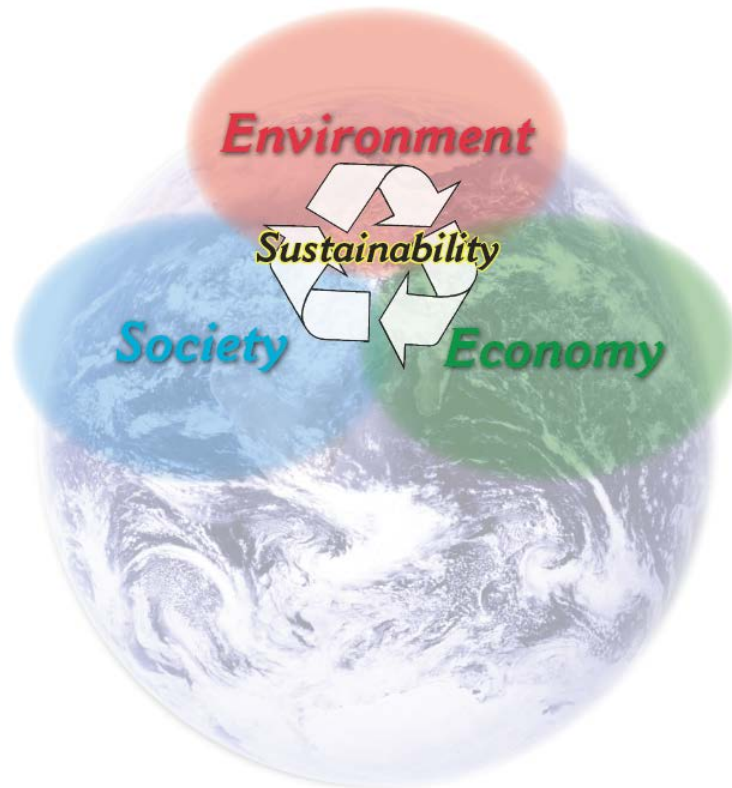


# Environmental Management System (EMS) Description



February 2015

Revision 5



## Review and Approval

---

---

Robert S. Sheneman  
EMS Program Manager

---

Virginia L. Finley  
Chair, Environmental Review Committee

---

Jerry D. Levine  
Head, Environment, Safety, Health & Security Department



Department of Energy Contract DE-AC02-09CH11466

---

## Table of Contents

---

Review and Approval .....	i
Table of Contents .....	ii
Appendices.....	ii
Record of Revisions.....	iii
Acronyms and Definitions .....	iv
1.0 Executive Summary.....	1
2.0 Introduction.....	4
2.2 ENVIRONMENTAL COMPLIANCE.....	5
2.3 ENVIRONMENTAL PERFORMANCE .....	6
2.4 PURPOSE OF THE EMS.....	7
2.5 INTEGRATION OF EMS WITH ISMS .....	8
2.6 GAP AND STRATEGIC ANALYSIS .....	9
3.0 EMS Program Elements.....	11
3.1 GENERAL REQUIREMENTS .....	11
3.2 ENVIRONMENTAL POLICY .....	12
3.3 ENVIRONMENTAL ASPECTS.....	12
3.4 LEGAL AND OTHER REQUIREMENTS.....	13
3.5 OBJECTIVES, TARGETS, AND ENVIRONMENTAL MANAGEMENT PROGRAMS.....	14
3.6 STRUCTURE AND RESPONSIBILITY.....	15
3.7 TRAINING, AWARENESS, AND COMPETENCE .....	16
3.8 COMMUNICATION.....	17
3.9 DOCUMENTATION .....	18
3.10 DOCUMENT CONTROL.....	19
3.11 OPERATIONAL CONTROL.....	20
3.12 EMERGENCY PREPAREDNESS AND RESPONSE.....	20
3.13 MONITORING AND MEASUREMENT .....	20
3.14 EVALUATION OF COMPLIANCE .....	21
3.15 NONCONFORMANCE, CORRECTIVE ACTION, AND PREVENTIVE ACTION....	21
3.16 RECORDS .....	23
3.17 AUDITS AND APPRAISALS .....	23
3.18 MANAGEMENT REVIEW .....	24
4.0 References.....	26

---

## Appendices

---

Appendices are available in electronic format on the [EMS website](#).

Appendix A – [Summary of Environmental Aspects & Impacts by Building or Area](#)

Appendix B – [Summary of EMS Legal and Other Requirements](#)

Appendix C – [Summary of EMS Objectives and Targets](#)

## Record of Revisions

---

Revision Number	Description	Sections	Date
0	Original	All	December 2005
1	Incorporate EO13423 & DOE Orders; update goals; update procedure references, etc.	All	September 2008
2	Revision to parallel the elements & structure of ISO14001; align goals & targets per DOE O450.1A & EO13423, and address third-part review comments.	All	July 2009
3	Remove references to rescinded DOE Orders. Align goals & targets per DOE O436.1, EO13514, and PPPL contract. Revise for ISO14001 registration audits.	All	December 2011
4	Update procedure references. Revise EMS Aspects & Impacts narrative. Verify and update embedded hyperlinks.	All	June 2013
5	Revise discussion of management review, evaluation of compliance, and significant environmental aspects following triennial certification audit. Update procedure, hyperlink, and other document references.	All	February 2015

## Acronyms and Definitions

---

CEDR - Comprehensive Energy Data Report (DOE database)

DOE O436.1 – US Department of Energy Order 436.1, *Departmental Sustainability*

EISA2007 – Energy Independence and Security Act of 2007

EMS – Environmental Management System

Environmental Aspect – an element of an organization's activities or products or services that can interact with the environment. Examples of PPPL's environmental aspects include energy use (heating, air conditioning, lighting, vehicle fuels, etc.), landscape maintenance, materials use, water use, and chemical use.

Environmental Impact - any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects. Examples of environmental impacts at PPPL include air emissions from boilers, generators and vehicles, wastewater effluents, waste generation, and potential spills and unplanned releases.

EO13423 – Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*

EO13514 – Executive Order 13514, *Federal Leadership in Environmental, Energy and Economic Performance*

EPACT2005 – Energy Policy Act of 2005

ERC – Environmental Review Committee

ESD – Environmental Services Division

ES&HEB – Environment Safety & Health Executive Board

ISO – International Organization for Standards

ISO14001 – International Organization for Standards (ISO) Standard 14001:2004(E), *Environmental Management Systems Requirements with Guidance for Use*

ISO14004 – International Organization for Standards (ISO) Standard 14004:2004(E), *Environmental Management Systems – General Guidelines on Principles, Systems and Support Techniques*

ISMS – Integrated Safety Management System

SSP – Site Sustainability Plan – required by DOE Order 436.1

WPF – PPPL Work Planning Form

## 1.0 Executive Summary

---

*“An Environmental Management System (EMS) is a systematic management approach to determining, prioritizing, implementing and improving upon those environmental issues that will lead to sustainable environmental stewardship.”*  
Edward Piñero, Federal Environmental Executive, 2005

Executive Order 13423 (EO13423), *Strengthening Federal Environmental, Energy, and Transportation Management* establishes a policy that Federal agencies conduct their environmental, transportation, and energy related activities in a manner that is environmentally, economically and fiscally sound, integrated, continually improving, efficient, and sustainable. Subsequently, EO13514, *Federal Leadership in Environmental, Energy and Economic Performance* expanded on the goals and policies of EO13423 to include the reduction of greenhouse gas (GHG) emissions, integration with local and regional planning effort and other sustainable environmental practices. EO13514 reiterates the previous policy that Environmental Management Systems (EMSs) are the management tool to address environmental, energy, and sustainability issues at Federal facilities. In addition to Executive Orders, various statutes address Federal energy and environmental management, among them the Energy Policy Act of 2005 (EPACT2005) and the Energy independence and Security Act of 2007 (EISA2007). Department of Energy (DOE) Order 436.1, *Departmental Sustainability* outlines departmental policy, roles and responsibilities for meeting the provisions of EO13423, EO13514 and applicable statutes.

