305.00	0.00	0.00
LAWRENCE LIVERMORE SITE 300	LEAD	4.20	0.00	0.00	0.00	3,980.90	3,985.10	0.00	22.00
LOS ALAMOS NATIONAL LABORATORY	LEAD	4.20	1.00	47.70	0.00	3,799.00	3,851.90	0.00	7,788.50
NEVADA TEST SITE	LEAD	5.27	0.00	0.00	0.00	3,880.00	3,885.27	0.00	4,100.00
OAK RIDGE NATIONAL LABORATORY	LEAD	0.00	1.00	36.00	0.00	0.00	37.00	0.00	46,855.00
OAK RIDGE NATIONAL LABORATORY	NITRATE COMPOUNDS	0.00	0.00	45,000.00	0.00	0.00	45,000.00	0.00	0.00
OAK RIDGE NATIONAL LABORATORY	NITRIC ACID	0.00	0.00	0.00	0.00	0.00	0.00	0.00	244.00
PADUCAH SITE	POLYCHLORINATED BIPHENYLS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
PANTEX PLANT	LEAD	4.00	0.00	0.00	0.00	4,302.00	4,306.00	0.00	4,588.00
PANTEX PLANT	MERCURY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	503.86
PORTSMOUTH GAS DIFF PLANT	LEAD AND COMPOUNDS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	245.86
SAVANNAH RIVER SITE	CHROMIUM COMPOUNDS	8.00	740.00	2.00	0.00	16,300.00	17,050.00	0.00	82.00
SAVANNAH RIVER SITE	FORMIC ACID	57.00	1,750.00	0.00	0.00	0.00	1,807.00	0.00	4.00

FACILITY NAME	CHEMICAL NAME	SECT. 5.1 NON-POINT AIR RELEASES	SECT. 5.2 POINT AIR RELEASES	SECT. 5.3 WATER RELEASES	SECT. 5.4 UNDER-GROUND INJECTION	SECT. 5.5 LAND RELEASES	TOTAL RELEASES TO THE ENVIRONMENT	SECT. 6.1 TRANSFERS TO POTWs	SECT. 6.2 OTHER OFF-SITE TRANSFERS
SAVANNAH RIVER SITE	LEAD AND COMPOUNDS	32.66	3,371.75	27.31	0.00	11,390.86	14,822.60	0.00	1,177.01
SAVANNAH RIVER SITE	MANGANESE COMPOUNDS	0.00	880.00	66.00	0.00	880.00	1,826.00	0.00	0.00
SAVANNAH RIVER SITE	MERCURY COMPOUNDS	6.46	109.84	18.81	0.00	0.02	135.13	0.00	14.46
SAVANNAH RIVER SITE	NICKEL COMPOUNDS	0.00	61.00	1.00	0.00	59.00	121.00	0.00	1.00
SAVANNAH RIVER SITE	NITRATE COMPOUNDS	17.00	110.00	37,970.00	0.00	0.00	38,097.00	0.00	291.00
SAVANNAH RIVER SITE	NITRIC ACID	42.00	5,600.00	0.00	0.00	0.00	5,642.00	0.00	427.00
SAVANNAH RIVER SITE	SODIUM NITRITE	2.00	0.00	0.00	0.00	0.00	2.00	0.00	36.00
SAVANNAH RIVER SITE	TOLUENE	7,000.00	0.00	0.00	0.00	2.00	7,002.00	0.00	415.00
SAVANNAH RIVER SITE	XYLENE (MIXED ISOMERS)	650.00	320.00	0.00	0.00	52.00	1,022.00	0.00	403.00
SAVANNAH RIVER SITE	ZINC COMPOUNDS	43.00	140.00	1,061.00	0.00	153,025.00	154,269.00	0.00	3,997.00
STANFORD LINEAR ACCELERATOR	COPPER	0.00	0.00	10.00	0.00	0.00	10.00	10.00	25,974.00
STANFORD LINEAR ACCELERATOR	LEAD	0.00	0.00	5.50	0.00	0.00	5.50	1.00	343,235.00
WEST VALLEY DEMONSTRATION PROJ	NITRIC ACID	0.00	5.00	0.00	0.00	0.00	5.00	0.00	5.00
Y-12 NATIONAL SECURITY COMPLEX	FREON 113	0.00	16,530.00	0.00	0.00	0.00	16,530.00	0.00	23.00

FACILITY NAME	CHEMICAL NAME	SECT. 5.1 NON-POINT AIR RELEASES	SECT. 5.2 POINT AIR RELEASES	SECT. 5.3 WATER RELEASES	SECT. 5.4 UNDER-GROUND INJECTION	SECT. 5.5 LAND RELEASES	TOTAL RELEASES TO THE ENVIRONMENT	SECT. 6.1 TRANSFERS TO POTWs	SECT. 6.2 OTHER OFF-SITE TRANSFERS
Y-12 NATIONAL SECURITY COMPLEX	HYDROCHLORIC ACID	0.00	102,332.00	0.00	0.00	0.00	102,332.00	0.00	0.00
Y-12 NATIONAL SECURITY COMPLEX	LEAD AND COMPOUNDS	1.76	2.00	1,367.00	0.00	2,881.65	4,252.41	4.00	8,502.70
Y-12 NATIONAL SECURITY COMPLEX	MERCURY COMPOUNDS	0.00	2.00	15.77	0.00	9.80	27.57	1.00	367.00
Y-12 NATIONAL SECURITY COMPLEX	METHANOL	21,417.00	0.00	792.00	0.00	0.00	22,209.00	0.00	153.00
Y-12 NATIONAL SECURITY COMPLEX	NITRATE COMPOUNDS	0.00	0.00	1.00	0.00	0.00	1.00	5,640.00	0.00
Y-12 NATIONAL SECURITY COMPLEX	NITRIC ACID	0.00	2,601.00	0.00	0.00	0.00	2,601.00	0.00	100.00
Y-12 NATIONAL SECURITY COMPLEX	SULFURIC ACID	0.00	44,221.00	0.00	0.00	0.00	44,221.00	0.00	0.00
Totals		33,836.38	181,387.28	86,422.59	0.00	214,339.23	515,985.49	5,664.22	1,056,964.45

