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# **Sandia National Laboratories, California Pollution Prevention Program Annual Report**

**May 2012**



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# **Sandia National Laboratories, California Pollution Prevention Program Annual Report October 2012**

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## **ABSTRACT**

The annual program report provides detailed information about all aspects of the SNL/CA Pollution Prevention Program for a given calendar year. It functions as supporting documentation to the *SNL/CA Environmental Management System Program Manual*. The program report describes the activities undertaken during the past year, and activities planned in future years to implement the Pollution Prevention Program, one of six programs that supports environmental management at SNL/CA.

## **Acknowledgement**

The authors thank Gary Shamber, Manager, Environmental Management Department, the Environmental Management Department personnel, and the Facilities Engineering, Maintenance and Operations Department personnel for their leadership, guidance and support in the responsible stewardship of the environmental resources in our care.

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## Summary of Document Changes

Significant changes made to the 2011 edition of the Pollution Prevention Program Report are summarized in Table 1.

**Table 1 Summary of Significant Changes to Pollution Prevention Program Report**

<b>Section</b>	<b>Page</b>	<b>Change</b>
1.1	8	Included Waste Minimization task to review NEPA submissions.
1.2	9	Included monitoring Sustainable Acquisition purchases for construction activities.
1.3	9	Removed Green Team reference.
1.4	9	Updated management responsibilities of Universal Waste.
2.0	10	Inserted section detailing replacement of DOE orders and defines GHG reductions.
Table 2	12	Replaced DOE Orders 450.1 and 430.2B with 436.1
2.1	14	Inserted section for summary of audits and assessments for 2011.
3.0	15-16	Updated Table 3 to reflect versions and dates for technical work documents.
4.0	17	Replaced Waste Generation and P2 Progress Report with PPTRS. Included Affirmative Procurement Report. Removed WasteWise Annual Report. Changed Monthly DOE P2 activities report to Quarterly updated.
5.0	18	Table 5 updated to reflect current assignments and backups.
7.0	21	Updated to reflect 2011 EMS objectives for minimizing Hazardous and Radioactive waste
7.1	22	Updated performance measures to include FY2011 data.
7.3	23	Removed Affirmative Procurement data.
9.0	25	Updated general assessment results.
9.1	25	Updated program self-assessment results.
9.3	26	Summarizes the results of the 2011 review of the construction and custodial contracts to determine incorporation of sustainability requirements.
9.4	26	Updated the results of the EP Representative Assessment on P2 compliance.
9.5	26	Removed corporate/line self assessment.
EMS	27-28	Updated Annual EMS Program Review Checklist
10.0	28	Updated P2 Program Accomplishments for FY2011
11.0	29	Updated Issues.
12.0	29	Updated Trends
Table 7	30	Updated EMS Objectives, Targets and Actions Supporting P2 for FY2011
Appx A	30	Updated Waste Stream data to reflect CY2011 information.



# 1 Program Description

The Pollution Prevention (P2) Program is one of six programs under the Environmental Management Department at Sandia National Laboratories, California (SNL/CA). The P2 Program promotes the elimination or reduction of all types of wastes generated at SNL/CA. The Program works closely with the site's organizations to establish routine and project specific recycling programs. The Program provides guidance for resource and energy conservation and assists in identifying recycled-content products for use throughout the site. The P2 Program also implements the Universal Waste program to ensure proper handling and disposal of low-hazard waste specifically consumer electronics, batteries, cathode ray tubes (CRTs), and fluorescent tubes. The P2 Program is responsible for the collection, analysis, and reporting of waste generation, recycling and Environmentally Preferable Purchases (EPP) data. The P2 Program is part of the SNL/CA Environmental Management System (EMS) and maintains responsibility for implementing the DOE Pollution Prevention performance based goals. The Program is an indirectly funded program, supported through the Integrated Enabling Service.

This program report provides detailed information about all aspects of the P2 Program. It provides supporting documentation to the *SNL/CA EMS Program Manual*. The program report is updated annually to reflect the dynamic nature of program operations, accomplishments, and goals.

## 1.1 Waste Minimization

Waste Minimization focuses on the elimination or reduction of all types of wastes generated at SNL/CA. The P2 Program researches new technology and equipment for waste minimization as well as provides guidance on Environmental Safety and Health (ES&H) Standard Operating Procedures (SOPs). Researchers, Maintenance and Waste Management staff, and the Environmental Programs (EP) Representative provide the P2 program with information about processes that should be evaluated for eliminating or reducing the amount of waste generated. This is accomplished by 1) reviewing projects at IDT, 2) conducting Pollution Prevention Opportunity Assessments and program self-assessments, 3) independent assessments performed by the EP Representative, 4) reviewing new and revised NEPA submissions and 5) receiving recommendations and input from other environmental programs.

## 1.2 Recycling and Reuse

The P2 Program encourages recycling of solid waste by diverting materials suitable for reuse and recycling from landfills. The P2 staff assists Waste Management, Facilities, and Maintenance staff and researchers in implementing, maintaining and improving programs for recycling and reuse of routine and non-routine wastes. The P2 Program has established several contracts to obtain revenue for the recycling of waste streams specifically beverage containers, cardboard, electronic waste, lead acid batteries and scrap metal. The P2 staff continues to evaluate other waste streams for recycling. The P2 Program in addition conducts outreach and awareness campaigns to inform the SNL/CA site population of the recycling requirements and when changes occur in the requirements. Appendix A contains information on the twenty-two waste streams recycled or reused at SNL/CA.

SNL/CA occupies approximately 60 facilities on the 410 acre campus. These facilities are comprised of offices, laboratories, warehouses, and storage areas. Each facility is provided with recycling containers and hoppers dependent on the facility's activity. Area 8, located in the southern part of the site, is the staging area for trash and large volume recycling waste streams as well as the pallet-recycling program. The P2 Program's Recycling Yard is located east of Building 928 and is the staging area for auction and recycling activities, the truck scale and the P2 storage trailers. South of Building 967 is the staging area for scrap metal collection activities. The cardboard baling operations are conducted in Building 927 on the east side.

The P2 Program participates in site cleanout events as needed. These activities include assistance with cataloging and advertising of unneeded excess materials and equipment, and the disposition of items and recyclables not reclaimed. The P2 Program also works with Reapplication staff and the EP Representative to evaluate equipment to determine if it can be reused or recycled as scrap metal. The P2 Program works with Facilities staff to ensure construction waste generated from C&D activities are recycled, and Sustainable Acquisition requirements are met for purchases of new materials.

The P2 Program works with the researchers and Waste Management staff to utilize the Chemical Exchange Program (CEP) to reuse chemicals onsite.

### **1.3 Environmentally Preferable Products**

The P2 Environmentally Preferable Products (EPP) Program concentrates on increasing the procurement of products that contain recycled and bio-based content. The P2 staff works with Procurement, Maintenance, and Facilities staff and line organizations to increase EPP purchases.

The P2 Program conducts outreach and awareness campaigns to inform the SNL/CA site population of the EPP requirements and provides updates when changes occur in the requirements.

