


PPPL	PRINCETON PLASMA PHYSICS LABORATORY ES&H DIRECTIVES		
	ES&HD 5008 SECTION 12 Environmental Protection		
Approved	Date: January 25, 2012	Revision 4	Page 1 of 10

## ES&HD 5008 Section 12 – Environmental Protection

### 12.1 INTRODUCTION

It is PPPL's environmental stewardship policy, expressed in Policy P-002, to conduct our scientific research and operate the Laboratory facilities in a manner that protects and preserves human health and the environment and is in full compliance with applicable environmental laws, regulations, and other requirements. We implement this policy through our Environmental Management System (EMS) which is aimed at integrating environmental requirements, pollution prevention, and continual improvement into our work planning and execution. We establish and communicate environmental responsibilities, provide environmental information to our workforce, and implement controls to minimize the environmental impacts of our operations.

The U.S. Department of Energy's (DOE) Orders direct all DOE contractors to protect the environment and include specific environmental requirements that are applicable to Laboratory operations.

The following sections outline general roles and responsibilities for PPPL's environmental stewardship program and refer the reader to the appropriate document(s) for further details about a particular element of the program.

### 12.2 SCOPE

This section is applicable to all Laboratory employees, collaborators, graduate students, and subcontractors.

### 12.3 ACRONYMS

**CAA** – *Clean Air Act of 1970*; also **CAAA** *Clean Air Act Amendments of 1990* [40 CFR 50 to 87].

**CERCLA** – *Comprehensive Environmental Response, Compensation and Liability Act of 1980*; also known as "Superfund" [40 CFR 302 to 305, 307 & 310].

**CFC** – Chlorofluorocarbons, Class 1 compounds regulated under CAAA.

**CWA** – *Clean Water Act of 1977* [40 CFR 122] amendment to Federal Water Pollution Control Act of 1972.

**DOE-PSO** – *U.S. Department of Energy - Princeton Site Office.*

**EMS** – *Environmental Management System.*

**EO** – *Executive Order.*

**ERC** – *Environmental Review Committee (PPPL committee).*

**ESA** – *Endangered Species Act of 1973.*

**ESD** – *Environmental Services Division (PPPL Division).*

**ESH&S** – *Environment, Safety Health & Security (PPPL Department).*

**ES&H-EB** – *Environment, Safety & Health Executive Board (PPPL).*

**ESH&IS** – *Environment, Safety & Health and Infrastructure Support (PPPL Department).*

**ESU** – *Emergency Services Unit (of the Site Protection Division).*

**FD** – *Facilities Division (PPPL Division).*

**FFCA** – *Federal Facilities Compliance Act of 1992.*

**FIFRA** – *Federal Insecticide, Fungicide, and Rodenticide Act of 1972*  
[40 CFR 150 to 189].

**GHG** – *Greenhouse gases, Carbon dioxide, Fluorinated gases (such as Sulfur hexafluoride), Methane, and Nitrous oxide.*

**GPP** – *General Plan construction Project*

**HP** – *Health Physics (PPPL Division).*

**ISM** – *Integrated Safety Management.*

**ISO 14001** – *International Standards Organization Section 14001, Environmental Management System (EMS)*

**NEPA** – *National Environmental Policy Act of 1969*  
[10 CFR 1021].

**NJDEP** – *New Jersey Department of Environmental Protection.*

**NJPDES** – *New Jersey Pollutant Discharge Elimination System*  
[NJAC 7:14A-1.1 to 23.34].

**NESHAPs** – *National Emission Standards for Hazardous Air Pollutants*  
[40 CFR 61 and 63].

**PCBs** – *Polychlorinated Biphenyls regulated under TSCA.*

**QA** – *Quality Assurance (PPPL Division).*

**RCRA** – *Resource Conservation and Recovery Act of 1976*  
[40 CFR 243 to 273].

**SARA Title III** – *Superfund Amendment and Reauthorization Act of 1986, Emergency Planning and Community Right-to-Know* [40 CFR 355].