2001 DOE EPCRA Section 313 TRI Reporting: Form R Section 8 Releases (in pounds)

FACILITY NAME	CHEMICAL NAME	SECT. 8.1 QUANTITY RELEASED	SECT. 8.2 ON-SITE ENERGY RECOVERY	SECT. 8.3 OFF-SITE ENERGY RECOVERY	SECT. 8.4 ON-SITE RECYCLING	SECT. 8.5 OFF-SITE RECYCLING	SECT. 8.6 ON-SITE TREATMENT	SECT. 8.7 OFF-SITE TREATMENT	SECT. 8.8 ACCIDENTAL RELEASES
ARGONNE NATIONAL LAB-EAST	CHLORODIFLUOROMETHANE	3,910.00	0.00	0.00	609.00	0.00	0.00	0.00	0.00
ARGONNE NATIONAL LAB-EAST	LEAD	137,320.00	0.00	0.00	0.00	2,308.00	0.00	0.00	0.00
BONNEVILLE	MERCURY	3.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BROOKHAVEN NATIONAL LAB	LEAD	30,688.00	0.00	0.00	0.00	0.00	0.00	0.00	30,688.00
BROOKHAVEN NATIONAL LAB	MERCURY	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E. TENN. TECHNOLOGY PARK (OLD K-25)	HEXACHLOROBENZENE	272.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E. TENN. TECHNOLOGY PARK (OLD K-25)	HYDROCHLORIC ACID	25.00	0.00	0.00	0.00	0.00	49,346.00	0.00	0.00
E. TENN. TECHNOLOGY PARK (OLD K-25)	LEAD	8,454.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
E. TENN. TECHNOLOGY PARK (OLD K-25)	POLYCHLORINATED BIPHENYLS	276.00	0.00	0.00	0.00	0.00	26,521.00	31.00	0.00
FERMI LAB	COPPER	3,649.00	0.00	0.00	0.00	206,000.00	0.00	0.00	0.00
HANFORD SITE	LEAD	11,682.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IDAHO NATL ENGR & ENV LAB (OLD INEL)	ETHYLBENZENE	313.00	0.00	17.00	0.00	0.00	0.00	2.00	0.00
IDAHO NATL ENGR & ENV LAB (OLD INEL)	LEAD	63,052.00	0.00	0.00	0.00	160,666.00	0.00	0.00	0.00
IDAHO NATL ENGR & ENV LAB (OLD INEL)	NITRIC ACID	2,500.00	0.00	0.00	92,035.00	0.00	22,248.00	3,106.00	0.00

FACILITY NAME	CHEMICAL NAME	SECT. 8.1 QUANTITY RELEASED	SECT. 8.2 ON-SITE ENERGY RECOVERY	SECT. 8.3 OFF-SITE ENERGY RECOVERY	SECT. 8.4 ON-SITE RECYCLING	SECT. 8.5 OFF-SITE RECYCLING	SECT. 8.6 ON-SITE TREATMENT	SECT. 8.7 OFF-SITE TREATMENT	SECT. 8.8 ACCIDENTAL RELEASES
KANSAS CITY PLANT	LEAD	5.40	0.00	0.00	0.00	661.67	0.00	0.00	0.00
KANSAS CITY PLANT	NITRIC ACID	305.00	0.00	0.00	0.00	0.00	10,410.00	0.00	0.00
LAWRENCE LIVERMORE SITE 300	LEAD	4,007.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LOS ALAMOS NATIONAL LABORATORY	LEAD	11,319.00	0.00	0.00	0.00	2.00	0.00	0.00	322.00
NEVADA TEST SITE	LEAD	4,105.00	0.00	0.00	0.00	3,720.00	0.00	0.00	0.00
OAK RIDGE NATIONAL LABORATORY	LEAD	37.00	0.00	0.00	117,000.00	46,855.00	0.00	0.00	0.00
OAK RIDGE NATIONAL LABORATORY	NITRATE COMPOUNDS	45,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OAK RIDGE NATIONAL LABORATORY	NITRIC ACID	0.00	0.00	0.00	0.00	0.00	40,970.00	244.00	0.00
PADUCAH SITE	POLYCHLORINATED BIPHENYLS	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
PANTEX PLANT	LEAD	5,777.00	0.00	0.00	0.00	3,117.00	0.00	0.00	0.00
PANTEX PLANT	MERCURY	0.00	0.00	0.00	0.00	503.86	0.00	0.00	0.00
PORTSMOUTH GAS DIFF PLANT	LEAD AND COMPOUNDS	245.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAVANNAH RIVER SITE	CHROMIUM COMPOUNDS	17,100.00	0.00	0.00	0.00	186,700.00	0.00	0.00	0.00
SAVANNAH RIVER SITE	FORMIC ACID	1,800.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00

FACILITY NAME	CHEMICAL NAME	SECT. 8.1 QUANTITY RELEASED	SECT. 8.2 ON-SITE ENERGY RECOVERY	SECT. 8.3 OFF-SITE ENERGY RECOVERY	SECT. 8.4 ON-SITE RECYCLING	SECT. 8.5 OFF-SITE RECYCLING	SECT. 8.6 ON-SITE TREATMENT	SECT. 8.7 OFF-SITE TREATMENT	SECT. 8.8 ACCIDENTAL RELEASES
SAVANNAH RIVER SITE	LEAD AND COMPOUNDS	15,818.35	0.00	0.00	48,328.00	132,555.16	0.00	0.00	181.22
SAVANNAH RIVER SITE	MANGANESE COMPOUNDS	1,800.00	0.00	0.00	0.00	15,800.00	0.00	0.00	0.00
SAVANNAH RIVER SITE	MERCURY COMPOUNDS	149.58	0.00	0.00	613.51	0.80	0.00	0.00	0.00
SAVANNAH RIVER SITE	NICKEL COMPOUNDS	120.00	0.00	0.00	0.00	77,000.00	0.00	0.00	0.00
SAVANNAH RIVER SITE	NITRATE COMPOUNDS	38,000.00	0.00	0.00	0.00	0.00	5,300.00	290.00	0.00
SAVANNAH RIVER SITE	NITRIC ACID	5,600.00	0.00	0.00	0.00	0.00	125,000.00	430.00	0.00
SAVANNAH RIVER SITE	SODIUM NITRITE	2.00	0.00	0.00	0.00	0.00	0.00	36.00	0.00
SAVANNAH RIVER SITE	TOLUENE	7,100.00	0.00	0.00	0.00	27.00	0.00	342.00	0.00
SAVANNAH RIVER SITE	XYLENE (MIXED ISOMERS)	1,000.00	0.00	0.00	0.00	87.00	0.00	340.00	0.00
SAVANNAH RIVER SITE	ZINC COMPOUNDS	158,000.00	0.00	0.00	0.00	390.00	0.00	0.00	0.00
STANFORD LINEAR ACCELERATOR	COPPER	20.00	0.00	0.00	0.00	21,000.00	0.00	0.00	5,000.00
STANFORD LINEAR ACCELERATOR	LEAD	6.00	0.00	0.00	0.00	343,200.00	0.00	0.00	35.00
WEST VALLEY DEMONSTRATION PROJ	NITRIC ACID	0.00	0.00	0.00	0.00	0.00	4.70	0.00	0.00
Y-12 NATIONAL SECURITY COMPLEX	FREON 113	16,530.00	0.00	19.00	0.00	0.00	0.00	4.00	0.00
Y-12 NATIONAL SECURITY COMPLEX	HYDROCHLORIC ACID	102,332.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