### **1.4 Universal Waste Management**

The P2 and Waste Management Programs co-manage the Universal Waste program at SNL/CA consisting of batteries, electronic waste and fluorescent light tubes. The Programs work closely with Facilities Engineering, Maintenance and Operations and Reapplication staff to implement the requirements of these waste streams.

### **1.5 Energy Conservation**

The P2 Program provides assistance in developing and communicating strategies to reduce the use of SNL/CA's natural resources.

### **1.6 Data Analysis and Reporting**

The P2 Program is responsible for the collection, analysis, and reporting of waste generation, recycling and EPP data. The information is provided by the Waste Management Program Lead, Researchers, Facilities Engineering, Maintenance and Operations staff, and vendors. The reports are discussed in Table 4.

## 2 Regulatory / Corporate Drivers

Environmental compliance drivers include laws, regulations, orders, directives, and other corporate and site-specific requirements. The drivers that are applicable to the P2 Program are listed and summarized in Table 2.

The P2 Program uses a variety of sources to stay current on applicable compliance drivers. The primary source used is the Sandia corporate notification service provided by corporate ES&H Library staff. Sandia's library staff monitors DOE requirements and federal, state, and local government publications for regulatory issues applicable to SNL operations. P2 receives notifications weekly, which are then reviewed for applicability to SNL/CA operations. P2 also receives and reviews the *California Environmental Insider*, a California-specific publication, issued twice per month, which summarizes current regulatory issues and changes that affect activities in the state. Both federal and state issues of concern are addressed in this publication. Additional sources of information on regulatory changes include direct communication with NNSA/SSO and regulating agencies, and periodic review of agency web sites. New requirements are incorporated into program activities and communicated to the site through electronic notifications, the ES&H Interdisciplinary Team process, self-assessments, targeted presentations, and the P2 web page.

In 2010 the State Department of Resources Recycling and Recovery (CalRecycle) developed regulations that require any business including public entities that generate four cubic yards or more of trash to recycle solid waste by subscribing to a recycling service, source separating their material and self-hauling to a recycling facility or having their material processed in a mixed waste processing facility. This regulation meets the requirement placed on CalRecycle to reduce 5 million metric tons of CO<sub>2</sub> equivalent greenhouse gas emissions annually. A business must implement their recycling program by July 1, 2012.

Department of Energy orders 450.1A and 430.2B were cancelled and replaced with DOE Order 436.1 Departmental Sustainability effective May 2, 2011. DOE Order 436.1 defines requirements and responsibilities for managing sustainability to ensure the DOE carries out its missions in a sustainable manner that addresses national energy security and global environmental challenges, and advances sustainable, efficient and reliable energy for the future; institute wholesale cultural change to factor sustainability and greenhouse gas (GHG) reductions into all DOE corporate management decisions; and ensure that DOE achieves the sustainability goals established in its Strategic Sustainability Performance Plan.

Table 2 Compliance Drivers for Pollution Prevention Program

<b>Driver</b>	<b>Summary</b>	<b>Regulating Authority</b>
<b>Federal Laws</b>		
Resource Conservation and Recovery Act (RCRA)	RCRA establishes a cradle to grave management framework and a regulatory system for solid waste. Waste generators must have a waste minimization program in place that reduces volume and toxicity of waste. Another section of the Act requires procurement of products that container recycled-content or recovered materials.	Environmental Protection Agency (EPA)
Pollution Prevention Act of 1990	The Pollution Prevention Act of 1990 establishes a national policy for Pollution Prevention, and introduces what is known as the pollution prevention hierarchy. The hierarchy requires facilities to prevent pollution at the source whenever feasible, followed by reuse/recycle, then treatment, and disposal.	EPA
Clean Water Act (CWA)	The CWA requires industrial storm water discharge facilities to have an onsite Pollution Prevention plan. It also directs the EPA to promote the inclusion of pollution prevention technologies in industrial effluent standards and promote source reduction in industrial water effluent guidelines.	EPA
Energy Policy Act of 2005	The Energy Policy Act of 2005 requires the Secretary of Energy to work with federal agencies to significantly reduce the use of energy and promote energy efficiency and the use of renewable energy technologies.	EPA
<b>DOE Directives</b>		
DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets	DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets establish the general requirements for capital assets, and include numerous pollution prevention and sustainable design concepts and requirements.	DOE

Table 2 Compliance Drivers for Pollution Prevention Program (cont.)

<b>Driver</b>	<b>Summary</b>	<b>Regulating Authority</b>
<b>DOE Directives</b>		
DOE Order 435.1, Radioactive Waste Management	DOE Order 435.1, Radioactive Waste Management requires waste minimization and pollution prevention to be implemented at all facilities that manage radioactive waste.	DOE
DOE Order 436.1, Departmental Sustainability Approved 5/2/11	DOE Order 436.1, Departmental Sustainability defines requirements and responsibilities for managing sustainability. Cancels DOE O 450.1A and DOE O 430.2B	DOE
<b>Executive Orders</b>		
Executive Order (E.O.) 12088, Federal Compliance with Pollution Control Standards	E.O. 12088, Federal Compliance with Pollution Control Standards makes the head of each Federal Agency responsible for the prevention of environmental pollution at Federal facilities and as well as for all activities that are under the control of that agency.	DOE as responsible federal agency for SNL facilities
E.O. 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention	E.O. 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention requires Federal agencies to reduce toxins entering waste streams and release to the environment through source reduction; to report toxic-chemicals entering the waste stream and released to the environment; to improve emergency planning, response, and accident notification; to encourage markets for clean technologies and safe alternative to hazardous substance and toxic-chemicals; and to set waste reduction goals.	DOE as responsible federal agency for SNL facilities
E.O. 13423 Strengthening Federal Environmental, Energy, and Transportation Management	E.O. 13423 Strengthening Federal Environmental, Energy, and Transportation Management strengthens and establishes new and updated goals, practices, and reporting requirements for environmental, energy, and transportation performances and accountability.	DOE as responsible federal agency for SNL facilities

Table 2 Compliance Drivers for Pollution Prevention Program (cont.)

<b>Driver</b>	<b>Summary</b>	<b>Regulating Authority</b>
<b>Executive Orders</b>		
E.O. 13514 Leadership in Environmental, Energy, and Economic Performance	E.O. 13514 Leadership in Environmental, Energy, and Economic Performance establishes an integrated strategy towards sustainability in the Federal Government and to make reduction of greenhouse gas emissions (GHG) a priority for Federal agencies.	DOE as responsible federal agency for SNL facilities
<b>California Laws</b>		
California Health and Safety Code, Div 20, Ch 6.5, §§ 25244.12-25244.24.) Hazardous Waste Source Reduction Act of 1989	The Hazardous Waste Source Reduction and Management Review Act of 1989, also known as Senate Bill 14, requires hazardous waste generators to complete a Source Reduction and Evaluation Review and Plan. Each generator regulated under the Act must conduct the source reduction evaluation review and plan every four years.	Department of Toxic Substances Control (DTSC)
California Health and Safety Code, Div. 20, Ch. 6.5, §§25202.9	Waste Minimization Certification: The waste generator must certify annually that the facility has a program in place to reduce the volume and toxicity of all hazardous wastes.	DTSC
California Health and Safety Code, Div. 20, Ch. 6.5, §§25211	Appliance Recycling: DTSC established a certification program for individuals and businesses that process major appliances for scrap. Before an appliance can be scrapped it is required that special materials such as refrigeration fluid (CFCs), used oil, and mercury are removed prior to the disposal of the major appliances.	DTSC
Title 22 Code of Regulations (CCR) Div. 4.5, Ch. 16. Recyclable Materials	Recyclable Materials: The management of recyclable materials. Mandates that specific waste streams are recycled instead of land filled.	DTSC
Title 22 CCR, Div. 4.5, Ch. 31. Waste Minimization (SB14)	Hazardous Waste Source Reduction and Management Review: Every four years the site must review its operations and prepare a report.	DTSC

Table 2 Compliance Drivers for Pollution Prevention Program (cont.)