[DOE Order 436.1](#) requires DOE contractors to develop and implement an Environmental Management System (EMS) that is registered to or conforms with the ISO14001:2004 standard and to incorporate the site sustainability goals into the EMS. It also requires that contractors annually prepare a Site Sustainability Plan (SSP) that identifies their respective contributions to the Department’s sustainability goals and to integrate the SSP with their operational plans. Finally, DOE Order 436.1 requires contractors to support the Department’s sustainability and other environmental programs and reporting requirements.

DOE Orders and associated policies establish goals and sustainable stewardship practices that are protective of environmental, natural, and cultural resources, and take a life cycle approach that consider environmental aspects such as:

- Acquisition and use of environmentally preferable products,
- Electronics stewardship,
- Energy conservation, energy efficiency, and the use of renewable energy,
- Pollution prevention, with emphasis on toxic and hazardous chemical and material reduction,
- Procurement of efficient energy and water efficient materials and equipment,
- Recycling and reuse of materials,
- Sustainable and high-performance building design and construction,
- Transportation and fleet management, and
- Water conservation.

The Princeton Plasma Physics Laboratory's (PPPL's) approach to sustainable environmental stewardship required under [Order 436.1](#) strives to implement its EMS in a compliant, efficient, and cost-effective manner. The purpose of this plan is to describe PPPL's approach for achieving such an EMS, including an overview of the roles and responsibilities of key Laboratory parties. The Laboratory's approach begins with a lab-wide [Environmental Stewardship Policy](#) (P-002). This policy states that PPPL is committed to the following:

- Conducting our scientific research and operating 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.
- Establishing environmental objectives and targets and updating them as necessary to reflect PPPL's changing needs, missions, and goals.
- Preventing pollution, minimizing waste, and conserving natural resources.
- Promptly identifying noncompliant conditions and encouraging full disclosure and open discussion regarding compliance issues and aggressively working to resolve identified issues.
- Continuously improving our environmental management system through self-assessment and corrective action.

A regular cycle of planning, implementing, evaluating, and improving processes is used to address the objectives and targets that help PPPL implement policy. DOE's sustainability goals are adopted as PPPL's environmental performance objectives. Interim targets may be developed (or updated) for significant environmental aspects based on performance or management concerns.



Figure 1 - EMS continual improvement cycle.

ES&H programs are reviewed on an annual schedule established in the [Integrated Assessment Plan](#); additional reviews are conducted as outlined in Sections 3.14 and 3.15. The Environmental Review Committee (ERC) and the Environment, Safety & Health Executive Board (ES&HEB) receive regular briefings on PPPL's environmental compliance status and program performance. An internal audit of the EMS is conducted every three years using an integrated audit/assessment process and program-specific audits are scheduled in conjunction with PPPL's lab-wide audit program. In addition, registration of the EMS requires initial and recurring audits to verify that the EMS conforms to and is being implemented in accordance with the standard.

The EMS is integrated with the Laboratory's [Integrated Safety Management System](#) (ISMS) through the use of common work planning and hazards/impact evaluation processes. To the extent practical, ISMS processes are used to support environmental performance improvement. This approach allows PPPL to develop an EMS that is integrated with work controls and focuses resources on activities with the highest potential environmental benefits.

PPPL's EMS reflects the eighteen elements of the International Organization for Standardization standard 14001:2004(E), *Environmental Management Systems Requirements with Guidance for Use* (ISO14001). Registration of the Laboratory's EMS is not a DOE requirement, although PPPL committed to DOE to obtain registration against the ISO14001. Section 3 of this document outlines how the eighteen elements in ISO14001 are addressed, including references to procedures, plans, or processes that implement these elements.



## 2.0 Introduction

---

Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, establishes the policy that Federal agencies conduct their environmental, transportation, and energy related activities in a manner that is environmentally and fiscally sound, integrated, continually improving, efficient, and sustainable. The overarching policy and directive as expressed in this Executive Order is:

*"It is the policy of the United States that Federal agencies conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient, and sustainable manner."*

The goal of Executive Order 13514, *Federal Leadership in Environmental, Energy and Economic Performance* is, "to establish an integrated strategy towards sustainability in the Federal Government and to make reduction of greenhouse gas emissions (GHG) a priority for Federal agencies."

EOs 13423 and 13514 direct Federal agencies to use EMSs as their primary management approach for addressing aspects of environmental, energy, water, and transportation management, along with establishing objectives and targets to ensure implementation and collection, analysis, and reporting of information to measure performance. The EMS is not a stand-alone environmental program, but a framework within which existing organizational responsibilities, programs, and activities are integrated with existing management systems such as ISM.

The Laboratory's EMS applies to all on-site research and support activities conducted by PPPL under its contract with DOE including collaborators, on-site subcontractors, and concessionaires. ES&H issues associated with off-site activities by PPPL personnel are covered by policy P-085. Where integrated management systems are utilized, only the environmental facets of those systems are included in the EMS registration.

DOE Order 436.1 requires the Department's management and operating contractors develop and implement an EMS that is registered to or conforms with the ISO14001:2004(E), *Environmental Management Systems – Requirements with Guidance for Use*. Section 3 of this Plan describes how each one of the elements in the ISO Standard is addressed, including reference to procedures, plans, or processes that implements these elements.

This Plan was prepared following the guidelines of PPPL's document management and control procedures [GEN-001](#) and [GEN-003](#) and PPPL's [Assurance System Description](#). PPPL's EMS is listed as one of the management systems and process controls in the PPPL Assurance System. The Assurance System applies to all PPPL organizations.

## 2.2 ENVIRONMENTAL COMPLIANCE

PPPL systematically works to protect the environment and public health by complying with federal, state, and local regulations and by environmental stewardship activities that address DOE goals and provide value to the Laboratory and DOE. The EMS employs tailored approaches that accomplish DOE objectives in a manner appropriate to the particular conditions and circumstances at the PPPL site. Accordingly, the EMS is based on the work, the environment in which the work is performed, and the hazards or impacts associated with the work.

Executive Orders 13423 and 13514 as well as DOE Order 436.1 require that DOE sites use their EMS as the key management tool to assure regulatory compliance and address federal sustainability and environmental performance goals. All new activities and changes to on-going activities require a National Environmental Policy Act (NEPA) review. This review allows for the identification of applicable environmental regulations or controls and the implementation of suitable operational controls. Procedure [ESH-014](#) outlines the NEPA review process. The status of PPPL's environmental compliance and management programs is reported in the *Annual Site Environmental Report* (ASER) as well as other DOE reports (e.g. *Site Sustainability Plan*, *Annual Laboratory Plan*, *Integrated Safety Management System Description*, etc.). A summary of compliance evaluation activities related to PPPL's identified legal and other EMS requirements is provided in [Appendix B](#) of this document. This summary is reviewed annually.