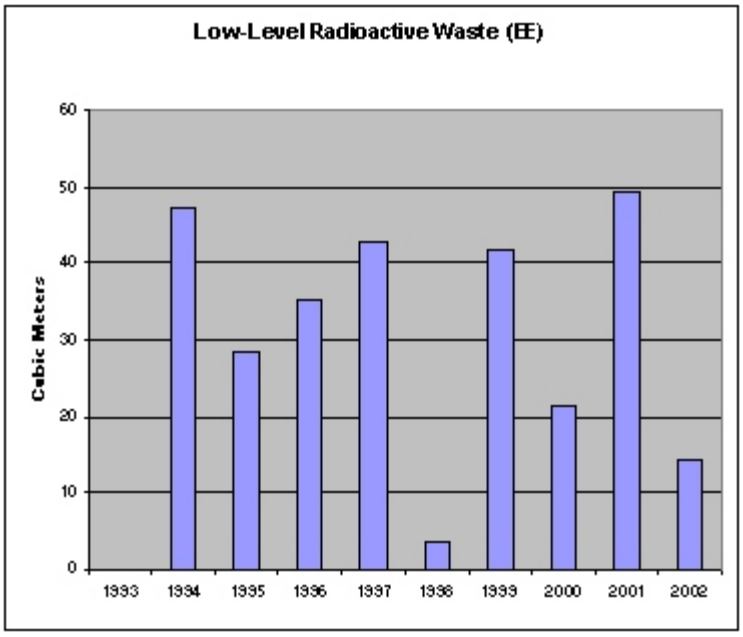
FACILITY NAME	CHEMICAL NAME	SECT. 8.1 QUANTITY RELEASED	SECT. 8.2 ON-SITE ENERGY RECOVERY	SECT. 8.3 OFF-SITE ENERGY RECOVERY	SECT. 8.4 ON-SITE RECYCLING	SECT. 8.5 OFF-SITE RECYCLING	SECT. 8.6 ON-SITE TREATMENT	SECT. 8.7 OFF-SITE TREATMENT	SECT. 8.8 ACCIDENTAL RELEASES
Y-12 NATIONAL SECURITY COMPLEX	LEAD AND COMPOUNDS	11,772.41	0.00	0.00	0.00	284.69	0.00	0.00	702.01
Y-12 NATIONAL SECURITY COMPLEX	MERCURY COMPOUNDS	337.47	0.00	0.00	0.00	58.00	0.00	0.00	0.00
Y-12 NATIONAL SECURITY COMPLEX	METHANOL	22,209.00	0.00	0.00	0.00	0.00	0.00	153.00	0.00
Y-12 NATIONAL SECURITY COMPLEX	NITRATE COMPOUNDS	1.00	0.00	0.00	0.00	0.00	17,475.00	5,640.00	0.00
Y-12 NATIONAL SECURITY COMPLEX	NITRIC ACID	2,601.00	0.00	0.00	0.00	0.00	413,301.00	100.00	0.00
Y-12 NATIONAL SECURITY COMPLEX	SULFURIC ACID	44,221.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals		780,066.27	0.00	36.00	258,585.51	1,200,942.18	710,575.70	10,732.00	36,928.23

APPENDIX F:

Hazardous, Low-level Radioactive, Low-level Radioactive Mixed, and Transuranic Wastes

This appendix contains data on the generation of hazardous, low-level radioactive, and radioactive mixed, and transuranic waste organized by Program Secretarial Offices (PSOs) having responsibility for operations at DOE sites.

Energy Efficiency

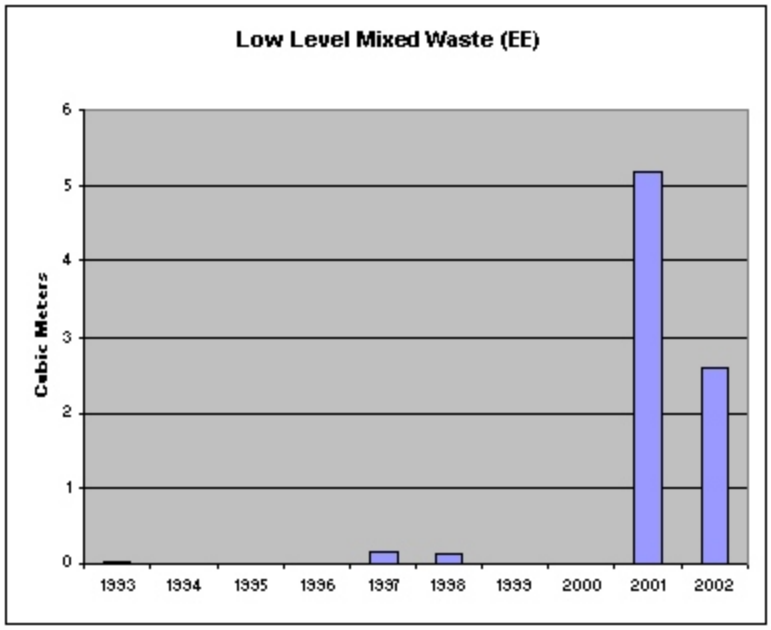


Total 2002 Low-level Waste: 12,167

Total 2002 EE Generation: 14

EE Site Contribution:
Oak Ridge National Lab 14

(cubic meters)



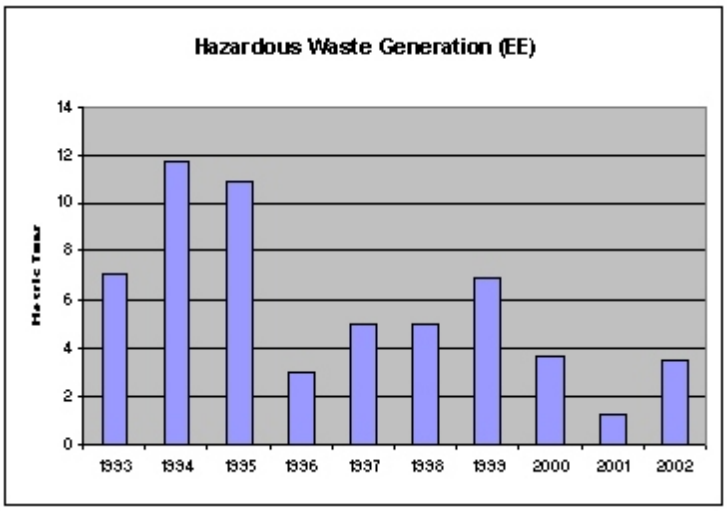
Total 2002 Mixed Waste: 476

Total EE Generation: 3

EE Site Contribution:
Oak Ridge National Lab 3

(cubic meters)