<b>Driver</b>	<b>Summary</b>	<b>Regulating Authority</b>
<b>California Laws</b>		
Public Resource Code, §§ 42490-42499. Cell Phone Recycling Act	Cell Phone Recycling Act: Requires all vendors of cell phones to have a system in place to recycle their consumer cell phones.	DTSC
Public Resource Code, §§ 42961 Tire Waste Manifest System	Tire Waste Manifest System: Requires generators of waste tires to properly manage waste tires and participate in the Waste Tire Manifest Program.	County of Alameda Environmental Health Department
Title 22 CCR, Division 4.5, Chapter 23, Standards for Universal Waste Management	Universal Waste Management: Requires universal waste generators register with the State, manage waste appropriately and report activity. In 2009 the regulations for Universal Waste Management were updated. The update consolidated specifically the requirements for various waste streams, the requirements for labeling of universal waste streams was specifically defined as was the tracking requirements for offsite shipments.	DTSC
Title 17 CCR, Division 3, Chapter 1, Article X Mandatory Commercial Recycling	Requires any business including public entities that generate four cubic yards or more of trash to recycle solid waste by subscribing to a recycling service, source separating their material and self-hauling to a recycling facility or having their material processed in a mixed waste processing facility.	California Department of Resources Recycling and Recovery (CalRecycle)

## 2.1 Summary of Audits and Assessments for 2011

The P2 Program is audited periodically by EPA, DTSC, DOE, Alameda County Environmental Health Department, Sandia Corporation, and Lockheed Martin, Sandia's parent company. In 2011 the P2 Program activities were audited by Alameda County Department of Environmental Health Solid/Medical Waste for conformance with Tire recycling and management. No findings, non-conformances, or Opportunities for Improvement were identified.

An internal audit of the Environmental Management department for EMS compliance was performed in September, 2011 by Organization 857. Results included a finding against the P2 program was issued for incorrectly completing the EMS measurement assurance plans (MAPS)

In November 2011 SNL/CA P2 staff provided an updated overview of the SNL/CA P2 program to the Sandia Site Office staff. The overview included the following topics: introduction of the new P2 Program Lead; changes in the PPTRS; and discussions of budget and staffing reductions impact to best business practices that are not regulatory driven while ensuring compliance with the SNL/CA site EMS. No non-conformances or Opportunities for Improvement were identified. However, it was determined that submission of monthly progress reports to DOE would be reduced to occasional.

The P2 Program Lead communicates with NNSA/SSO counterparts regularly to keep them informed of issues and trends of importance to the program. The P2Program staff at SNL/CA work together with the SNL/NM counterparts and NNSA/SSO to resolve concerns and to develop effective approaches to program implementation. The P2 Program and SSO maintain an open and cooperative relationship.

### 3 Operational Controls

The P2 Program uses technical work documents, and administrative and engineering controls to control operational aspects of the Program. Table 3 lists the technical work documents applicable to the P2 Program. They include the Hazardous Waste Facility Permit, corporate processes and procedures, administrative and operating procedures, preliminary hazard screening documents, hazard assessments, and other site-specific requirements. Administrative controls include checklists, reporting forms, site documentation review, and collection point locations for recyclables and construction debris to minimize trash generation and maximize recycling and reuse. Administrative controls also include blocking the ordering of virgin products or products that do not meet EPA Guidelines to improve the purchasing of required recycled-content products. Engineering controls include personal protective equipment and hearing protection.

**Table 3 Technical Work Documents for the Pollution Prevention Program**

<b>Title</b>	<b>Current Issue Date</b>
California Environmental Protection Agency, Department of Toxic Substances Control (CAL-EPA, DTSC) Hazardous Waste Facility Permit	March, 2011
Corporate Procedure ESH100.2.ENV15 Manage Hazardous Waste at SNL/CA	October 2009
Corporate Procedure ESH100.2.ENV20 Manage Other Waste at SNL/CA	October 2009
Corporate Procedure ESH100.2.ENV21 Recycle or Reuse Waste at SNL/CA	October 2009
SNL06A00127-006, Pollution Prevention/Waste Minimization Program Activities	1/09/2012

**Table 3 Technical Work Documents for the Pollution Prevention Program (cont)**

<b>Title</b>	<b>Current Issue Date</b>
SP473635 Management of Universal Waste Batteries at SNL/CA	5/10/2010
SP473637 Management of Universal Waste Lamps at SNL/CA	6/8/2010
OP472271 Operating the Vertical Cardboard Baler	4/10/2012
OP472288 Operating the Portable Axle Scale	6/2/2010
AP800015 Division 8000 WP&C for Activity Level Work	3/8/2010
OP471680 IDT Process to Evaluate Proposed Projects & Action	1/26/2010



## 4 Documents Produced

Table 4 identifies the documents and reports generated by the Pollution Prevention Program. One change that occurred in 2011, was the decision to no longer actively participate in the Federal Waste wise program. As a result the annual Wastewise Report was not prepared and will no longer be supported. This decision was based on the loss of a full time Pollution Prevention Program Lead. This decision was made in concurrence with Gary Shamber, Manager, 8516, Ralph Wrons, Consultation with Sandia/New Mexico Corporate Pollution Prevention staff, and DOE/NNSA oversight representative, Carolyn Holloway.

**Table 4 Pollution Prevention Program Documents and Reports.**

<b>Document</b>	<b>Due Date</b>	<b>Frequency</b>	<b>Distribution</b>	<b>Purpose</b>
Source Reduction and Evaluation Review and Plan (SB-14)	September 2015	Every 4 years	CAL-EPA/DTSC	State requirement
Notification for Handlers/Handlers-Recyclers of Universal Waste Electronic Devices and/or CRTs: Provides one-time notification site generates universal waste.	February	One-time	CAL-EPA/DTSC	State requirement
Annual Report for Handlers/Handlers-Recyclers of Universal Waste Electronic Devices and/or CRTs: Requires annual reporting of a facility's universal waste electronic devices and/or CRTs generation, treatment and disposition data.	February	Annual	CAL-EPA/DTSC	State requirement

**Table 4 Pollution Prevention Program Documents and Reports (Cont)**

Pollution Prevention Tracking Report System (PPTRS): Provides waste generation data, recycling data, and site accomplishments. Review of defined contract types to ensure sustainable acquisition requirements are included.	December	Annual	DOE/SSO	DOE requirement
Federal Electronic Challenge Annual Report	February	Annual	FEC	DOE requirement
Sandia Annual Program Report: Provides a summary of Pollution Prevention activities, program and goals.	February	Annual	DOE/SSO, SNL Management	Information
Quarterly Reporting: Provides quarterly data for radioactive/ mixed waste, hazardous waste and solid waste.	Quarterly	Quarterly	DOE/Service Center, SNL Management	Information
Quarterly Reporting: Provides quarterly data for hazardous waste, solid waste, C&D waste and water purchased.	Quarterly	Quarterly	Lockheed Martin	Information
Quarterly Reporting: Provides quarterly data for radioactive/ mixed waste, hazardous waste and solid waste.	Quarterly	Quarterly	DOE	Information
Quarterly Report: Provides updates of Pollution Prevention monthly activities	Quarterly	Quarterly	DOE/SSO SNL Management	Information

## **5 Approved Job Descriptions and Current Assignments**

Job assignments in the P2Program include a Program Lead, a P2 Laborer and various Universal Waste Technicians. Job descriptions and qualifications for each assignment follow. Table 5 provides a list of personnel supporting each job assignment.