An effective environmental compliance management program includes the following elements:

- A commitment by senior leadership to achieve and maintain environmental compliance,
- Clear roles and responsibilities related to environmental performance to ensure accountability for less than desired environmental performance,
- A compliance review and audit program that identifies compliance needs and possible root causes of non-compliance, and
- Integration of compliance information and resources to ensure that audit findings and possible non-compliance root causes are tracked and addressed.

The overarching elements to achieve these requirements are found in the [Environmental Management System Description](#), [PPPL Integrated Safety Management System Description](#), [Institutional Quality Assurance Plan](#), and [Assurance System Description](#). ES&H responsibilities are articulated in Policies P-002, [Environmental Stewardship](#), P-003, [Environment, Safety & Health Policy](#), and P-004, [Quality Assurance](#). The Laboratory's EMS legal and other requirements are summarized in [Appendix B](#).

## 2.3 ENVIRONMENTAL PERFORMANCE

The performance-based approach applies the elements of ISO14001 in a manner aimed at providing tangible business value in the context of PPPL's management contract with DOE. This approach allows the PPPL to focus resources on those activities that have more business value or environmental benefit and to maintain the current strengths of the environmental compliance programs. Performance of the EMS is measured against DOE's sustainability goals and includes annual reporting both internally and to DOE.

EMS implementation is achieved by establishing and maintaining specific performance objectives after evaluating significant environmental aspects and impacts. The EMS objectives are adopted from Executive Orders 13423 and 13514, DOE Order 436.1, the Energy Policy Act of 2005, and the Energy Independence and Security Act of 2007. Annually, PPPL prepares and submits to DOE a [Site Sustainability Plan](#) that summarizes status and progress toward the established objectives and outlines planned programs, projects or actions to address the Departmental goals. PPPL reports its sustainability progress through its responsible Program Secretarial Office (PSO), which is the Office of Science (SC). SC has recognized a PSO-level portfolio of sustainability goals and coordinates actions among the SC laboratories. Sustainable practices of particular interest to DOE are:

- Improvement in energy efficiency
- Reduction in greenhouse gas emissions,
- Use and on-site generation of renewable energy,
- Reduction in water consumption,
- Acquisition of environmentally-preferable products, such as ENERGY STAR<sup>®</sup>, recycled-content, and biobased materials,
- Reduction of the use and disposal of toxic and hazardous chemicals and materials,
- Pollution and waste prevention/diversion and recycling programs,
- High performance and sustainable buildings,
- Vehicle fleet management and alternative fuels consumption, and
- Electronics stewardship.

Using self-assessments performed by the various divisions that evaluate environmental and safety performance, PPPL annually reports to DOE on the effectiveness of the Lab's ISMS (See [Integrated Assessment Plan](#)). In addition, operational-level assessments applicable to PPPL's EMS legal and other requirements are conducted by the responsible organizations as outlined in [Appendix B](#).

Under DOE Order 436.1, DOE requires several annual reports on EMS and sustainability performance: the DOE Sustainability Dashboard system, DOE Site Sustainability Plan (SSP) and Comprehensive Energy Data Report (CEDR), and the Office on Management and Budget (OMB) Annual EMS Report. EMS and sustainability reporting are based on the Federal fiscal year (October to September). Reporting is required of all federal agencies and applicable

contractors. The OMB oversees this reporting in its role of administering the requirements of Executive Orders 13423 and 13514. Details of PPPL's environmental reporting requirements are presented in Sections 3.8 and 3.9.

Compliance with applicable environmental regulations has long been a contractual obligation of PPPL subcontractors. Requiring sustainable practices of subcontractors is an evolving process. PPPL has identified contract types that are subject to EMS performance-based consideration. PPPL includes sustainable practice clauses in solicitations and subcontracts involving U.S. Environmental Protection Agency-designated items (i.e., a product that is or can be made with recovered material), environmentally preferable products and services, energy-consuming products listed in the ENERGY STAR® or Federal Energy Management Program, and USDA-designated biobased products. The purchase of environmentally preferable products is included in regular material supply contracts, such as janitorial, stockroom, and office supplies.

PPPL's only concessionaire is a vendor providing food service at the cafeteria. The vendor has substituted biodegradable food service products for petroleum-based products and works closely with PPPL to facilitate food-waste composting as part of our waste-reduction program.

## **2.4 PURPOSE OF THE EMS**

The overall purpose of the PPPL EMS is four-fold:

1. Comply with applicable environmental protection, public health, and resource conservation requirements.
2. Prevent pollution, minimize waste, and conserve natural resources.
3. Correct environmental hazards and cleaning up existing environmental problems, and
4. Continually improve the Laboratory's environmental performance in a cost-effective manner while supporting the overall mission of the Laboratory.

A continual cycle of planning, implementing, evaluating, and improving processes and actions allows PPPL to achieve these EMS goals (see the diagram below).



Figure 2 - ISM & EMS Integration

## 2.5 INTEGRATION OF EMS WITH ISMS

Both the Environmental Management System (EMS) and the Integrated Safety Management System (ISMS) strive for continual improvement, through a plan-do-check-act cycle. This cycle calls for defining the scope and purpose of the system, followed by a planning (Plan) step to develop programs and procedures that must then be implemented (Do). Once implemented, programs must be assessed (Check) and any problems corrected (Act) to improve the effectiveness of the management system and to achieve improved environment, safety, and health performance. PPPL has integrated its EMS with the ISMS to the extent that it is practical. Established ISMS and work planning/control processes are used to support environmental performance improvement and compliance management. Where that is not the case, new processes will be developed to support PPPL's EMS. These processes will also be integrated with the PPPL ISMS as appropriate. An outline of how environmental aspects and impacts are considered in the ISM Core Functions is presented below.

### 1. Define the Scope of Work

- Project Management Planning Process (ENG-032)
- NEPA Review (ESH-014)

### 2. Analyze the Activity

- NEPA Review (ESH-014)
- Work Planning Procedure (ENG-032)
- PPPL's ES&H Directives Manual (ESHD 5008)

### **3. Develop and Implement Controls**

- PPPL's ES&H Directives Manual (ESHD 5008)
- Job Hazards Analysis Procedure (ESH-004)
- PPPL Environmental Permits
- PPPL Environmental Monitoring Plan
- Employee Training (general and job-specific)

### **4. Perform the Work Within Controls**

- PPPL's ES&H Directives Manual (ESHD 5008)
- Work Planning Procedure (ENG-032)
- Permit Requirements
- Procedures (lab-wide and specific)

### **5. Feedback & Continuous Improvement**

- EMS review by the ERC
- EMS Management Review by the ES&H Executive Board
- PPPL's QA Audit Program
- DOE Lessons Learned Program
- Annual Site Environmental Report
- Comprehensive Energy Data Report
- Site Sustainability Plan
- Environmental Monitoring Plan
- Facility Walkthroughs
- P2 and EMS Reporting to DOE
- Employee "SOS" Suggestion Box
- Briefings to the Plainsboro Township Environmental Advisory Committee

## **2.6 GAP AND STRATEGIC ANALYSIS**

Prior to the development of its initial EMS Plan, PPPL performed a gap and strategic analysis in 2004. Existing programs and systems were reviewed that meet or correspond to an EMS program element of the ISO-14001 standard and applicable DOE Orders. Relevant PPPL documents were reviewed, and key program managers were interviewed. Gaps were identified between the existing programs and systems, and each EMS element. Potential actions that were required to address each gap were identified, and the significance of each element for assuring environmental compliance and improving environmental performance was evaluated. The initial EMS program was developed to meet the requirements of EO 13148, other environmental Executive Orders in force at the time, as well as DOE Orders 450.1 and 430.2. PPPL's EMS has been updated over time to reflect changes to EOs and DOE Orders.