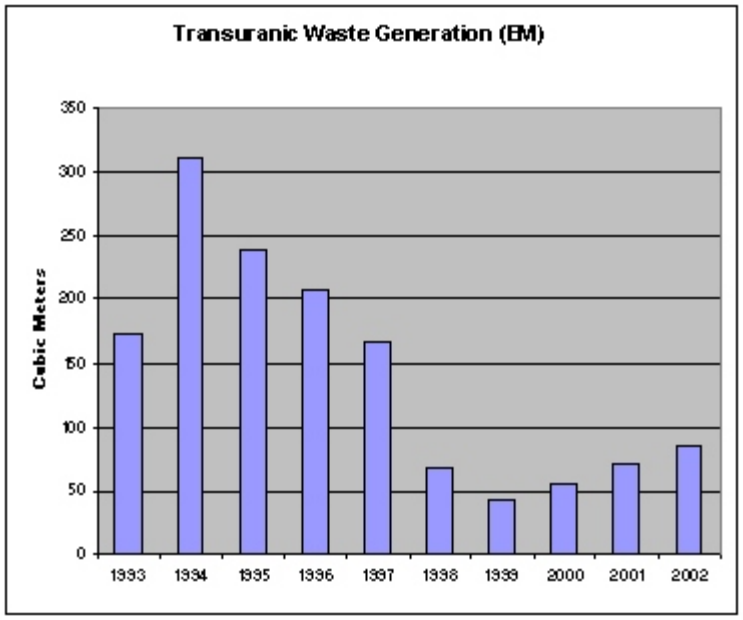
Energy Efficiency (cont)



Total 2002 Hazardous Waste:	1,368
Total EE Generation:	4
EE Site Contribution:	
Oak Ridge National Lab	2
Sandia National Lab/CA	1
Sandia National Lab/NM	1

(metric tons)

Environmental Management



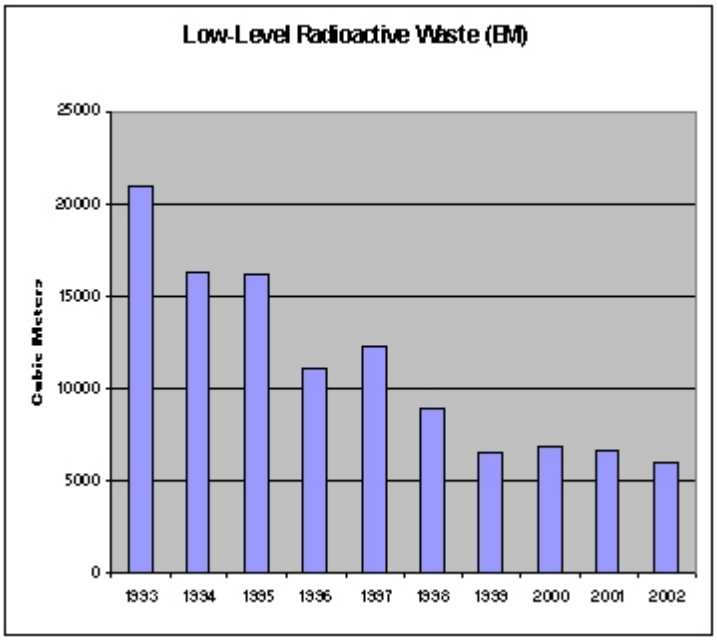
Total 2002 Transuranic Waste: 175

Total EM Generation: 87

EM Site Contribution:

Idaho National EE Lab	1
Oak Ridge National Lab	2
Savannah River Site	76
West Valley	8

(cubic meters)



Total 2002 Low-level Waste: 12,167

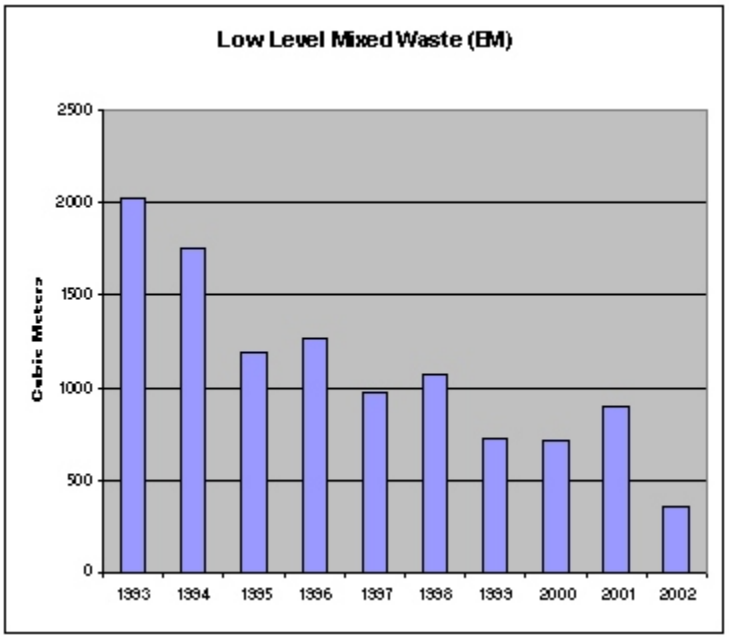
Total EM Generation: 5,971

EM Site Contribution:

Argonne National Lab-East	3
East Tennessee Tech. Park	74
Fernald	310
Hanford	90
Idaho National EE Lab	667
Lawrence Livermore National Lab	6
Oak Ridge National Lab	22
Y-12	27
Savannah River Site	4,344
West Valley	428

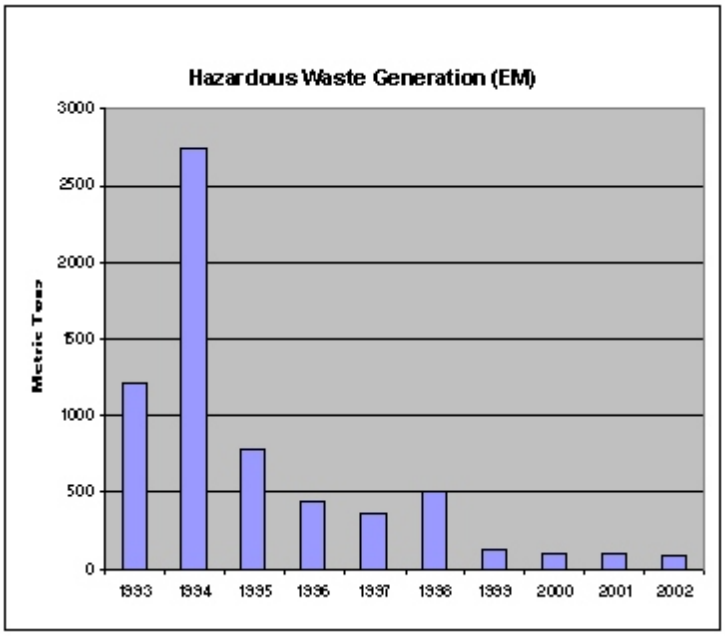
(cubic meters)

Environmental Management (cont)



