

**U.S. DEPARTMENT OF ENERGY
BROOKHAVEN SITE OFFICE
ENVIRONMENT, SAFETY AND HEALTH
MANAGEMENT PLAN**



July 2009

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I. Introduction

The purpose of this Environment, Safety & Health (ES&H) Management Plan is to describe how activities in the ES&H areas are managed at the Brookhaven National Laboratory (BNL) by the U.S. Department of Energy's (DOE) Brookhaven Site Office (BHSO). The ES&H Management Plan follows the guiding principles set in DOE Order and Policy 226.1, *Department of Energy Oversight Policy*, which requires the DOE to protect the public, workers, environment and national security and to perform its business operations effectively. The BHSO ES&H Management Plan sets the following expectations for all activities conducted at BNL:

- Conduct operations in a safe and environmentally sound manner in order to protect worker and public health and the environment
- Compliance with all applicable ES&H-related federal and state laws, local ordinances, and with contractually agreed upon DOE Orders and Directives.
- Analyze ES&H risks associated with laboratory operations, appropriately allocate risk reduction resources and implement appropriate risk reduction measures.
- Ensure that federal financial resources are being efficiently spent to reduce the greatest amount of imminent and potential risk.

The principles of Performance Based Management (PBM), Integrated Safety Management (ISM) and the "Graded Approach" are the primary tools used by BHSO for the management of all ES&H activities at BNL and the fulfillment of the above ES&H expectations.

The key elements of PBM include: Setting Expectations, Monitoring Performance, Facilitating Performance and Providing Feedback. The PBM elements are utilized in the management of the DOE contract with Brookhaven Science Associates (BSA), in BHSO's oversight activities at BNL and interactions with other DOE organizations.

ISM is used by BHSO to provide a level of confidence that work at BNL is being conducted in a safe manner. The core functions of ISM include: Define Scope of Work, Analyze Hazards, Develop and Implement Hazard Controls, Perform Work within Controls and Provide Feedback and Continuous Improvements.

The concept of "graded approach" is integrated with PBM and ISM. The "graded approach" requires that hazards (the danger inherent in the activity) be assessed and then designs, methods, processes, and procedures be implemented to control the risks, including residual risks (i.e., any risk remaining after appropriate controls have been implemented.) In other words, the "graded approach" can also be described in the following manner: *The greater the hazard or risk, the more detailed the risk management process.* The "graded approach" is integrated into the allocation of all BHSO resources.

II. DOE and BHSO Organizational Structure

The BHSO reports to the Office of Science and holds line responsibility for all ES&H matters at the BNL site. BHSO is comprised of the Site Manager's office (including Legal Counsel, and Community and Government Relations), the Operations Management Division (OMD), the Project Management Division (PMD) and the Business Management Division (BMD). OMD and PMD have direct responsibilities related to ES&H and monitor contractor implementation of

ES&H programs. The Business Management Division (BMD) has the lead in managing contractual matters, budget, and other administrative programs (i.e., Work for others, property management, and training). The BHSO Organizational structure is documented in detail in BHSO-PPP-04, Functions, Responsibilities and Authorities Document.

III. Roles and Responsibilities

It is essential to the BHSO and BSA missions that all employees and visitors conduct their jobs safely and in compliance with established ES&H requirements and standards. BHSO employees and their contractors are required to know and understand DOE and BSA ES&H requirements. Therefore, employees at BHSO must complete all required DOE and BSA ES&H training and maintain their training status current. BHSO personnel must also conduct all their activities in accordance with established DOE Orders, Directives, regulations and procedures. Table 1 in the Appendix provides a list of procedures established by BHSO to govern its activities.

The BHSO Site Manager and Division Directors are responsible for providing leadership and communicating all ES&H expectations to BHSO employees. They also assess the necessary training and allocate resources. BHSO management is also responsible for providing leadership in the ES&H areas and holding BHSO and staff accountable for ES&H requirements.