**Table 5 Current Program Staff Assignments**

<b>Job Assignment</b>	<b>Personnel</b>	<b>Back-Up</b>
Pollution Prevention Program Lead	Deanna Dicker	Janet Harris
Pollution Prevention Laborer	Paul Wilson	Harold Hernandez
Communications Technologist-Universal Waste (UW) cell phones	Marcia Jacobs	None
Facilities Technologist-UW lamps	Carlisle Smith	None
Reapplication Technologist-UW CRTs and electronic devices	Harold Hernandez	None
Universal Waste Technologist-UW batteries	Pamela Irish	Janet Harris

## 5.1 Pollution Prevention Program Lead

The Program Lead is responsible for management and oversight of all program activities, interacting with the DOE/SSO on all pollution prevention issues, interacting with local, state and federal regulatory agencies, and participating on the ES&H Interdisciplinary Team. Management and oversight responsibilities encompass a range of activities including budgeting, monitoring costs, identifying investments needs, identifying new recycling waste streams, task assignment and oversight, contract management, conducting program self-assessments, maintaining the program website, data collection, reporting, developing operational controls, and participating in special site events and department projects. The Program Lead serves as the Pollution Prevention subject matter expert for SNL/CA. The Program Lead is responsible for monitoring changes in program compliance drivers and for communicating these changes to the site.

At a minimum, the Program Lead is required to hold a Bachelor of Art degree with at least 10 years' experience in an environmental field, or a Bachelor of Science degree in an engineering, environmental, or science field with three years of related work experience. Desirable qualifications for this position include proficiency in technical writing, project management skills, and pollution prevention or waste management expertise. Registration as an environmental manager is optional, but encouraged, for the Program Lead position.

## **5.2 Pollution Prevention Laborer**

The Pollution Prevention Laborer is responsible for providing labor support to the Pollution Prevention Program for implementation of the recycling programs. The responsibilities include monitoring recycling containers and delivering the containers as needed, collecting and transporting recyclables by means of forklift, cart or pickup truck as well as documentation. The responsibilities also include overseeing the onsite documentation shredding conducted through a contract with an offsite vendor, conducting the cardboard baling activities and maintaining equipment in a clean orderly fashion.

At a minimum, the Pollution Prevention Laborer is required to have a high school diploma. Desirable qualifications include experience in vehicle operations including forklifts, good customer relation skills, experience with site operations, and attention to detail. Computer skills are optional, but encouraged, for the Pollution Prevention Laborer position.

## **5.3 Communications/Facilities/Reapplication/Universal Waste Technologists**

The Communications/Facilities/Reapplication/Universal Waste Technologists are responsible for providing support to the Pollution Prevention Program for implementation of the Universal Waste Program. The responsibilities include collecting, transporting universal waste onsite specifically batteries, cell phones, CRTs, electronic devices and lamps by means of cart or pickup truck and processing universal waste for offsite recycling.



## 6 Training and Competency

Sandia views training, development, and education as a strategic investment in Sandia’s future. The policy of Sandia Corporation is to maintain a high level of technical and administrative competence in support of its mission. In support of this policy, Sandia maintains a set of general corporate training requirements that cover a wide range of areas such as security (physical, information, and computer), business ethics and diversity, general ES&H, and general business processes. Standard corporate requirements are identified for each individual in the online Corporate Education, Development, and Training database at <https://hrprod.sandia.gov/cfdocs/prod/hris/ctd/apps/cedtweb/comp/comp.cfm>. The online database tracks completion status for all corporate training requirements and provides electronic reminders when a course is due to all Pollution Prevention personnel. Sandia training coordinators identify corporate training requirements for new hires. Sandia has developed online training courses to meet these requirements.

In addition to corporate training requirements, each program assignment has job-specific training requirements. These training requirements address safety as well as specific job functions. The Environmental Management Department Manager, Program Lead, or Department ES&H Coordinator may identify job-specific training requirements. Most of these requirements are tracked in the online database. Table 6 presents job-specific training requirements for the Pollution Prevention Program.

**Table 6 Pollution Prevention Training Matrix**

Training Requirement	Training Method	Program Lead	Laborer	Comm/Fac/ Reapp/UW Technologists	Frequency
Pollution Prevention Workshops	Offsite	●			When Available
Sustainable Assistance Network; (SAN) Federal Electronic Challenge; (FEC) and (EPP) Teleconferences	Onsite	●			Monthly (SAN & FEC) Quarterly (EPP)
Program Workshops-seminars	Offsite	●			When Available
ESH100 ES&H Awareness	Web based	●	●		Annual
FKL 153R Forklift: Operation Refresher	Sandia class		●		Triennial
FKL 153 Forklift: Hands on Use	Sandia class		●		One time only
FRP 106 Fire Extinguisher:	Sandia	●	●		

Hands on Use	class				Annual
PKX 100 Basic Hazardous Material Transportation Training	Sandia class	●			Triennial
PKX 112 Basic Hazardous Waste Transportation Training	Sandia class	●			Triennial
Universal Waste Training	Sandia class	●	●	●	Annual

## 6.1 Specialized Training

The P2 Program has identified staff in other SNL/CA organizations that are required to be trained in the management of Universal Waste as required in Title 22 CCR Ch. 23 Universal Waste Management, specifically proper handling and emergency spill procedures. This is an annual training and the P2 Program retains the records. These individuals support the site by collecting, transporting and preparing universal waste for offsite recycling.

## 7 Performance Measures

EMS objectives that are applicable to the P2 Program include the minimization of the generation of hazardous and radioactive waste, and the minimization of the generation of solid waste. To assess performance in meeting these objectives the P2 Program monitors waste generation and recycling of waste streams. The following summarizes the P2 Program's progress in the last year.