Total 2002 Mixed Waste:	476
Total EM Generation:	346
EM Site Contribution:	
East Tennessee Tech. Park	25
Fernald	10
Hanford	13
Idaho National EE Lab	38
L. Livermore National Lab	3
Oak Ridge National Lab	18
Y-12	7
Savannah River Site	232

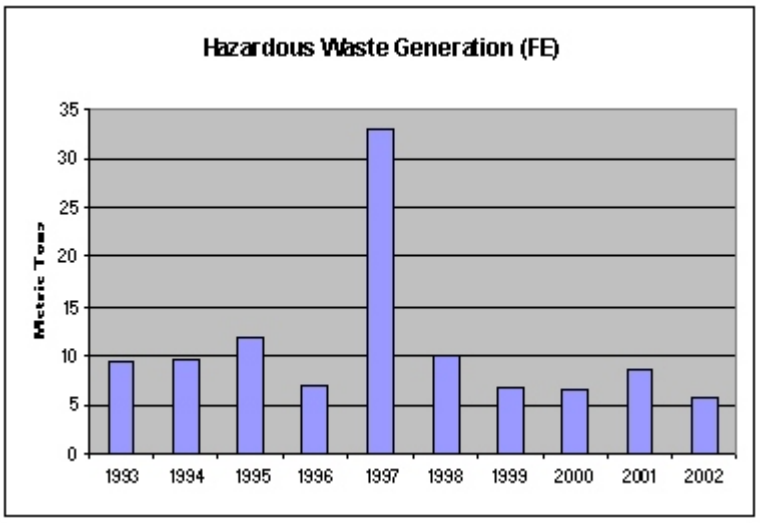
(cubic meters)



Total 2002 Hazardous Waste:	1,368
Total EM Generation:	79
EM Site Contribution:	
Fernald	7
Hanford	7
Idaho National EE Lab	26
L. Livermore Nat'l Lab	9
Nevada Test Site	1
Oak Ridge National Lab	1
Sandia-NM	1
Savannah River Site	18
Waste Isolation Pilot Plant	9

(metric tons)

Fossil Energy



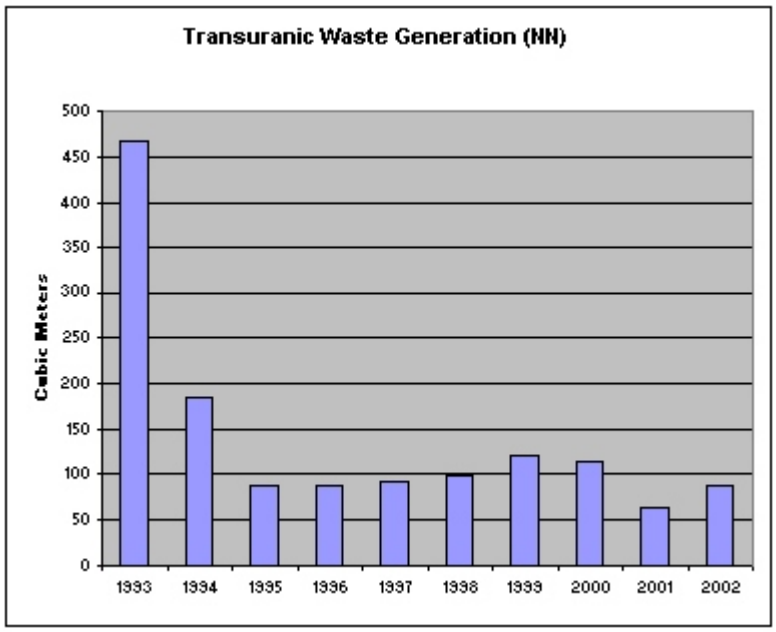
Total 2002 Hazardous Waste: 1,368

Total 2002 FE Generation: 6

FE Site Contribution:
National Energy Technology Lab 6

(metric tons)

National Nuclear Security Administration



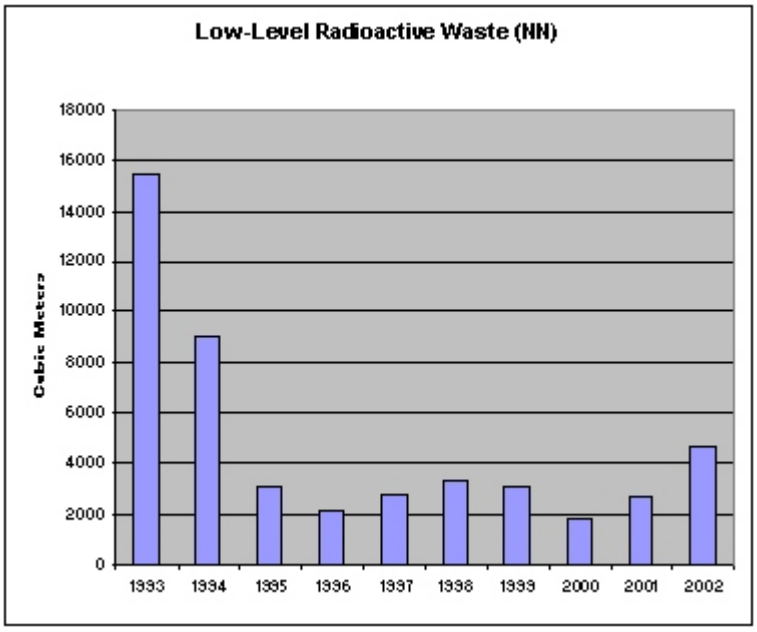
Total 2002 Transuranic Waste: 175

Total NNSA Generation: 88

NNSA Site Contribution:

L. Livermore Nat'l Lab	1
Los Alamos National Lab	87

(cubic meters)



Total 2002 Low-level Waste:12,167

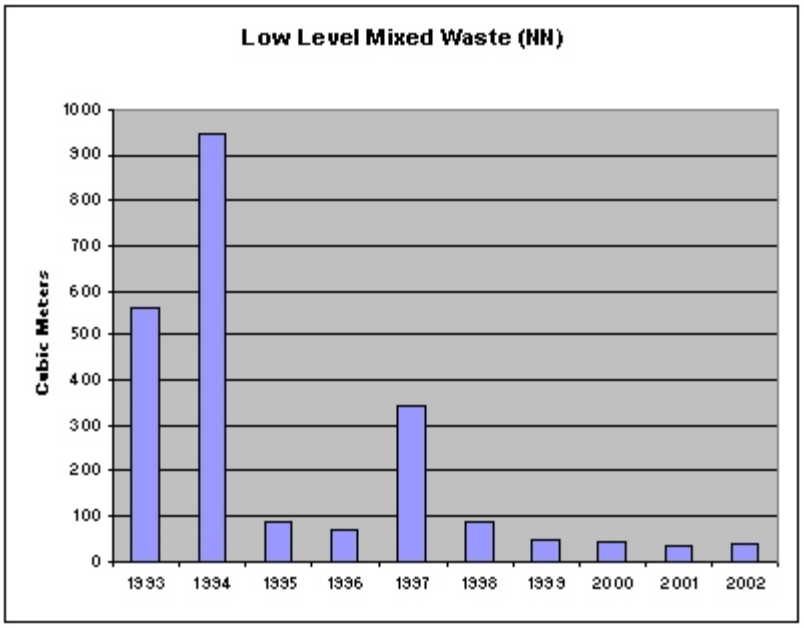
Total NNSA Generation: 4,675

NNSA Site Generation:

Argonne National Lab-East	6
Idaho National EE Lab	909
L. Livermore Nat'l Lab	74
Los Alamos National Lab	337
Y-12	2,832
Pantex	129
Sandia-NM	67
Savannah River Site	321

(cubic meters)

National Nuclear Security Administration (cont)



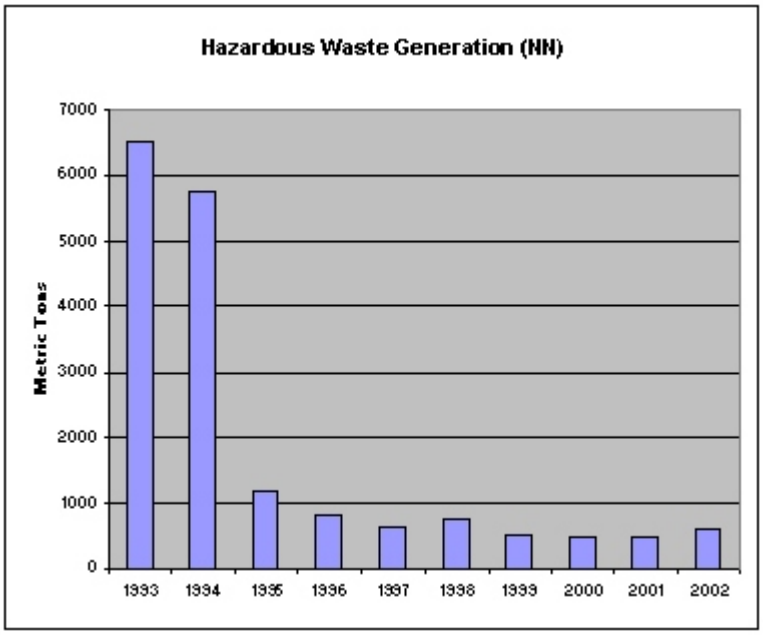
Total 2002 Mixed Waste: 476

Total NNSA Generation: 38

NNSA Site Contribution:

L. Livermore Nat'l Lab	7
Los Alamos National Lab	4
Y-12	14
Pantex	2
Sandia-NM	9
Savannah River Site	2

(cubic meters)



Total 2002 Hazardous Waste: 1,368

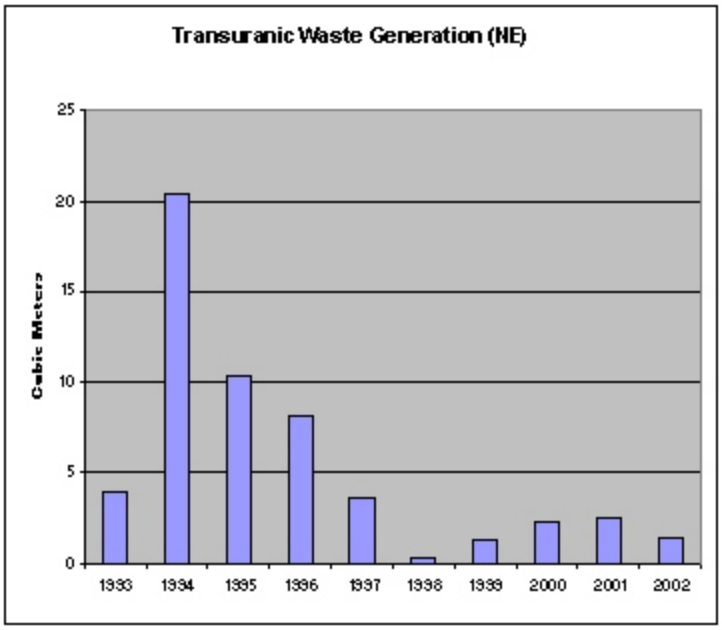
Total NNSA Generation: 607

NNSA Site Contribution:

Kansas City Plant	47
L. Livermore National Lab	246
Los Alamos National Lab	14
Nevada Test Site	10
Y-12	4
Pantex	210
Sandia-CA	29
Sandia-NM	46

(metric tons)

Nuclear Energy

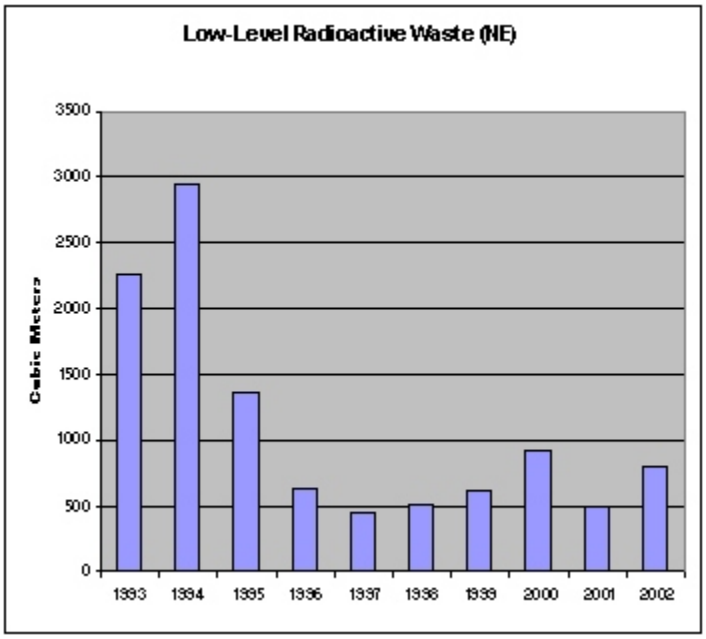


Total 2002 Transuranic Waste: 175

Total 2002 NE Generation: 1

NE Site Contribution:
Argonne National Lab-West 1

(cubic meters)