Under the requirements of DOE Order 450.1, it was determined that an effective environmental management system could be constructed with the more valuable components of ISO14001, using existing elements of the PPPL ISMS and work processes while focusing on environmental performance improvement and compliance management. The EMS developed at that time focused on activities that added value by improving environmental performance and did not focus on the extensive documentation involved in connecting, summarizing, and describing

existing PPPL activities that would be required for strict adherence to the ISO14001 standard. While elements of the ISO14001 standard require documentation of procedures that are effective in managing and controlling associated activities, some are less critical for achieving focused improvement in environmental performance. Thus, a performance-based approach was developed that allows PPPL to focus its limited resources on improvement activities associated with significant environmental aspect and greater environmental benefits.

The PPPL EMS has evolved over time with improvements coming from experience gained in implementation as well as from changing requirements, including the evolution of DOE Orders 450.1 and 430.2 and the issuance of DOE Order 436.1 in May 2011. Our approach continues to leverage on established systems and processes in order to integrate the EMS into regular Laboratory operations.

---

## 3.0 EMS Program Elements

---

Consistent with the requirements of ISO14001, implementation of the PPPL EMS program addresses the following eighteen elements:

1. General requirements
2. Environmental policy
3. Environmental aspects
4. Legal and other requirements
5. Objectives, targets, and Environmental Management Programs
6. Structure and responsibility
7. Training, awareness and competence
8. Communication
9. Documentation
10. Document control
11. Operational control
12. Emergency preparedness and response
13. Monitoring and measurement
14. Evaluation of compliance
15. Nonconformance, corrective action, and preventive action
16. Records
17. Audits and appraisals
18. Management review

### 3.1 GENERAL REQUIREMENTS

The purpose of this EMS element is to establish, document, implement, maintain, and continually improve an organization's EMS through the remaining elements of the ISO14001 standard. The scope of PPPL's EMS is all on-site research and support activities conducted by PPPL under its contract with DOE including collaborators, on-site subcontractors, and concessionaires. ES&H issues associated with off-site activities by PPPL personnel are covered by policy [P-085](#). Where integrated management systems are utilized, only the environmental facets of those systems are included in the EMS registration.



## **3.2 ENVIRONMENTAL POLICY**

PPPL's [Environmental Stewardship Policy \(P-002\)](#) establishes policy direction for the Laboratory in environmental matters. It specifies that all employees and subcontractors are expected to conduct activities in an environmentally safe manner that limits the risks to the environment and protects public health. It commits the Laboratory 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." PPPL's Environmental Stewardship Policy is available on the Laboratory's public website (available at <http://www.pppl.gov/organization/environment-safety-health/sustainable-pppl>).

The Environmental Stewardship Policy further commits PPPL to implement this policy by integrating environmental requirements, pollution prevention, and continual improvement into our work planning and execution, and by taking actions to minimize the environmental impacts of our operations. We establish and communicate environmental responsibilities, provide environmental information to our workforce, and implement controls to mitigate environmental hazards.

Implementing this policy relies on the following core safety values found in PPPL's ISMS:

- The Laboratory demonstrates a strong commitment to safety by integrating safety into all facets of our work.
- Managers and supervisors are actively involved in performing work safely.
- Individuals take ownership for safety and continually strive to improve.
- Individuals demonstrate an awareness and concern for the safety of others.

In accordance with DOE Policy P450.4A, *Integrated Safety Management Policy*, whenever the term safety is used, it refers "...to environment, safety, and health to encompass protection of the workers, the public, and the environment."

## **3.3 ENVIRONMENTAL ASPECTS**

The identification and prioritization of significant environmental aspects is a key part of systematic planning involved in environmental programs designed to protect public health and the environment, prevent pollution, and conserve resources. The EMS approach to environmental improvement provides a systematic framework for managing and controlling PPPL activities while minimizing negative impacts to the environment. PPPL's EMS has been designed to utilize existing work processes to plan, conduct and review activities. The process of identifying activities which may present significant environmental impacts provides a framework for PPPL to prioritize its efforts of managing, controlling, and minimizing these impacts. An environmental aspect is any element of an organization's activities, products or services that can interact with the environment. An environmental impact is a change to the environment, whether

adverse or beneficial, wholly or partially resulting from an organization's activities, products or services.<sup>1</sup>

PPPL's NEPA review process, outlined in procedure ESH-014, provides for the review of environmental aspects associated with the new or significant changes to facilities, activities and operations. ERC meetings include review of recent NEPA actions. The actions may include research, engineering, maintenance and operations, administration, transportation, and construction activities. Emergency response and catastrophic events may also be discussed. Additional work processes that incorporate environmental aspects on a task-specific or project-specific basis include the Job Hazard Analysis, Work Planning System, and Design Review Processes.

Biennially, each area of the Laboratory is surveyed for changes to facility-level specific environmental aspects and impacts and the associated opportunities for improvement. These surveys are coordinated by the Environmental Services Division (ESD) with support from other Laboratory organizations, and cover every building and area at PPPL and its support facilities. Using the process outlined in procedure [EM-OP-46](#), the surveys include the activities taking place in each building or area, material use, recycling, chemical use and storage, and waste generation. Surveys are conducted in coordination with the designated Facility Manager for each area or his/her representative. After completion, the surveys are reviewed by the team leader for consistency and electronic records of the surveys and associated information (photos, etc.) and documents are maintained on a centralized data storage network location that is regularly backed-up for protection. Enviance<sup>®</sup> is used to schedule and track completion of the surveys to facilitate annual review and assessment by the ERC.

While building- or area-level surveys target specific areas, activities and environmental aspects, annual review of the Laboratory's environmental aspects provides a site-wide perspective PPPL's environmental management priorities. Annually, the ERC reviews the Laboratory's significant environmental aspects to determine if they remain appropriate or if changes are needed. The review includes considerations such as regulatory compliance, legal exposure, probability of occurrence, severity of impact, mission impact, stakeholder concerns, financial impact and potential for improvement. Changes to the list of significant aspects are proposed to the ES&H Executive Board for concurrence.

A listing of PPPL's significant environmental aspects is provided on the internal [EMS webpage](#) and the public [Sustainable PPPL](#) webpage. Public release of the list of significant environmental aspects was authorized by The Laboratory's ES&H Executive Board. The process of identifying environmental aspects and impacts and determining their significance is further described in procedure [EM -OP-46, \*Environmental Aspects & Impacts Evaluation\*](#).