**SBRSA** – Stony Brook Regional Sewerage Authority, publicly-owned treatment works; PPPL is an industrial discharger.

**SPCC** – *Spill Prevention Control and Countermeasure Plan* [40 CFR 110 & 112].

**SPD** – *Site Protection Division (PPPL Division)*.

**SSP** – *Site Sustainability Plan* [DOE Order 436.1, *Departmental Sustainability*].

**STOP** – *Safety Observation Program*

**SWDA** – *Safe Drinking Water Act of 1974* [40 CFR 265 & 268, 0].

**TSCA** – *Toxic Substances Control Act of 1976* [40 CFR 761].

**USEPA** – U.S. Environmental Protection Agency; PPPL is in Region II.

## **12.4 RESPONSIBILITIES**

### 12.4.1 Department Of Energy – Princeton Site Office (DOE-PSO)

DOE-PSO has oversight responsibilities for all environmental activities at PPPL. DOE-PSO is the facility owner and permittee while PPPL is the operator. DOE-PSO currently uses the services of the DOE Brookhaven Site Office for NEPA approval authority for categorical exclusions until in-house authority is delegated to DOE PSO.

### 12.4.2 Environmental Safety & Health –Executive Board (ES&H-EB)

PPPL's ES&H-EB is responsible to the Laboratory Director for the overall direction and guidance of ES&H programs at PPPL. It is composed of senior laboratory managers with responsibilities that include ES&H matters. It is the highest level policy and review committee for Laboratory ES&H functions. The Deputy Laboratory Director for Operations (COO) is the chair of this Board. ES&H-EB's charter is found in PPPL Organization and Mission Statement O-021.

### 12.4.3 Environmental Review Committee (ERC)

PPPL's ERC is a resource subcommittee supporting the ES&H-EB with responsibility for coordinating and overseeing EMS implementation, reviewing environmental projects and advising the ES&H-EB on issues of environmental concern. Members are technical specialists representing different departments at PPPL. ERC is responsible for acting on environmental issues and reviewing environmental documents. ERC's charter is found in PPPL Organization and Mission Statement O-23.

#### 12.4.4 Environment, Safety, Health and Security Department (ESH&S)

PPPL ESH&S Department is composed of several divisions that are directly responsible for environmental activities: Environmental Services (ESD), Safety Division, Health Physics (HP) and Site Protection (SPD). In addition, ESH&S maintains ESH&S policies and procedures, manages lab-wide ESH&S programs, conducts employee/subcontractor training and outreach and performs causal analyses of deviations or incidents to facilitate continuous improvement of ESH&S programs.

Environmental Services Division (ESD) is responsible for waste management (hazardous and radiological), asbestos management, environmental cleanup/monitoring, environmental compliance, sustainability initiatives, pollution prevention/waste minimization, and voluntary environmental programs such as ENERGYSTAR® and WasteWise.

ESH&S Department office is responsible for National Environmental Policy Act (NEPA) compliance, high level safety analyses, programmatic direction and interfacing with DOE on ES&H and security matters.

The Safety Division includes electrical safety, construction safety, industrial hygiene, industrial safety, the safety observation (STOP) program, and accident investigations.

The Health Physics Division is responsible for radiological protection, nuclear materials safeguards, HP field operations, and operation of the PEARL.

Site Protection Division (SPD) is responsible for emergency planning and training, emergency response services, fire and medical response, and site security.

#### 12.4.5 Other Key PPPL Organizations

The Engineering Department's Facilities Division is responsible for facilities engineering, house/grounds keeping including solid waste and recycling, facilities operations and maintenance (plumbing, electrical, carpentry, heating and air conditioning) and general plant construction projects (GPP).

The Engineering Department's Electrical Engineering Division includes organizations responsible for PPPL's electrical power distribution systems which include oil-filled equipment such as transformers, switchgear as well as emergency backup generators.