### 7.1 Hazardous and Radioactive Waste Objectives

Although SNL/CA does not have a specific target for this objective, we strive to minimize generation of radioactive and hazardous waste through process controls, recycling, and reapplication of chemicals from one activity to another. Figures 1 and 2 show hazardous and radioactive waste generated since 2005, respectively. As shown, waste generation in both categories fluctuates from year to year depending on the nature and scope of research and facilities projects conducted. Over the last several years, SNL/CA has undertaken a number of campaigns to identify and remove old chemicals from the site inventory. These activities contributed to an increase in hazardous waste for 2009 and 2010. The drop in weight noted in 2011 reflected the type of research materials, such as sample sized chemicals, that were submitted for disposal during the Advanced Biology Laboratory cleanout. SNL/CA also experienced an increase in radioactive waste in 2010, and a decrease in 2011; however, the total quantities generated are small and consistent with quantities generated since 2005.

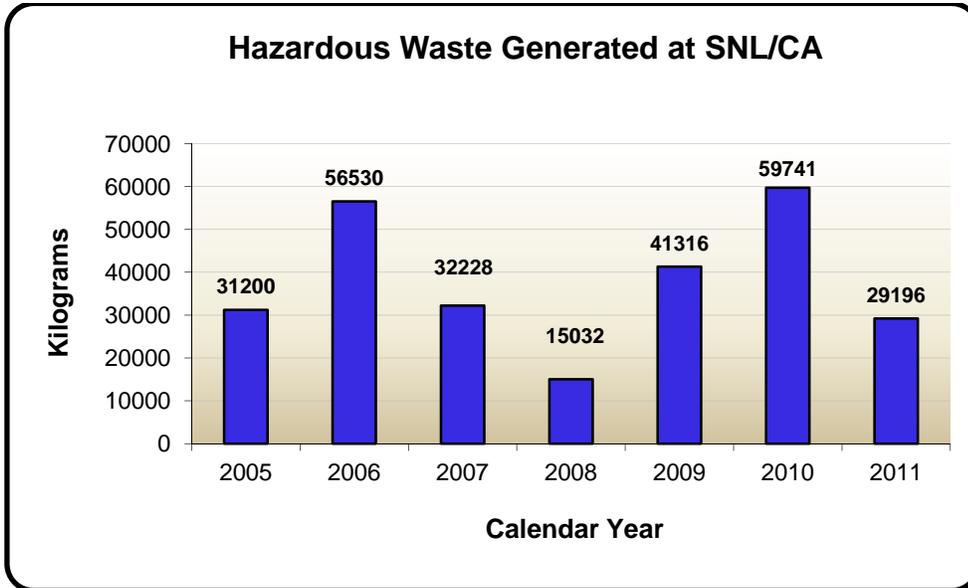
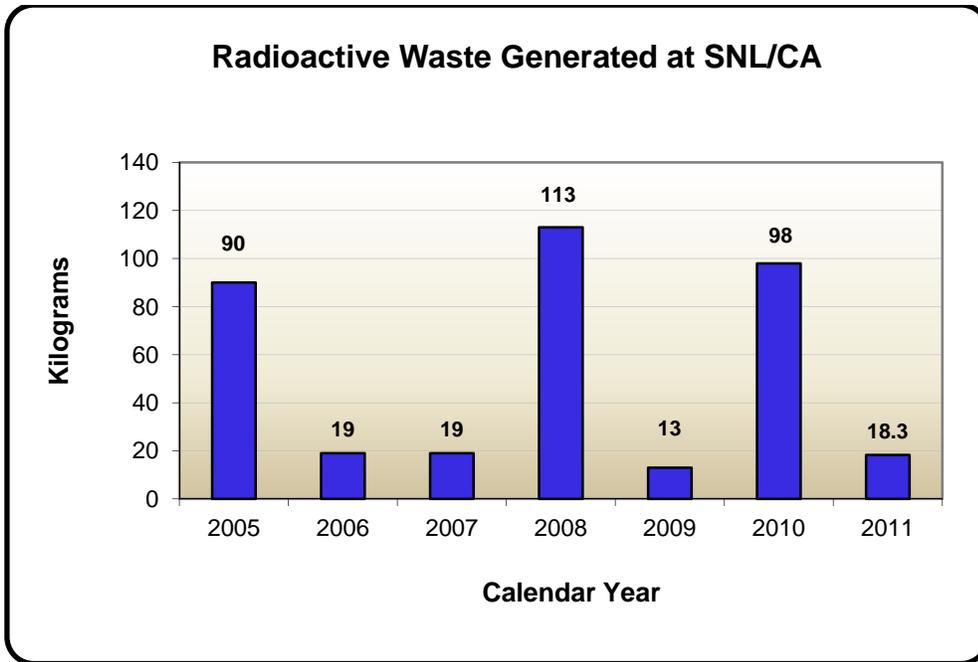