### **3.4 LEGAL AND OTHER REQUIREMENTS**

PPPL's contract between DOE and the Trustees of Princeton University (DE-AC02-09CH11466) contains the contractual language and provisions that provide the legal basis for Laboratory

---

<sup>1</sup> ISO14001-2004 – Environmental Management Systems – Specification and Guidance for Use

operations. Attachment J.9, Appendix I, identifies the DOE Directives applicable to the Laboratory, which includes certain DOE environment, safety & health (ES&H) standards. A summary of the environmental legal and other requirements applicable to PPPL's EMS is provided in [Appendix B](#) of this document, which is reviewed regularly by key ESH&S personnel. All of these documents are available to employees from the PPPL employee home page.

As part of its Integrated Safety Management (ISM) program, PPPL reviews its operations for applicable ES&H regulations, requirements and standards. Listings and links to applicable ES&H requirements are maintained on the [PPPL Policies and Procedures](#) web page along with the [Integrated Safety Management System \(ISMS\)](#) document. A summary of applicable ES&H requirements, responsible lead organizations, technical experts and training requirements is provided in the [ES&H Standards and Cognizant Points of Contact](#) matrix.

Key environmental professionals in the ESD have access through Enviance<sup>®</sup> to daily regulatory updates at the state and Federal level from the Bureau of National Affairs (BNA). These updates provide timely notification of proposed and adopted changes to applicable regulations. Changes to DOE directives are coordinated by the Best Practices group. Applicable changes to the PPPL contract are coordinated by the Business Operations Department. ESD maintains subscriptions to the *New Jersey Register* as well as several environmental regulatory update publications. Finally, ESD staff members subscribe to targeted email notifications from state and federal agencies, such as NJDEP, EPA, DOE and FedCenter, a clearinghouse for environmental compliance and sustainability information applicable to Federal agencies and facilities.

### **3.5 OBJECTIVES, TARGETS, AND ENVIRONMENTAL MANAGEMENT PROGRAMS**

#### **Objectives and Targets**

Objectives and targets are established based on the analysis of significant aspects and impacts and DOE's departmental goals. PPPL has adopted the DOE sustainability goals outlined in the *Site Sustainability Plan* as its EMS objectives. Specific annual targets are generally not established, but may be established in order to drive performance in specific areas. These interim targets may be used in program evaluations, audits, and management reviews of the EMS. The metrics serve as the basis for action and for continual improvement. A summary of PPPL's environmental performance against the DOE goals and targets is presented annually in the *Site Sustainability Plan*.

In conjunction with its regular reviews of the EMS program, the ERC receives briefings on the Laboratory's environmental performance and can propose supplemental environmental performance targets for adoption by the ES&H Executive Board. The ERC is a resource committee to the Laboratory's ES&H Executive Board, which is composed of the members of the senior laboratory management team. The ERC chair and/or the EMS Program Manager regularly report to the ES&H Executive Board members on the status of environmental projects and performance. The ERC is made up of representatives from the environmental, safety, administrative, research, engineering, and facilities functions of the Laboratory. In recommending targets, the ERC may consider such factors as:

- Past environmental performance,
- Established DOE or Federal performance goals,
- Recent environmental events (e.g. spills, permits occurrences, etc.),
- Planned changes to Laboratory infrastructure,
- On-going and new research programs, and
- Regulatory developments.

The EMS Program Manager, ERC members, and appropriate responsible line managers have input on objectives for technological, financial, operational, and business parameters. They evaluate various options for meeting objectives, taking into consideration the Laboratory's resource and mission constraints, along with goals and time periods that are realistic to achieve the established targets.

### **3.6 STRUCTURE AND RESPONSIBILITY**

Successful implementation of this EMS requires varying degrees of commitment from all PPPL employees, collaborators, and subcontractors. PPPL's [Environmental Stewardship](#) (P-002) and [ES&H Policy](#) (P-003) statements establish expectations for all to follow responsible and sustainable environmental practices in their work activities. Section 3.8 describes the various means by which PPPL communicates the ES&H expectations to the Laboratory community as well as further educate the community on environmental management and sustainable practices.

The majority of the key roles and responsibilities are administered by a relatively small group of PPPL individuals:

- Senior management commitment to the EMS is the responsibility of the Deputy Laboratory Director for Operations and the ES&H Executive Board.
- Annual management review is performed by the ES&H Executive Board members during one of its regular meetings and/or through other communications such as reviews at Laboratory Managers Meetings of EMS activities reported in the ESH&S Newsletters, presentations on EMS progress at quarterly Laboratory Management Reviews (LMRs), email correspondence, etc.
- Maintenance of the EMS Description and other supporting documents is coordinated by the Environmental Services Division (ESD).
- Independent [Internal] auditing of the EMS is performed by the Quality Assurance Division and other Laboratory organizations using an integrated assessment process that is coordinated by ESD.
- Quarterly environmental permit updates are the responsibility of the ESD's Environmental Compliance Manager.
- A third-party external audit by a qualified ISO14001 auditor will be performed at least once every 3 years to validate that the EMS is being implemented according to this plan.
- Remaining responsibilities for implementing the EMS rest largely with the ESD, ERC and other members of the ESH&S Department.

The EMS team, led by the Environmental Services Division Head and composed of ESD staff, with the support of ERC members and other PPPL staff as necessary, is responsible for coordinating the various EMS program elements. The ESD Head is the EMS Program Manager and is the designated senior management representative for the EMS. ESD staff members work with other Laboratory organization representatives such as Safety, Health Physics, Site Protection, Facilities, Engineering and Procurement organizations on environmental programs. These organizations are selected for their organizational role, subject matter expertise, knowledge of or concern for environmental impacts, and the potential impact they can have on achieving the lab and departmental sustainability goals. As issues arise, other organizations may be consulted or brought into discussion on a particular subject. Similarly, input from other groups (e.g., PPPL Safety Review Committee or ALARA Committee) can be requested. A representative from the DOE Princeton Site Office participates in the ERC meetings and is consulted on an on-going basis in order to maintain an operational awareness of EMS activities.

As noted earlier, the Laboratory's activities are reviewed regularly by the ERC and ES&H Executive Board members as a means of evaluating PPPL's performance under the EMS. These reviews provides a basis for proposing new performance targets, updating the EMS plan, and identifying problems that can be corrected to improve productivity and environmental performance. Periodically, the EMS Program Manager provides informal status updates to the Deputy Laboratory Director for Operations, the ESH&S Department Head, the ERC, and the ES&H Executive Board members to monitor performance in achieving objectives and targets.

### **3.7 TRAINING, AWARENESS, AND COMPETENCE**

Line Management is responsible for ensuring that personnel receive the appropriate ES&H training. Line management determines needs in accordance with the subject area training and qualifications requirements. Training and qualification records are maintained by the Human Resources Department's Training Office.

Key PPPL training and communication programs to make staff, visiting scientists, and contractors aware of the environmental policy and their roles in environmental management include:

- General Awareness Training:
  - a) General Employee Training (for any person working >40 hours per year),
  - b) Annual Earth Day briefings,
  - c) Management briefings,
  - d) Hazard Awareness Training, and
  - e) Ongoing communication programs (ESH&S Newsletter, Lab newsletter articles, posters, lobby displays, etc.)
  