BHSO Division Directors plan, organize, direct, and manage work and/or personnel in their programmatic, facility, or functional area of responsibility. Division Directors are required to maintain ES&H expertise and know the applicable ES&H regulations, DOE regulations and DOE Orders to ensure that they are being complied with by BSA as specified in the BSA contract.

IV. Training and Qualification

BHSO technical personnel receive specific ES&H training in core competencies and participate in formal qualification programs. BHSO personnel may also demonstrate, through education and/or work experience, the required knowledge, skills, and abilities necessary for their assignment. BHSO employees develop Individual Development Plans (IDP) which specifies their training and development plans for the fiscal year. The IDPs provide a formal mechanism for BHSO staff to keep their ES&H training and qualifications current.

FR's participate in a formal qualification program as required by DOE-STD-1063-2000, *Facility Representatives*, and DOE-STD-1151-2002, *Facility Representative Functional Area Qualification Standard*. BHSO maintains minimum qualification standards for SME and Subject Matter Authorities (SMA). A risk-based graded approach was followed in determining whether a SME or SMA is sufficient for an ES&H functional area.

FPDs are also required to obtain the appropriate certification level in the DOE Project Management Career and Development Program (PMCDP). ES&H training and proficiencies are included in this certification program.

SMEs and FPDs also complete specific training to maintain proficiency in their areas of expertise and participate in cross-training activities to enhance their overall capabilities. These SMEs and FPDs must also maintain specific knowledge regarding DOE general standards and

requirements, site ES&H programs, and project design and ES&H requirements in accordance with BHSO procedures for qualifications certifications.

V. Performance Based Management (PBM) Approach Defined

The following are the key elements of Performance Based Management (PBM):

- **Setting Expectations:** Establish and communicate expectations and requirements to guide BSA planning, conduct of work activities and results.
- **Monitoring Performance:** Monitoring BSA operations, work activities and deliverables to ensure that contract expectations and requirements are being met.
- **Facilitating Performance:** Ongoing DOE federal employee operational awareness activities, which promote contractor performance.
- **Providing Feedback:** Developing and communicating performance results from the monitoring processes to the contractor so as to improve future performance.

VI. Integrated Safety Management (ISM) Implementation

The BHSO transmits DOE's expectations for a current and valid Integrated Safety Management (ISM) System to BSA through contractual requirements. ISM System status is evaluated annually by examining performance measures, BSA's Annual Self-Evaluation, BSA ISM effectiveness reviews and declarations, and BHSO operational awareness data gathered throughout the fiscal year. Results are subsequently reported to SC and HQ, including accomplishments, opportunities for improvement and system status in the areas of process robustness, system effectiveness and continuous improvement.

BHSO also has a Site Office ISM Program Description. The purpose of this document is to describe the integrated processes used by BHSO to meet the principles and functions of ISM and to ensure safety is integrated into all work activities. This program description addresses the safety processes used by and oversight provided by BHSO employees and BHSO subcontractor employees only.

VII. BHSO ES&H Operational Awareness Activities

BHSO conducts planned ES&H operational awareness activities to provide a level of confidence that BSA is in compliance with DOE expectations and requirements. The BHSO ES&H operational awareness activities are performed in accordance with the principles of Performance Based Management. A key goal of BHSO's operational awareness activities is to ensure that BSA is implementing ISM. BHSO selects and conducts operational awareness activities utilizing the "graded approach."

The following are examples of ES&H operational awareness activities performed by BHSO FRs and SMEs:

A. BHSO Facility Representative ES&H Operational Awareness Activities

- Walkthroughs of facilities;
- Surveillances of facilities to monitor specific activities;
- Performance of readiness assessments and operational readiness reviews;
- Regular meetings with appropriate contractor departmental/facility and ES&H personnel;
- Observation of BSA event critiques and investigations;
- Review of all BSA occurrence reports;
- Observation of BSA self-assessment activities;
- Review of BSA self-assessment program reports;
- Maintaining general knowledge of departmental/facility procedures, hazard and safety analysis documents and emergency plans;
- Observing selected BSA review (safety, experimental, etc.) committee processes;
- Monitoring investigations of BSA employee ES&H concerns;
- Conducting regular BHSO internal staff meetings on ES&H issues; and
- Participating in meetings between BHSO SMEs and FPDs and BSA ES&H management personnel.