Figure 1 Hazardous Waste Generated at SNL/CA

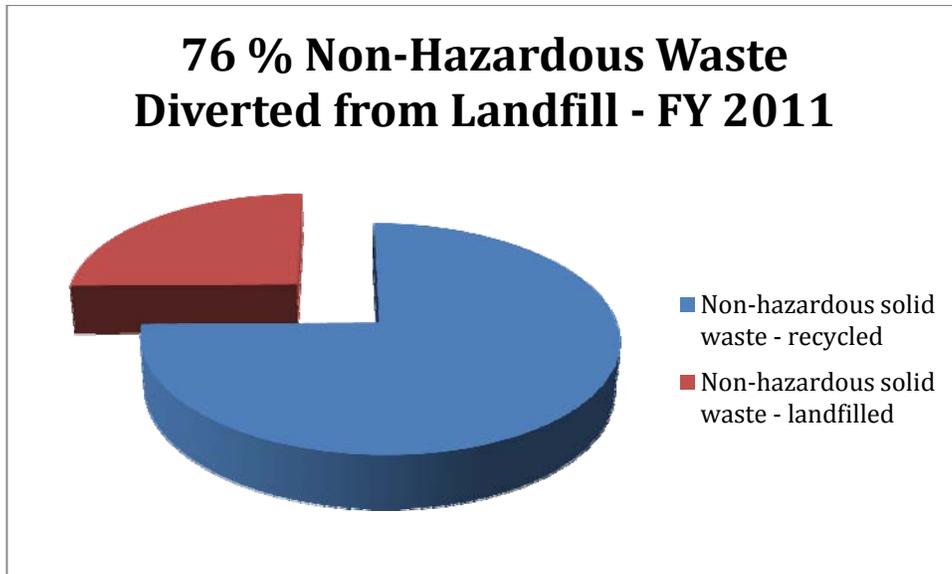


**Figure 2 Radioactive Waste Generated at SNL/CA**

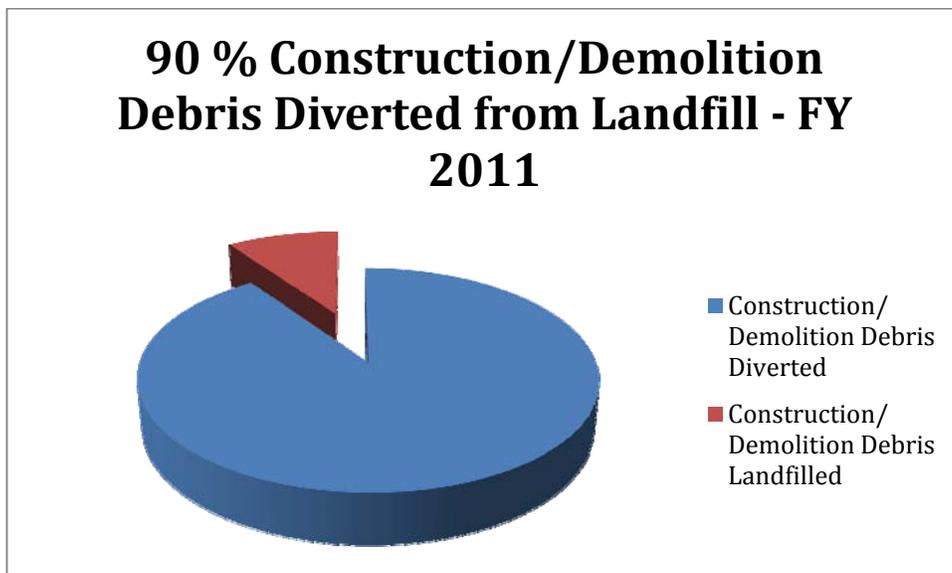
## 7.2 Solid Waste Objective

In 2010, SNL/CA established two targets to support our objective of minimizing the quantity of solid waste that is sent to the landfill. The targets were to divert from disposal 50% of non-hazardous waste and 50% of construction/demolition debris by fiscal year 2015. These targets are also consistent with the goals of Executive Order 13514. As shown in Figures 3 and 4 Sandia met both targets in 2011 through recycling of fifteen waste streams. The quantity of routine non-hazardous solid waste (excludes construction debris) sent to the landfill in 2011 also decreased from 2010, by 18.44 metric tons. Figure 5 presents routine landfill waste data for fiscal years 2003 to 2011.

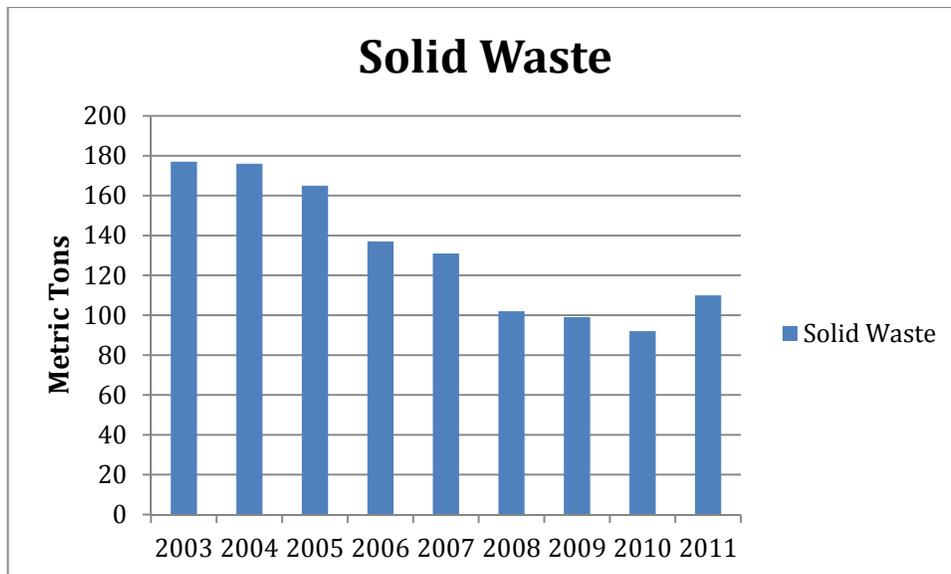
There was an increase of maintenance debris and routine trash that occurred during FY 2011, that is attributed to two significant events that occurred almost simultaneously. In FY 2011 there was a Site Wide Excess Equipment/Material Cleanup Campaign and there was an exodus of approximately 9% of the SNL/CA employee workforce. Although recycling, reuse, and reapplication was the theme for the campaign and largely advertised to upcoming retiree's, there were still waste streams that were disposed of to landfill.



**Figure 3 Non-Hazardous Solid Waste Diverted From Landfill Disposal**



**Figure 4 Construction / Demolition Debris Diverted From Landfill Disposal**



**Figure 5 SNL/CA Landfill Waste**

## **8 Quality Assurance**

### **8.1 Program Risk Assessment**

In January 2011, the P2 Program completed a program risk assessment. The risk assessment identified four potential risks associated with P2. These included

1. Potential risk of a contaminated container or equipment being released to the public sector.
2. Mismanagement of disposition of equipment from an outside organization
3. Inaccurate data reported to internal and external organizations
4. Impacts of reduction in Program funding

A copy of the complete risk assessment is available upon request.

### **8.2 Maintaining Program Quality**

Pollution Prevention applies the following program-specific elements to assure quality is maintained in data collection, analyses, and reporting.

- Affirmative Procurement data is reviewed and checked against the vendor's electronic ordering system, contracted computer suppliers, Pro Card purchases, catalog or suppliers.
- Internal reports and documents are subjected to internal review and technical editing before finalizing.
- Published reports are reviewed before finalizing by NNSA/SSO, applicable SNL/CA staff, and technical editors.



## **9 Program Assessments**

### **2011 Program Self-Assessment**

The P2 staff completes a self-assessment annually that includes two parts:

Part 1 is an assessment of the mechanisms and workings of the program to include, but not necessarily limited to: program procedures; program web site, directory and other communications information; field infrastructure and signage; program documents; and program financials and contracts. This is an inward looking part of the assessment.

Part 2 is an assessment of the effectiveness of the environmental program as evidenced by compliance of requirements performed by the line. The 2011 Program Self-Assessment results are discussed in Sections 9.2 and 9.3.

The Pollution Prevention program is assessed by the NNSA/SSO located in New Mexico with participation from the Sandia Site Office. SNL/CA was reviewed in the fall 2011. No issues were found.

The DTSC audits Waste Management and Pollution Prevention. The Pollution Prevention aspect of the DTSC audit consists of a review of affirmative procurement practices, SB-14 Source Reduction Evaluation Review and Plan, and training as required by the Part B Permit. DTSC did conducted two audits in 2011, and no Pollution Prevention violations were issued.

The Alameda County Department of Environmental Health (ACDEH) audits the Waste Tire Manifest program. The ACDEH did audit SNL/CA's Waste Tire Manifest program in 2011 and issued no findings or observations.

### **9.1 Follow-Up on 2010 Program Assessments**

In 2010, P2 assessed the management of regulated waste streams that were either recycled or reapplied offsite or onsite including certified appliances through Property Management. The assessment determined the requirements and regulations associated with these waste streams and reviewed the management procedures and practices to ensure compliance. As a result of this assessment, P2 identified a vendor and developed a new contract to shred and recycle CDs/DVDs.

### **9.2 2011 Program Self-Assessment - Part 1 - Program Mechanics**

In 2011, P2 completed a self-assessment that reviewed all of our technical work documents, processes, and web pages. The results of this assessment are documented on the Annual EMS Program Review Checklist on pages 27 & 28.

### **9.3 2011 Program Self-Assessment - Part 2 – Line Performance Assessment**

In October 2011 P2 reviewed the SNL/CA construction contract template and custodial contract to determine the sustainable requirements to be incorporated and to ensure contracts are compliant with Executive Order 13514. This assessment resulted in two observations that P2 quickly worked with the management of the Facilities group to implement improvement actions.