- Examples of ES&H training required for select environmental personnel are given below.
  - a) OSHA Hazardous Waste Worker (HAZWOPER),
  - b) OSHA Hazardous Waste Supervisor,
  - d) OSHA Asbestos Supervisor,
  - e) Hazardous/Radioactive Material Transportation,

- f) Radiation Safety,
- h) Other job-specific training as determined by the organization.

Materials related to PPPL's EMS and environmental management programs are prepared by the ESD for inclusion in GET or other training course materials by the Training Office. GET and other training materials are updated as necessary to reflect changes in procedures or requirements or in response to audits or incidents.

### **3.8 COMMUNICATION**

EMS communication is performed in a number of ways at PPPL including the annual [Site Sustainability Plan](#) and [Annual Site Environmental Report](#), regular articles in the [ESH&S Newsletter](#), [PPPL Weekly](#), presentations and meetings with PPPL work groups, and an ES&H concerns "drop box" on PPPL's internal home page where employees, collaborators and on-site subcontractors can express ES&H concerns. In addition, PPPL shares with other DOE sites and Federal agencies through case studies, the DOE Lessons Learned system and presentations at workshops and conferences.

The annual [Site Sustainability Plan](#) (SSP), *Comprehensive Energy Data Report* (CEDR) and DOE's Sustainability Dashboard system summarize PPPL's annual progress toward meeting environmental performance goals and planned actions to improve environmental performance. The [Annual Site Environmental Report](#) (ASER) summarizes PPPL's environmental performance, presents environmental monitoring results, and summarizes significant environmental programs for a particular calendar year. Electronic copies of the ASER are available on the Laboratory's public websites. Compact disk (CD-ROM) and printed copies of the SER are distributed to key stakeholders and are also available to the public upon request.

The PPPL employee home page contains a link to the [EMS website](#) which has important EMS documents, including this EMS Description Document, applicable policies and procedures, environmental performance metrics, EMS fact sheets, internal assessments, and third-party audit reports. This web page is accessible to all PPPL and DOE-PSO employees as well as collaborators and subcontractors with access to PPPL's intranet. A [public web page](#) also provides EMS and environmental management information to the public, regulatory agencies, and community members.

PPPL participates in DOE's Lessons Learned and best practices programs. Noteworthy developments in the EMS program can be posted to this database where PPPL, DOE and other lab personnel can review, or if requested, receive an automated notification of new postings.

In addition, each regular issue of [PPPL's ESH&S Newsletter](#), which is provided to all Laboratory staff and discussed with senior Laboratory managers (i.e., ES&H Executive Board members), features a "Sustainable PPPL" column featuring EMS principles, compliance highlights or ongoing environmental sustainability efforts and how they affect Laboratory operations. On-going EMS communications efforts also include regular management briefings (e.g., at the weekly Laboratory Managers Meetings for senior PPPL managers), features in the weekly newsletter *PPPL Weekly*, a Sustainable PPPL bulletin board located in a main employee entrance area, and ES&H poster stations located throughout the Laboratory.

PPPL employees, subcontractors or collaborators may communicate their concerns or interests on any ES&H topic using a dedicated [SOS “Drop Box”](#) on the employee home page. Various options exist for leaving concerns or questions, including anonymous reporting, and the status of follow-ups for all items submitted are posted.

Communications within the DOE community are also important. Key members of the EMS team exchange knowledge with colleagues at other DOE facilities or DOE offices through participation in various forums such as DOE’s Sustainability Assistance Network and regular EPA WasteWise Partner conference calls. These venues provide an opportunity to share valuable lessons in EMS implementation and environmental stewardship between members.

The PPPL Communications Office maintains an electronic log of all media and public inquiries or information requests, including those of an environmental nature. Inquiries are directed to the appropriate technical or operations manager for further action. Communications Office staff assist technical personnel as necessary in addressing public or media inquiries.

### **3.9 DOCUMENTATION**

The EMS includes the following documentation:

- This *EMS Description Document* describes the scope and elements of the environmental management system and how it relates to the Laboratory's ISMS and ISM processes.
- Applicable laboratory-wide and department/division implementing plans and procedures that provide additional information about the following activities: (1) identification of significant environmental aspects and impacts, (2) environmental management programs, (3) training, (4) assessments and audits, and (5) management review.
- The annual [Site Sustainability Plan](#), *Comprehensive Energy Data Report* and [DOE Sustainability Dashboard System](#) summarize PPPL’s progress toward meeting EMS objectives and planned actions to improve environmental performance.
- The [Environmental Aspect and Impact Summary \(Appendix A\)](#) provides a comprehensive list of environmental aspects and impacts throughout the Laboratory.
- Audit and assessment reports from both internal and external organizations.
- Other records including meeting minutes and attendance sheets, presentation materials, fact sheets, and training records.

Much of this information is available at the Laboratory's [EMS website](#) or is elsewhere accessible from the employee home page. Other documents are held by the originating organization.

Under DOE Order 436.1, DOE requires several annual reports on EMS and sustainability performance: the DOE Sustainability Dashboard System, DOE Site Sustainability Plan (SSP) and Comprehensive Energy Data Report (CEDR), and the Office on Management and Budget (OMB) Annual EMS Report. EMS and sustainability reporting are based on the Federal fiscal year (October to September). Reporting is required of all federal agencies and applicable contractors. The OMB oversees this reporting in its role of administering the requirements of

Executive Orders 13423 and 13514. Details of PPPL's environmental reporting requirements are presented in Sections 3.8 and 3.9.

The SSP and CEDR reports are prepared annually following guidance issued by DOE. Together they summarize PPPL's progress toward meeting DOE's environmental performance goals and planned actions to improve environmental performance. These reports are submitted to DOE-PSO, which in turn submits them to DOE headquarters. They form the basis for assessing past performance and projecting future performance across the DOE complex.

The Sustainability Dashboard replaced DOE's PPTRS as the online reporting portal for data on waste prevention, pollutant release reduction, toxic chemical use reduction, environmentally preferable purchasing, recycling, electronics stewardship, and other pollution prevention data. It is being expanded to include data currently reported in the CEDR in order to become a single data entry and reporting portal for DOE energy and sustainability data.

The OMB Annual EMS Report follows an established set of metrics that are set at the departmental level and apply to all federal agencies. It is prepared using the online FedCenter reporting portal. Metrics may change from year to year to reflect changing federal initiatives. PPPL's EMS Program Manager prepares the report and the DOE-PSO representative reviews the online report prior to online submittal.

PPPL prepares an [Annual Site Environmental Report](#) (ASER) per DOE Order 231.1B which summarizes environmental monitoring and compliance activities at the Laboratory and provides an overview of PPPL's EMS implementation progress. The ASER is submitted to DOE, public agencies and interested stakeholders and is available on PPPL's public website. Finally, PPPL includes a discussion of its environmental and sustainability performance in its Annual Highlights report, which is publically available and is distributed to DOE and local agencies.

### **3.10 DOCUMENT CONTROL**

The EMS documents that are reviewed and approved for adequacy prior to issue are this EMS Description Document and appendices, implementing procedures, and the annual [Audit Schedule](#) and [Integrated Assessment Plan](#). Printed copies of these documents are uncontrolled convenience copies unless otherwise identified. The EMS Description Document is prepared by the EMS Program Manager, reviewed by ERC members, and approved by the ERC chair, and ESH&S Department Head. The current version of this Plan is posted on the EMS website. Laboratory-wide documents are prepared following Laboratory policy [P-032](#) and procedure [GEN-003](#) which identify the requirements, responsibilities, and controls for issuing, revising, and approving documents. Implementing procedures are prepared by the appropriate subject matter expert and approved by the applicable Division/Department head or the Laboratory Director in accordance with the above procedures.