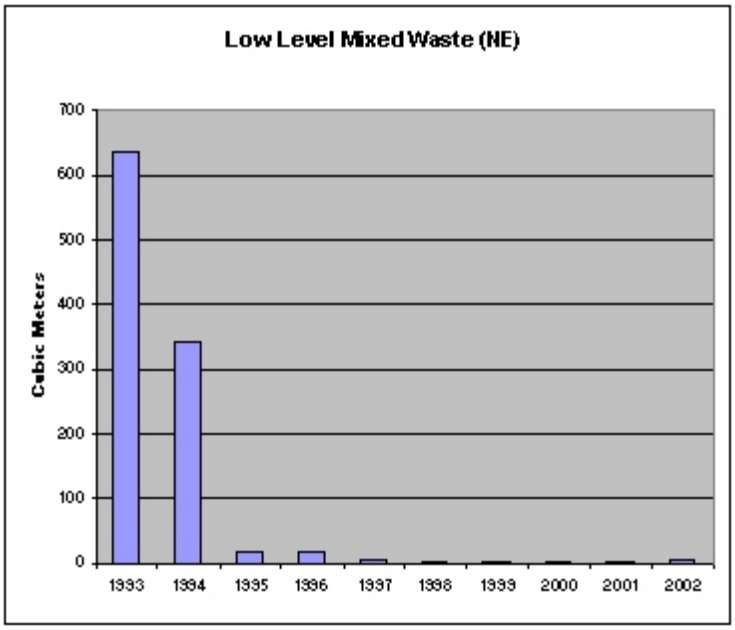
Total 2002 Low-level Waste: 12,167

Total 2002 NE Generation: 792

NE Site Contribution:
Argonne National Lab-East 2
Argonne National Lab-West 208
Idaho National EE Lab 576
Sandia Lab/NM 6

(cubic meters)

Nuclear Energy (cont)



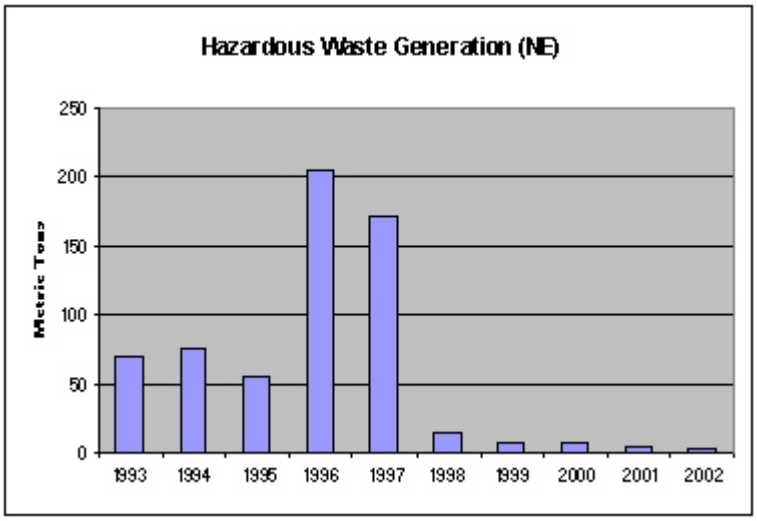
Total 2002 Mixed Wastes: 476

Total 2002 NE Generation: 5

NE Site Contribution:

Argonne National Lab-West	1
Idaho National EE Lab	4

(cubic meters)



Total 2002 Hazardous Waste: 1,368

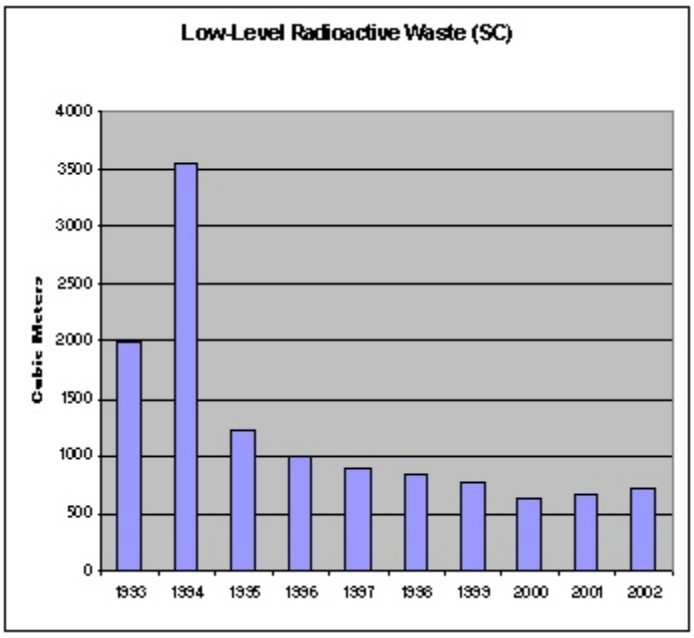
Total 2002 NE Generation: 3

NE Site Contribution:

Argonne National Lab-East	1
Argonne National Lab-West	1
Idaho National EE Lab	1

(metric tons)

Office of Science



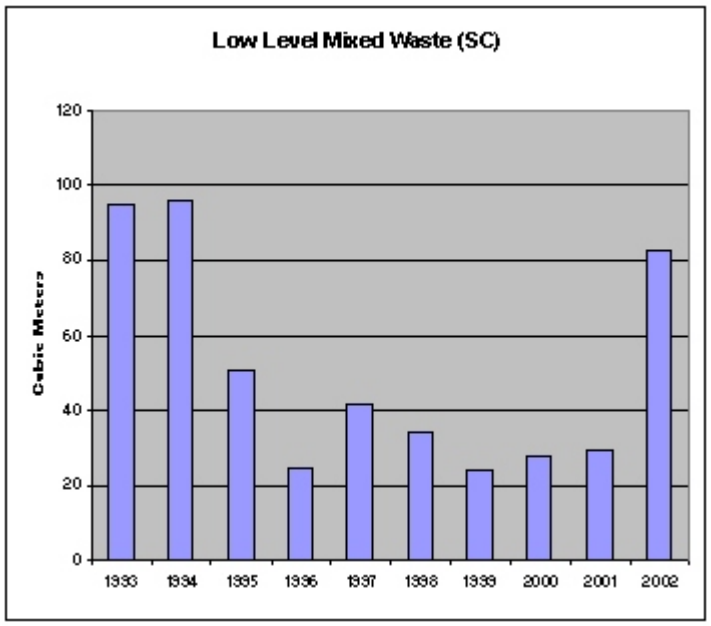
Total 2002 Low-level Waste: 12,167

Total 2002 SC Generation: 714

SC Site Contribution:

Argonne National Lab-East	61
Brookhaven National Lab	146
Fermi National Accelerator Lab	294
Lawrence Berkeley National Lab	5
L. Livermore National Lab	1
Los Alamos National Lab	7
Oak Ridge Institute	1
Oak Ridge National Lab	148
Pacific Northwest National Lab	40
Jefferson National Accelerator	11

(cubic meters)