#### 12.4.6 Employees, Collaborators, Graduate Students, and Subcontractors

Every PPPL employee and subcontractor is expected to conduct all activities in an environmentally sound manner that complies with applicable requirements, limits risks to the environment, and protects public health. Specific responsibilities include but are not limited to:

- Complying with NEPA and other applicable environmental requirements;
- Understanding the hazards of their work and minimizing risks to self, others and the environment;
- Promptly identifying noncompliant conditions to supervisors;
- Identifying and reporting environmental releases to SPD (ext. 3333);
- Ensuring that any hazardous materials, hazardous waste, scrap, excess material, and debris are properly handled, stored, and disposed of in accordance with PPPL policies and applicable regulations;
- Minimizing use of hazardous chemicals and the generation of hazardous wastes;
- Participating in emergency response functions in accordance with the PPPL Emergency Preparedness Plan;
- Participating on ES&H walkthroughs as requested by Facility Managers, Area Coordinators, or Line Managers;
- Conserving natural resources by specifying, purchasing and using environmentally preferable products such as recycled/recyclable materials, biobased products, ENERGYSTAR and other energy efficient products, and less toxic materials;
- Recycling materials (cardboard, paper, food waste, plastics, glass, metals, construction/demolition waste, packing materials, binders, electronics, etc.) using established recycling programs and practices; and
- Collecting and recording data for environmental reports or where required by permit conditions.

## **12.5 TRAINING**

All employees and subcontractors are required to attend or challenge the General Employee Training (GET) course and pass a written test when employment at PPPL begins (training applies to all subcontractors who will be at PPPL for more than 40 hours), and every two years thereafter.

PPPL organizations maintain training requirements for their operations and employees. These training matrices frequently include safety and environmental training requirements. They are coordinated with the Training Office in the Human Resources Department. Task-specific and other training may be required depending on the requirements of the work activities.

## **12.6 ENVIRONMENTAL REQUIREMENTS**

The following table provides the environmental requirement and its applicability to PPPL.

Requirement	Applicability
<i>Asbestos</i>	<ul style="list-style-type: none"> <li>• Testing prior to removal of material</li> <li>• Notification to EPA</li> <li>• Removal by certified personnel</li> </ul>
<i>CAA</i>	<ul style="list-style-type: none"> <li>• Title V exemption</li> <li>• Annual Air Emission Statement exemption</li> <li>• Individual permits for:                             <ul style="list-style-type: none"> <li>• boilers (4 units), Annual Emissions calculations, annual boiler inspections, Monthly fuel consumptions by boiler</li> <li>• above-ground storage tank vents (2) – TANKS measures annual emissions based on through-put.</li> <li>• dust collectors (2)</li> <li>• emergency diesel generators (3)</li> </ul> </li> <li>• CFC program – inventory and certified technicians.</li> </ul>
<i>CERCLA</i>	<ul style="list-style-type: none"> <li>• Inventory completed (1993)</li> <li>• No mandated cleanup activities or further actions warranted.</li> </ul>
<i>CWA</i>	<ul style="list-style-type: none"> <li>• Water Quality Standards under NJPDES permits for surface and ground discharges.</li> <li>• Indirect Discharges under Sanitary or Publicly Owned Treatment Works (POTW) for waste water discharges.</li> </ul>
<i>10 CFR 1-22</i>	Compliance with Floodplain/Wetlands Management Review Requirements
<i>40 CFR 355</i>	Emergency Planning and Notification (SARA Title III)
<i>EO 13423</i>	Implement: <ul style="list-style-type: none"> <li>• 30% reduction in energy intensity by 2015, base year FY2003</li> <li>• 7.5% of annual electricity consumption from renewable sources by 2013 and thereafter (5% FY 2010-2012)</li> <li>• Reduce water consumption intensity by 26% by FY2015, base year FY2007</li> <li>• New buildings &amp; major renovations to comply with “Guiding Principles” (15% sustainable by FY2015)</li> <li>• All new construction, major renovations, and alterations of buildings &gt;5000 GSF must comply with GPs and where the work exceeds \$5 million, each are LEED NC Gold certified or equivalent</li> <li>• Reduction of Toxic and Ozone-Depleting Chemicals</li> <li>• Direct acquisition of goods use sustainable environmental practices</li> </ul> Individual buildings or processes metering for 90% of electricity (by October 1, 2012); for 90% of steam, natural gas, and chilled water (by October 1, 2015)