EMS documents are reviewed and updated as necessary to address changes in Laboratory operations. The EMS Description will be reviewed at least every three years per procedure [GEN-003](#). Electronic versions of essential and relevant documents are maintained in a centralized network location that is regularly backed-up for protection. As noted elsewhere in this document,



many of the key documents are available to employees on the PPPL EMS website. Documents are tracked by a date and revision number to maintain control.

### **3.11 OPERATIONAL CONTROL**

Operational control is maintained by the responsible line manager and organizations through the use of work planning documents (NEPA, WPF, JHA), plans, procedures, and other work authorizations. Operations that are associated with significant environmental aspects may be evaluated by ESD personnel during environmental compliance evaluations and aspect/impact surveys to evaluate whether activities comply with regulations and are being conducted in a way that will minimize adverse impacts. Routine meetings are used to identify, coordinate, and track specific environmental performance obligations for significant environmental aspects, especially in programs or areas affecting significant environmental performance objectives (e.g., energy efficiency, GHG emissions, waste management, etc.). New procedures and/or interim performance targets may be considered in situations where there are difficulties in achieving or maintaining environmental performance objectives, or where the absence of procedures may lead to deviations from PPPL's environmental policy.

### **3.12 EMERGENCY PREPAREDNESS AND RESPONSE**

PPPL's Site Protection Division (SPD) and its Emergency Services Unit (ESU) are the primary emergency response organization at the Laboratory. A comprehensive Emergency Preparedness Plan is established for a variety of situations that may occur including, but not limited to, security incidents, medical emergencies, operational emergencies, oil and chemical spills or releases, radiological releases, and fires. The Spill Prevention Control and Countermeasures (SPCC) Plan, required by 40 CFR 112, is a supplement to the site-wide Emergency Preparedness Plan. The SPCC Plan is maintained by the Environmental Services Division (ESD). Many facility-related and environmental protection alarms are monitored by the ESU communications center, which is staffed 24 hours per day. SPD and ESD staffs regularly coordinate on environmental response and cleanup actions. Emergency drills are often coordinated to allow both SPD and ESD personnel opportunities to practice responding to spills and other environmental emergencies.

### **3.13 MONITORING AND MEASUREMENT**

PPPL has developed and implemented an environmental monitoring program to document environmental conditions at and around the PPPL site and evaluate potential impacts to the environment. The [Environmental Monitoring Plan](#) includes both radiological and non-radiological aspects. Environmental monitoring data are used to demonstrate compliance with requirements imposed by federal, state, and local agencies; confirm adherence to DOE environmental protection policies; and support environmental management decisions. The environmental monitoring program is implemented by different Laboratory organizations including the Environmental Services and Health Physics Divisions and consists of three major activities:

1. Air Monitoring,
2. Surface Water Surveillance,

3. Ground Water Monitoring, and
4. Radiological Monitoring

Further information can be found in the [Environmental Monitoring Plan](#).

Measurement and testing equipment pertinent to environmental monitoring and operational controls applicable to the EMS is calibrated or verified and calibration records are retained as described in the applicable operational procedures or documents. Calibration scheduling, services, and records may be managed by the PPPL Calibration Lab or by the responsible PPPL organization (department, division, project, etc.).

### **3.14 EVALUATION OF COMPLIANCE**

Assessments and inspections are conducted at PPPL facilities to evaluate compliance with established standards on an ongoing basis. [Appendix B](#) provides a summary of legal and other requirements applicable to PPPL's Environmental Management System. This summary includes a listing of applicable operational documents/procedures and the most recent compliance assessment or verification dates. ESD personnel also conduct regularly scheduled compliance assessments for programs and equipment covered by PPPL's environmental permits following procedure [EM-OP-47](#).

In addition to the compliance-focused assessments noted above, PPPL conducts a series of regular ES&H self-assessments throughout the Laboratory. This integrated assessment process is designed to ensure that Laboratory work is conducted safely and with minimal adverse effects to workers (employees, participating guests, and subcontractors), the public, and the environment. The assessment process also serves to foster continual improvement to the Laboratory's ES&H programs. It uses performance objectives and criteria based on the ISM core functions and guiding principles to evaluate the ES&H performance, including environmental performance. While these assessments may not be directly associated with the EMS program, information obtained through these assessments may be relevant and beneficial to the EMS program. An annual overview of the Laboratory's self-assessment program can be found in the [Integrated Assessment Plan](#). The Laboratory's *Annual Audit Schedule* is available on the [Quality Assurance Division](#) webpage.

### **3.15 NONCONFORMANCE, CORRECTIVE ACTION, AND PREVENTIVE ACTION**

Environmental compliance inspections and reviews may be conducted by a number of external organizations including:

- U.S. Department of Energy
- U.S. Environmental Protection Agency, Region 2
- New Jersey Department of Environmental Protection
- New Jersey Department of Health

- Princeton University Office of Audit and Compliance

The EMS Program Manager is responsible for coordinating management reviews, compliance assessments, and audits of PPPL's Environmental Management System. Members of the [Environmental Review Committee](#) (ERC) and Laboratory subject matter experts may assist with the reviews, assessments and audits. The ERC committee is a Resource Committee to the [ES&H Executive Board](#). The ERC meets twice annually to review status of environmental matters at the Laboratory. These meetings include an EMS status report. Additional meetings may be called by the ERC Chairperson at the request of members or in response to significant environmental events. The ERC is briefed regularly about EMS processes and the Laboratory's performance against established environmental objectives. The ERC may also identify areas for improvement or emphasis in the coming year based on its review.

The Laboratory conducts investigations and causal analysis of adverse events and conditions to prevent recurrence and to improve safety, health, and environmental protection systems, and the efficiency, compliance, and effectiveness of Laboratory operations. The depth and formality ("graded approach") of investigations and analysis is based on the categorization of the severity or potential severity of an event or condition. Procedure GEN-006, *Investigation and Follow-up of Adverse Events and Conditions including Occurrence Reporting and Price Anderson Amendment Act Reviews*, describes the requirements for investigation, analysis, and follow-up actions for such adverse events and conditions. PPPL staff, collaborators, and visitors are responsible for identifying issues that may require correction, improvement, or management attention. Management encourages the reporting of any accident, incident, near-miss, or adverse condition so that they can be addressed and prevented in the future. Non-conformances related to items or services are addresses following the process outlined in procedure [QA-005, Control of Non-conformances](#). This procedure outlines a process for evaluating, documenting and controlling non-conforming items or services and may invoke other corrective action procedures identified herein.

Occurrences of a serious or systemic nature require a causal analysis. Procedure QA-019, Root Cause Analysis establishes the process and provides instructions by which the Laboratory conducts formal root cause analysis (RCA). Formal root cause analyses may be invoked per procedure [GEN-006](#) to investigate and determine the causes of accidents, incidents, near-misses, and adverse conditions, by [QA-002, PPPL Audit Program](#) for high priority audit findings, or at the request of management. Informal root causes analysis can be performed at any time and for any reason and should use [GEN-006](#) for guidance. Root cause analysis refers to the process of identifying those specific or systematic factors that caused or fostered adverse consequences.