The first observation concluded that some of the products listed specifically mention compliance with product specifications listed in Appendix C, DOE FY2011 Sustainable Acquisition Priority Products and Attributes. However, Section 5 of the above Supplies and Equipment order requires all cleaning products must comply with Appendix A. To rectify this observation, the SDR worked closely with the P2 Program Lead to ensure the existing chemical products were in compliance and that contract language ensures the SDR must approve changes or the introduction of new products.

The second observation resulted when the Pollution Prevention Program Lead evaluated the construction contract templates, Section 018113.13 LEED Sustainable Design Requirements and Section 01 81 13.23 FHPSB Sustainable Design Requirements. SNL/CA writes their contracts utilizing construction spec 013543. Section 1.4 in Spec 013543 requires the vendor 10 days after month end to report to SNL/CA all environmental preferable purchases. The spec also states design requirements for purchasing products with recycled / recovered content products will be provided by the SDR at contract award as part of the design package. Spec 013543 is incorporated in all construction contracts. Although contract specs include required verbiage, an area of improvement was identified, the Environmental Preferable Purchasing Data Collection Form, Attachment 1 has not been forwarded in a timely manner. As a result, the P2 Program Lead provided training to the Facilities SDRs and management to reiterate this requirement.

### **9.4 Environmental Program Representative Assessment**

During 2011, P2 worked with the Environmental Protection Representative (EP Rep) to correct concerns found during the EP Rep assessments. The EP Rep submitted a formal assessment to the line and notified P2 of any concerns found during the assessments. The P2 staff worked with the Line to mitigate concerns. The final resolutions are communicated to the EP Rep. Typical concerns found during 2011 included:

- Recyclable containers not labeled and properly managed.
- Metal Hoppers not properly covered.
- Mixed materials identified in material specific recycle containers.

**Annual EMS Program  
Review Checklist**

**Organization:** 8516      **Program:** Pollution Prevention

**Date Completed:** January 28, 2012      **Signature:** Deanna Dicker  
Program Lead

Document Type	Document Title	Review Complete / Date	Changes Made	Comments
PHS	Pollution Prevention/Waste Minimization Program Activities (SNL06A00127-007)	<input checked="" type="checkbox"/> 1/09/12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Annual rollover complete. Changed Program Lead information.
Operating Procedures	SP 473637 "Management of Universal Waste Lamps at SNL/CA"	<input checked="" type="checkbox"/> 1/27/12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Change Requested: 1) contact information from J. Harris to D. Dicker, 2) Change dept. #'s from 8513 & 8514 to 8515, 3) Delete previous maintenance Manager
	SP 473635 "Management of Universal Waste Batteries at SNL/CA"	<input checked="" type="checkbox"/> 1/27/12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Change Requested: 1) contact information from J. Harris to D. Dicker,
	OP 472271 "Operating the Olympic Vertical Cardboard Baler"	<input checked="" type="checkbox"/> 1/27/12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will be renewed by 3/12 – changes will be made then.
	OP 472288 "Operating the Portable Axle Scale in the Recycling Center"	<input checked="" type="checkbox"/> 1/27/12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	CA-PM-WI-04 "Reapplication Process"	<input checked="" type="checkbox"/> 1/27/12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Property Management owns procedure. P2 reviewed regarding e-waste.
	CA-PM-WI-06 "Media Destruction Process"	<input checked="" type="checkbox"/> 1/27/12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Property Management owns procedure. P2 reviewed regarding e-waste.
	CA-PM-JA-05 "Hardware/Software Reapplication"	<input checked="" type="checkbox"/> 1/27/12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Property Management owns procedure. P2 reviewed regarding e-waste.
	CA-PM-OP-04 "CA Site Property Management and Reapplication Operations"	<input checked="" type="checkbox"/> 1/27/12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Property Management owns procedure. P2 reviewed regarding e-waste, CARS, PM.
WPC Documents	JQWA forms (Dicker, Wilson)	<input checked="" type="checkbox"/> 1/27/12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Replaced J. Harris with D. Dicker. Updated Dicker's.
ES&H Corporate Procedures	ESH100.2.ENV.15 <a href="#">Manage Hazardous Waste at SNL/CA</a> ESH100.2.ENV.20 <a href="#">Manage Other Waste at SNL/CA</a> ESH110.2.ENV.21 Recycle or Reuse Waste at SNL/CA	<input checked="" type="checkbox"/> 1/27/12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Other Program Documents	Annual Pollution Prevention/Waste Minimization Program Report	<input checked="" type="checkbox"/> 1/27/12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Dated: 04/19/11
	Pollution Prevention Tracking and Reporting System (PPTRS)	<input checked="" type="checkbox"/> 1/27/12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Dated: 12/01/11

**Annual EMS Program  
 Review Checklist (cont)**

**Organization:** 8516      **Program:** Pollution Prevention

**Date Completed:** January 28, 2012      **Signature:** Deanna Dicker  
 Program Lead

	Source Reduction and Evaluation Review and Plan (SB-14)	<input checked="" type="checkbox"/> 1/27/12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Report is every 4 years. Next report is due 8/31/15
	Cal-EPA Department of Toxic Substances Annual Report for Handlers/Handlers-Recyclers of Universal Waste Electronic Devices and/or CRTs	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Dated: 01/24/11
Contracts	Staff Augmentation for P2 laborer	<input checked="" type="checkbox"/> 1/25/12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	labor provided hourly breakdown of activities
Web Pages	General Web Page	<input checked="" type="checkbox"/> 1/25/12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewed general web pages. Updates complete
	Program Web Page	<input checked="" type="checkbox"/> 1/27/12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Reviewed program web pages. Changes should be completed early January 2010.
	Program Metrics	<input checked="" type="checkbox"/> 1/27/12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewed Program Metrics. Updates complete.
	Get Rid of It	<input checked="" type="checkbox"/> 1/27/12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewed Get rid of It web page. Updates submitted.
Outlook Task Calendar		<input checked="" type="checkbox"/> 1/27/12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

## 10 Accomplishments

During 2011, Pollution Prevention accomplished the following activities:

- SNL/CA site management implemented a site-wide Excess Equipment Campaign to identify and dispose of unwanted materials and equipment. This campaign occurred from July – September, 2011. Pollution Prevention staff worked with other Environmental Management disciplines and Property Management to properly characterize the excess equipment to reapply, reutilize and recycle all eligible equipment.
- SNL/CA P2 provided guidance to Procurement to ensure all contracts placed for onsite vending machines were specified Energy Star for energy efficiency.
- Sandia and LLNL showcased two buses powered by hydrogen, currently operating at both sites. The collaborative effort is part of a strategy for an energy sustainable future and cleaner environment. The vehicles were displayed in downtown Livermore on Feb. 22, 2011 and have since submitted nominations for a FY11 P2 EStar award.
- SNL/CA worked with LLNL to establish an onsite Farmer's Market which occurred monthly between July and October, 2011. Pollution Prevention staff provided containers and encouraged recycling of all beverage containers and composting of compostable materials.
- SNL/CA P2 worked with Property Management to establish a new contract in which 300 lbs. of CDs/DVDs were shredded and ultimately recycled.
- SNL/CA received the LEED Gold for our newest building, the Combustion Research Computation and Visualization building.
- SNL/CA P2 staff purchased and established a rechargeable battery station in one building as part of a pilot Environmental Sustainability Project being conducted, to determine the feasibility of implementing a site wide rechargeable battery program.
- To celebrate Earth Day 2011, SNL/CA Environmental Management staff developed and published an interactive virtual Earth Day web page that was promoted heavily to the SNL/CA site. The web page included information regarding the history of Earth Day and interactive applications allowing employees to calculate their carbon footprint and commuting costs. The web page also included over 40 links to external Environmentally Friendly or Green products and services available to consumers.