Requirement	Applicability
<i>EO 13514</i>	<ul style="list-style-type: none"> <li>• 28% Scope 1 &amp; 2 GHG reduction by FY 2020 from a FY 2008 baseline</li> <li>• 13% Scope 3 GHG reduction by FY 2020 from a FY 2008 baseline</li> <li>• Reduce potable water consumption intensity by 2% annually through FY2020 relative to FY2007 (Total = 26%)</li> <li>• Reduce industrial, landscaping, and agricultural water consumption by 20% through 2020 relative to FY 2010</li> <li>• Divert at least 50% of non-hazardous solid waste and at least 50% of construction and demolition materials and debris from landfills to recycling or recovery operations excluding diversion to waste-to energy facility by 2015</li> <li>• New federal buildings in FY 2020 are to achieve zero net-energy use by 2030 &amp; Meet 15% sustainable by FY2015</li> <li>• Acquisition practices must ensure that 95% of new contract actions for products and services require sustainable practices</li> </ul>
<i>ESA</i>	Requires protection of specific animal and plant species.
<i>FFCA</i>	Requires Federal facilities have Site Treatment Plans for “mixed wastes”, both radiological and hazardous wastes.
<i>FIFRA</i>	Applies to application of herbicides and pesticides by certified contractors.
<i>NEPA</i>	Applies to all activities that have not been characterized as “inherently low hazard” (see ES&H-014)
<i>Historical Preservation</i>	Required identification of historical and archaeological resources.
<i>Lab Certification</i>	New Jersey program for certifying analytical laboratories for data reported to NJDEP.
<i>Medical Waste</i>	Required approved waste disposer for medical waste generated by on-site occupational health office.
<i>NJPDES</i>	Under CWA, permit program for : <ul style="list-style-type: none"> <li>• Surface water discharges – monthly reports and periodic chronic toxicity tests</li> </ul>
<i>RCRA</i>	<ul style="list-style-type: none"> <li>• Hazardous and universal waste management program</li> <li>• USTs – all tanks removed from service before 1996.</li> </ul>
<i>SARA</i>	<ul style="list-style-type: none"> <li>• Inventory or hazardous materials</li> <li>• Material Safety Data Sheets (MSDS) required</li> <li>• Completed Tier I form for each chemical above threshold (12 chemicals at PPPL).</li> </ul>
<i>SPCC</i>	Required plan for oil storage and oil-filled equipment: <ul style="list-style-type: none"> <li>• Inspections and record keeping</li> <li>• Release notification and reporting requirements</li> </ul>

Requirement	Applicability
SSP	<ul style="list-style-type: none"> <li>Individual buildings or process metering for 90% of electricity (by October 1, 2012); for 90% of steam, natural gas, and chilled water (by October 1, 2015)</li> <li>10% annual increase in fleet alternative fuel consumption by FY 2015 relative to the FY 2005 baseline</li> <li>75% of light duty vehicle purchases must consist of alternative fuel vehicles (AFV) by FY 2000 and thereafter</li> <li>Reduce fleet inventory by 35% within the next 3 years relative to a FY 2005 baseline</li> <li>All data centers are metered to measure a monthly PUE (100% by FY 2015)</li> <li>Maximum annual weighted average Power Utilization Effectiveness (PUE) of 1.4 by FY 2015</li> <li>Electronic Stewardship- 100% of eligible PCs, laptops, and monitors with power management actively implemented and in use by FY 2012</li> </ul> <p>(See EO 13423 &amp; 13514 for additional requirements)</p>
SWDA	<ul style="list-style-type: none"> <li>Quarterly inspections of physical connections with water purveyor.</li> </ul> <p>Annual internal inspections of equipment.</p>
Soil Erosion /Sediment Control	<ul style="list-style-type: none"> <li>Approval prior to disturbance of soil &gt; 5000 sq. feet.</li> <li>Activities to prevent soil erosion for projects not requiring formal approval.</li> </ul>
Sanitary	<ul style="list-style-type: none"> <li>Monthly monitoring of Liquid Effluent Collection tanks (LEC) prior to release to sanitary.</li> </ul>
Solid Waste	<ul style="list-style-type: none"> <li>Approved hauler / recyclers for on-site wastes.</li> </ul>
TSCA	<ul style="list-style-type: none"> <li>PCB inventory and approved disposal facility.</li> </ul>
Wetlands	<ul style="list-style-type: none"> <li>Permitted activities require NJDEP permit</li> </ul>