Procedure [QA-012, Corrective Action Request](#), outlines the process for developing corrective actions for deficiencies identified during work activities at PPPL. Deficiencies need not be the result of audits or assessments, but may be identified during work activities or may address a management concern. The responsible organization develops an action plan to correct the deficiencies. Further analysis with respect to the cause and extent of condition may be initiated by the responsible organization or Laboratory management. The action plan typically includes a schedule for completing the corrective actions and may provide for regular reporting, as required, until the corrective action is completed.

PPPL has several systems in place to track issues and corrective actions to closure. The QA Division manages the Laboratory's Issues Tracking program through procedure [QA-017, PPPL Issues Tracking System](#). The primary purpose of the PPPL Issues Tracking System is to assure that environmental, safety, health and quality issues are appropriately resolved. A secondary purpose is to assure that trends associated with this data are identified and resolved. The data covered by this procedure include findings from both audits and assessments performed by PPPL staff and those performed upon PPPL by outside organizations, e.g., DOE, NJDEP, responses to ORPS and NTS events, corrective actions taken as a result of root cause analyses, and issues identified via the QA Nonconformance System. Items identified during safety walkthroughs are tracked by the ESH&S Department. Significant issues that require reporting to DOE under procedures [GEN-006](#) or [ESH-013](#) are tracked in the DOE Occurrence Reporting System (ORPS). Findings and action items are tracked to closure and open items over a specified time period receive review by senior laboratory management to facilitate closure.

### **3.16 RECORDS**

Laboratory Policy [P-O32, Hierarchy of Documents](#) identifies the relationship of laboratory policies, plans and procedures. Laboratory procedures [GEN-001](#) and [GEN 003](#) identify the requirements, responsibilities, and controls for issuing, revising, and approving documents. Laboratory Policy [P-015, Records Management](#) provides policy guidance for the management of Laboratory records.

The Environmental Services Division (ESD), in support to the Environmental Review Committee, maintains records pertaining to development and implementation of the EMS program and ERC meetings. Official copies of the EMS Description as well as applicable policies, plans and procedures are available on the PPPL internal employee web site. Operational documents and records (e.g. emergency response records, inspection & operational logs, etc.) are maintained by the responsible PPPL organization. Uncontrolled convenience copies may be obtained by printing them from the web page. Hardcopy files of materials pertaining to the EMS are also maintained by ESD.

### **3.17 AUDITS AND APPRAISALS**

#### **Internal Audits & Assessments**

At least every three years, an internal audit of the EMS program will be conducted by the QA Division. It is preferable that the audit be performed approximately mid-way between any third-party registration audits. The audit team may include a representative of the ERC and appropriate subject matter experts. In cases where the ERC representative is not independent of the area being audited, they will not participate in the auditing and only serve as a subject matter expert. A DOE-PSO representative may also participate. Auditors should be knowledgeable of applicable DOE and Executive Orders, the ISO14001 standard, and the PPPL EMS.

The purpose of the audit is to determine if EMS activities conform to the requirements of applicable orders and the ISO14001 standard, and evaluate implementation and maintenance of the EMS. The audit will document corrective actions and may include observations or

opportunities for improvement. The internal audit may be conducted as a single comprehensive audit or may be broken into smaller audits such that the all applicable clauses of ISO-14001 are evaluated every three years. The audit may also include reviews of specific environmental management programs. The results of the internal audit are discussed with the EMS Program Manager and other responsible managers, who determine corrective actions. Results of the audit and corrective actions are discussed with the ERC and ES&H Executive Board members, and at monthly assessments and action items meetings held by the Deputy Laboratory Director for Operations as part of PPPL's Management Review.

### **Registration Audit**

In order to be registered to the ISO14001 a third-party registration audit of PPPL's EMS program is required. This audit can only be conducted by ANAB-qualified auditors with expertise in environmental management, auditing practices, and the requirements of the ISO standard. Regular surveillance audits are also required in order to maintain system registration.

### **ES&H Assessments**

In addition to the compliance-focused assessments noted in Section 3.14, PPPL conducts a series of regular ES&H self-assessments throughout the Laboratory. This integrated assessment process is designed to ensure that Laboratory work is conducted safely and with minimal adverse effects to workers (employees, participating guests, and subcontractors), the public, and the environment. The assessment process also serves to foster continual improvement to the Laboratory's ES&H programs. It uses performance objectives and criteria based on the ISM core functions and guiding principles to evaluate the ES&H performance, including environmental performance. While these assessments may not be directly associated with the EMS program, information obtained through these assessments may be relevant and beneficial to the EMS program. An annual overview of the Laboratory's self-assessment program can be found in the [Integrated Assessment Schedule](#). The Laboratory's Annual Audit Schedule is available on the [Quality Assurance Division](#) webpage.

## **3.18 MANAGEMENT REVIEW**

The EMS program and activities are reviewed with ES&H Executive Board members annually at a board meeting and/or through other communications such as reviews at Laboratory Managers Meetings of EMS activities reported in the ESH&S Newsletters, presentations on EMS progress at quarterly Laboratory Management Reviews (LMRs), email correspondence, etc. The purpose of this review is to ensure that the Laboratory's EMS continues to be suitable, adequate and effective. Topics of discussion include the following:

- Continued suitability, adequacy and effectiveness of the EMS,
- Results of internal audits and evaluations of compliance with legal and other requirements,
- Communication from external interested parties (including complaints),
- PPPL's environmental performance, including the extent to which objectives and targets have been met,

- Status and effectiveness of corrective and preventive actions,
- Follow-up actions from previous management reviews,
- Changing circumstances, including developments in legal and other requirements related to its environmental aspects, and
- Any recommendations for improvement.

Based on this review the ES&H Executive Board members (i.e., senior Laboratory management) may determine the need to make changes to the EMS program seeking continual improvement. Factors such as improved assessment methodologies, major changes to the facility's mission and programs, regulatory changes or stakeholder concerns may be considered in determining the need to make changes to the program.

## 4.0 References

---

U.S. Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (January 26, 2007).

U.S. Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009)

DOE Order 436.1, *Departmental Sustainability*, (May 2, 2011).

DOE Policy 450.4, *Integrated Safety Management Policy*.

DOE Order 231.1E, *Environment, Safety, and Health Reporting*, (June 27, 2011).

International Organization for Standardization (ISO) 14001:2004(E), *Environmental Management Systems – Requirements with Guidance for Use*, <http://www.iso.org> (November 2004).

Princeton Plasma Physics Laboratory (PPPL), *Site Sustainability Plan* (current revision)

PPPL, *ES&H Directives – “PPPL Safety Manual”* (current revision)

PPPL, *Integrated Safety Management System Description*, (current revision).

PPPL, *Environmental Monitoring Plan* (current revision)

PPPL, *Spill Prevention Control and Countermeasures Plan*, (current revision)

PPPL, *Stormwater Pollution Prevention Plan, Rev. 2* (current revision)

PPPL, *Emergency Preparedness Plan* (current revision)

Public Law 109-58, *Energy Policy Act of 2005* (August 8, 2005).

Public Law 110-140, *Energy Independence and Security Act of 2007* (December 19, 2007).