Total 2002 Mixed Waste: 476

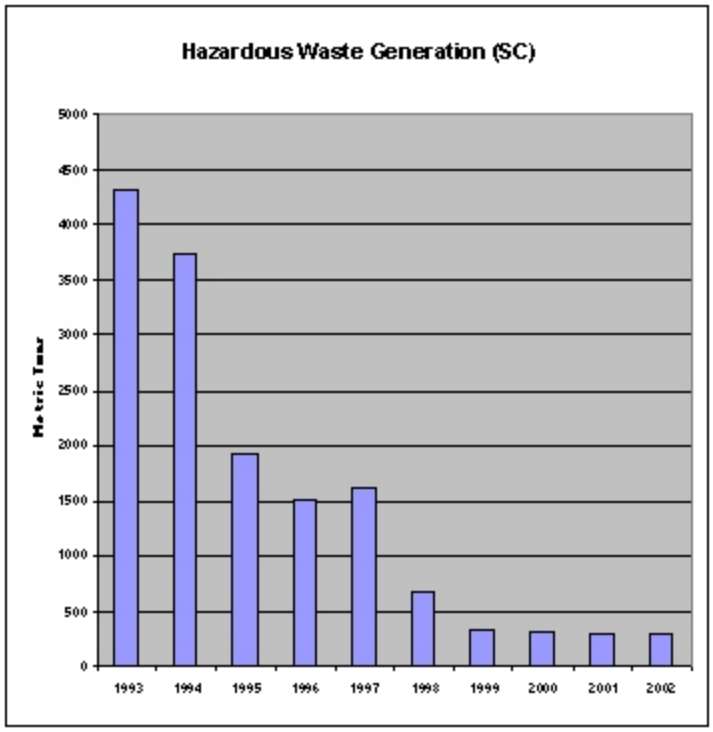
Total 2002 SC Generation: 83

SC Site Contribution:

Argonne National Lab-East	50
Brookhaven National Lab	3
L. Livermore National Lab	1
Oak Ridge National Lab	1
Pacific Northwest National Lab	28

(cubic meters)

Office of Science (cont)



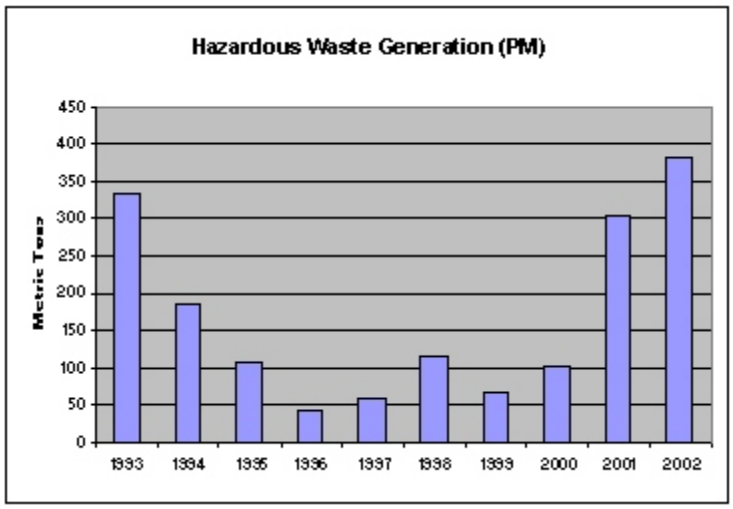
Total 2002 Hazardous Waste:	1,368
Total 2002 SC Generation:	286

SC Site Contribution:

Ames Lab	3
Argonne National Lab-East	45
Brookhaven National Lab	88
Fermi National Accelerator	30
Lawrence Berkeley National Lab	33
Lawrence Livermore National Lab	7
Oak Ridge Institute	1
Oak Ridge National Lab	9
Pacific Northwest National Lab	7
Princeton Plasma Physics Lab	11
Sandia National Lab/CA	1
Sandia National Lab/NM	1
Stanford Linear Accelerator	45
Jefferson National Accelerator	5

(metric tons)

Power Marketing



Total 2002 Hazardous Waste: 1,368

Total 2002 PM Generation: 384

PM Site Contribution:

Southwestern Power Admin	236
Western Area Power Admin	148

APPENDIX G:

Ozone Depleting Substances Use Reporting

Recent Progress in the Phaseout of Ozone-Depleting Substances (ODS)
at Select DOE Sites as Reported in 2001 Annual Site Environmental Reports

DOE Site	ODS Phaseout Progress
Brookhaven National Laboratory	• Instituted standard practice that technicians will immediately repair or isolate a refrigerant leak and prepare a work order for the needed parts. • Recovered and reclaimed approximately 600 lbs of R-11, 2 lbs of R-12, 1119 lbs of R-22 and 5 lbs of R-123 refrigerants were recovered and reclaimed for future use from equipment serviced in 2001. • Retired two 650-ton R-11 centrifugal chillers and sent the recovered refrigerant to a refrigerant reclamation facility. • Recovered 120 lbs of Halon 1211 from several retired portable fire extinguishers. • Replaced several Halon portable fire extinguishers with ABC dry chemical extinguishers.
National Energy Technology Laboratory	• Initiated activities to replace its two chillers with a cooling capacity greater than 150 tons by FY05.
Oak Ridge Reservation	• Evaluated and replaced all chillers at the East Tennessee Technology Park, Oak Ridge National Laboratory (ORNL), and the Y-12 Plant that meet the criteria of DOE's 2005 Class I ODS chiller phaseout goal. • Planning to decommission remaining seven units at ORNL, which are exempt from the DOE goal, as funding and circumstances allow.
Princeton Plasma Physics Laboratory	• Disposed of equipment containing ozone-depleting substances by removing refrigerants to specified levels prior to disposal. • Trained and certified technicians to operate, service and repair the four refrigerant recovery units and equipment containing ozone-depleting substances. • Pursued replacing its older equipment with non-Class I and II refrigerants.

Sandia National Laboratory	• Overhauled a chlorofluorocarbon (CFC) chiller and installed a new higher-efficiency purge unit and replaced all gaskets to significantly reduce the chances of a CFC leak.
Savannah River Site	• Reduced CFC refrigerant usage by more than 99% based on 1993 use. • Operated DOE's Halon repository; total Halon inventory has increased from 75,089 lbs in 1995 to 93,941 lbs in 2001. • Developed, by Fire Protection Engineering, a Halon phaseout plan and schedule, to help meet DOE's 2010 Class I ODS use phaseout goal.
Stanford Linear Accelerator Center	• Placed Source S-4, an open-topped vapor degreaser, into suspended operations during 2000 due to successful operation of Source S-54, a degreaser with near-zero emissions. • Identified four additional projects that, if successfully completed, would virtually eliminate the site use of Class I ODS.
Strategic Petroleum Reserve New Orleans, LA	• Developed plans for reducing use and storage of Halon 1301 by 1356 lbs.
Thomas Jefferson National Accelerator Facility	• Used an EPA-certified contractor to perform all service, repair and maintenance on its refrigeration/air conditioning equipment. • Developed plans to phaseout CFCs to the extent possible. However, R-12 is a highly preferred material for use in some physics experiments, and Halon 1211 is stored in portable fire extinguishers in the experimental halls as a last resort to protect certain types of specialized equipment.