## **11 Issues**

The most prevalent issue for the P2 program this year was the continuous reduction of work force and resources to support the program. As of the end of FY11 the P2 Program consisted of a half of an FTE Lead and a Full time technician. As a result, the program is performing only requirement driven tasks.



## **12 Trends**

P2 program continues to modify the management of several recyclable waste streams to recover revenue for the P2 program. The changes have also resulted in a reduction in disposal costs. P2 continues to evaluate the management of recyclable waste streams to ensure cost effectiveness of recycling.



## **13 Goals and Objectives**

Pollution Prevention supports the goals and objectives to increase the procurement and use of environmentally friendly products and materials and minimize the generation of waste (nonhazardous, hazardous, radiological, wastewater). Through participation on the Interdisciplinary Team P2 provides guidance for integration of environmentally friendly purchasing and waste minimization requirements into projects during the planning phase.

Table 7 presents SNL's corporate objectives and targets that support the elements of the Pollution Prevention program.

Table 7 EMS Objectives, Targets and Actions Supporting P2 Program Elements

Objective	Target	2011 Action Items Completed
Minimize consumption (energy, water, non-renewable resources).	<u>CORPORATE</u> : By FY15, reduce energy intensity by 30 percent. (FY03 baseline). (2010 SSP) (Total Bldgs)	1. Completed re-lamping and ballast change from T12 to T5 in bldgs. 905/906 2. Modified Energy Mngmt Software and new hardware.
	<u>CORPORATE</u> : Reduce water intensity by 26 percent by the end of FY20. (FY07 Baseline). (2010 SSP)	Dolphin Water Treatment units installed on all major towers.
Minimize the production of waste (non-hazardous, hazardous, radiological, wastewater).	<u>CORPORATE</u> : By FY12, divert at least 65 percent of non-hazardous solid waste, excluding construction and demolition debris.	Completed. By 4 <sup>th</sup> quarter FY11, 74.79% of non-hazardous solid waste was recycled.

## Appendix A Management of Recycling Waste Streams

Wastestream	CY2011 (lbs)	Charge/Revenue	Potential cost/revenue
Aluminum beverage containers	304	125% CRV Value \$1.54-\$1.55 per lb.	\$469.74 (REV)
Asphalt	28000 lbs	Managed by Facilities contractor as part of contract	0
Batteries (alkaline, carbon-zinc, lithium (non-rechargeable), mercury, nickel cadmium (non-rechargeable), nickel metal hydride (non-rechargeable) and silver oxide batteries)	635 lbs	Boxes hold approximately 40 lbs and are \$60each.	635/40 =18 at \$60 ea = \$1080(CHG)
Batteries (Rechargeable batteries specifically lithium, nickel cadmium, and nickel hydride batteries)	611 lbs	Box can hold approximately 40 lbs and are provided at no charge	Free
Batteries (lead acid)	3800 lbs	\$0.15 -.25 per lb.	\$735.60(REV)

<b>Wastestream</b>	<b>CY2011 (lbs)</b>	<b>Charge/Revenue</b>	<b>Potential cost/revenue</b>
Cardboard	52,170 lbs 1960 lbs. managed by Facilities contractor with no revenue	\$0.2-\$0.3 per pound	52,170 lbs at various prices = \$987.13(REV)
Concrete	64760 lbs Managed by facilities contractor		
Empty containers	1108 lbs	No charge	0
Electronic waste	67,833 lbs	\$0.10/lb	\$6,777.00(REV)
Fluorescent tubes (various types)	2029 lbs	straight tubes .8/lb utubes 2.60/lb hid 2.90/lb broken lamps 3.50/lb	Due to varying prices average bill is \$1600. Average two pickups per year. \$3200(CHG)
Glass beverage containers	1376 lbs	100% CRV Value (current price \$.104-.105 per lb)	1376 at \$0.11 = \$143.62(REV)
Green waste	157328 lbs	\$450 per 30 yard rolloff plus \$40.00 per ton	157328/2000 =77 tons at \$40 = \$3080 (tonnage) + 77/3 = 26 at \$450 = \$11700 (total bin cost) = \$14780 (CHG) Note 17260 lbs managed by Facilities contractor as part of contract.
Mercury items	42 lbs	\$324 per 5 gallon drum	2 5-gallon drums in CY10 at \$324 is \$648 (CHG)
Mixed recycled waste	40000 lbs	\$600 per 40 yard rolloff plus \$60.00 per ton	33940/2000 = 17 at \$60.00 = \$1020(tonnage)+ 6 bins at \$600 = \$3600 (total bin cost)= \$4620(CHG) Note: 6060 lbs managed by Facilities contractor as part of contract.
Oil filters	283 lbs	\$1350 per 55 gallon drum	2 55-gallon drums in FY08 at \$1350 is \$2700 (CHG)
Paper (books, catalogs, envelopes, folders, glossy printed materials, newspapers, pamphlets-brochures paper, white and colored paper (staples, adhesives, clips, ok), phone books, Post-it notes, and transparencies/viewgraphs)	231750 lbs	\$680.00 per servicevisit up to four hours.	\$680 at 26 visits = \$17,680(CHG)
Plastic beverage containers	1010 lbs	100% CRV value (current price is \$0.91-\$0.93 per lb)	1010 lbs at \$0.96 per lb = \$929(REV)

<b>Wastestream</b>	<b>CY2011 (lbs)</b>	<b>Charge/Revenue</b>	<b>Potential cost/revenue</b>
Scrap metal	27918 lbs	Pricing based on AMM Scrap Iron and Steel Prices, Export Yard Buying (fluctuates \$103-\$153 per ton as well as \$0.65 per pound if meets premium criteria)	27300/2000 = 14 tons @ various \$ per ton = \$14121(REV) Note 618 lbs managed by Facilities contractor as part of contract.
Tires	2215 lbs	\$850 per 20 yd box	(Based on receipt from Waste Management) \$850 (CHG)
Toner cartridges	5061 lbs	No charge	0
Waste oil	3583 lbs	\$50 per 55 gallon drum	8 55-gallon drums in CY10 at \$50 is \$400(CHG)
Wood	60046 lbs	\$450.00 per 30 yd rolloff plus \$40.00 per ton	54700/2000=27 at \$40.00 = \$1080(tonnage) + 27/2.5 = 11 bins at \$450 = \$4950(total bin cost)= \$6030(CHG) Note:5346 lbs managed by Facilities contractor as part of contract.

**Distribution:**

- 1 MS9002 Smith, Pat, 08500
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