**12.7 IMPLEMENTING DOCUMENTS:**

The following is a listing of important PPPL environmental documents:

PPPL	Policy/Charter/Plan
P-002	Environmental Stewardship
O-021	Environment, Safety and Health Executive Board Charter
O-023	Environmental Resource Committee Charter
Rev. 12, Oct. 2010	Integrated Safety Management System Description
Rev. 1	Environmental Management System Description
ES&H 5008Section 12	Environmental Protection
ES&H 5008 Section 10	Radiological Program
ESH-014	NEPA Review System
Annual	PPPL annual Site Sustainability Plan

<b>ESH&amp;S</b>	<b>Plan</b>
<i>Rev. 3, 2011</i>	Environmental Management System (EMS) Description
<i>2008</i>	Beneficial Landscaping Plan
<i>2005</i>	Cultural Resource Management Plan
<i>EQP-001 Rev. 5</i>	Environmental Monitoring Plan (EMP)
<i>Rev. 2</i>	Radiological ALARA Plan
<i>Rev. 5</i>	Radiation Protection Plan
<i>Rev. 2</i>	Storm Water Pollution Prevention Plan

<b>ESD</b>	<b>Procedure</b>
<i>ESD Procedures</i>	<a href="http://www-local.pppl.gov/erwm/opdocs.htm">http://www-local.pppl.gov/erwm/opdocs.htm</a> Waste Management Procedures
<i>EM-OP-31</i>	Surface Water Sampling
<i>EM-OP-33</i>	Rain Water Sampling
<i>EM-OP-35</i>	Non-Emergency Release Notification
<i>EM-OP-37</i>	Low-Flow Ground Water Sampling ("Micro-purge")
<i>EM-OP-41</i>	Annual Site Environmental Report Preparation
<i>EM-OP-42</i>	Environmental Permits
<i>EM-OP-43</i>	Downloading flow data from Badger 2100L Ultrasonic Flow Meter Data Logger
<i>EM-OP-45</i>	Environmental Air Program Requirements
<i>EM-OP-46</i>	Environmental Aspects and Impacts Evaluation
<i>EM-OP-47</i>	Environmental Compliance Assessments
<b>SPD</b>	<b>Plan</b>
<i>Emergency Preparedness Plan Supplement 6</i>	Spill Prevention Control and Countermeasure Plan

**12.8 Reports**

Required environmental reports are listed in the table below:

<b>Frequency</b>	<b>Report Title</b>
Biennial	RCRA Waste Generator's Report
Biennial	TSCA PCB Report
Annual	SARA Title III Report
Annual	Site Environmental Report
Annual	NESHAPS Report
Annual	Chronic Toxicity Testing
Quarterly	Permit Status Updates
Monthly	Discharge Monitoring Report (DMR)
As Needed	Asbestos Removal Notification
As Needed	Release Confirmation Report

## 12.9 REVIEWS

The following is a list of examples of reviews performed:

- EMS Management Review
- PPPL QA Audits and Assessments (QA-002)
- Monthly PPPL Tracking and Trending Report
- Environmental Compliance Assessments
- Third-party EMS ISO-14001 Registration Audits
- External Agency Audits or Inspections
- Other reviews identified in the annual Integrated Assessment Plan

## 12.10 REFERENCES

All laws and Regulations cited in **Section 12.2 Acronyms.**

All Documents listed in **Section 12.7 Implementing Documents.**

All Reports listed in **Section 12.8 Reports**

### **DOE References**

DOE Order 231.1A, Environment, Safety & Health Reporting

DOE Order 436.1, Departmental Sustainability

DOE Order 458.1, Radiation Protection of the Public and the Environment

10 CFR 1021, DOE NEPA Guidelines

10 CFR 1022, Compliance with Floodplain/Wetlands Environmental Review Requirements

### **PPPL References:**

PPPL Laboratory Procedure GEN-006, Occurrence Reporting and Processing of Operations Information