BHSO attempts to follow the FR Performance Indicators guidance described in DOE-STD-1063-2000. These performance indicators set goals for the following categories of FR time:

- in the field (i.e., not at the desk);
- reviewing documents; and
- Other activities (i.e., training, administrative, special projects, etc.)

These goals provide a weighted balance of broadly diverse FR activities. The diversity balance prevents unwanted and long-term focusing of FR activities in areas which do not serve the objective of the DOE FR Program of being the DOE's "*eyes and ears*."

B. BHSO SME ES&H Operational Awareness Activities

- Assessments – BHSO SME assessments are pre-planned, formal reviews of performance in a specific functional area or multiple functional areas within a specific facility or department or across the entire Laboratory. BHSO's assessment program compliments day-to-day monitoring activities to ensure that BHSO maintains comprehensive awareness of BSA performance in ES&H, Quality, and Safeguards and Security. Results from periodic assessments provide the basis for BHSO to promote continuous improvement through correction of identified deficiencies and recommendations for application of best practices. The assessment process also provides assurance that BSA is in compliance with applicable regulations, requirements and standards.
- "For Cause" Reviews - BHSO SMEs also conduct "For Cause" reviews to evaluate specific performance issues, examine causes for declining performance, and/or address specific operational events.
- BHSO has entered into an agreement with the EPA to promote environmental excellence at BSA through implementation of formal Environmental Management Systems (EMS). A key element of this agreement is a commitment by BHSO to conduct periodic process reviews and EMS audits to monitor the effectiveness of the programs

developed and implemented by the contractor. An initial management system audit was conducted in FY 1998 and an additional focused audit was conducted in FY 1999 to evaluate specific elements of environmental management system development and implementation. An independent third party audit for obtaining the ISO 14001 certification was completed in FY 2000 and maintenance audits have been performed annually.

C. BHSO Quality Assurance Program

DOE O 414.1C *Quality Assurance* requires contractors and DOE to develop and implement Quality Assurance Programs. BHSO reviews and approves the contractor's Quality Assurance Program Description (QAPD) on an annual basis. The Laboratory's QAPD includes a program description for implementation of DOE O 226.1. BHSO provides oversight of both these programs.

BHSO also maintains a Quality Management Plan or Quality Assurance Program Description (QAPD) which describes how BHSO performs work and ensure quality in accordance with DOE O 414.1C. This plan has been approved by the Office of Science and is reviewed on an annual basis.

VIII. ES&H/Infrastructure Prioritization and Integration Consider adding more on the entire infrastructure management process

BHSO provides oversight of BSA's analysis, prioritization, planning and execution for allocating resources to support ES&H program and infrastructure needs. The BSA process called the Project, Planning, Programming and Budgeting Process (3 PBP) uses an Activity Data Sheet (ADS) Database to list and prioritize ES&H and infrastructure projects needed for the BNL site and track unfunded risks. The BHSO oversight encompasses integration of all activities that are ES&H, infrastructure, and programmatic support related. The prioritization process is a vital link in ensuring recognized deficiencies are corrected, the required infrastructure is maintained, and cost-effective improvements based on total risk reduction is implemented. BHSO is responsible for ensuring that BSA implements their process in accordance with DOE performance expectations and past agreements. BHSO also partners with BSA to ensure optimal use of ES&H and infrastructure resources.

IX. BHSO Requirements and Expectations for Key Subject Areas

DOE requirements are incorporated in 10 CFR 851, *Worker Safety and Health Program* its Orders and Directives. This section provides a summary of some requirements and expectations in key ES&H subject areas.

A. Environmental Protection Program

The BHSO Environmental Protection Program (EPP) consists of the following program elements:

- Environmental Compliance;
- Environmental Restoration;
- Environmental Monitoring;

- Waste Management; and
- Waste Minimization and Pollution Prevention

B. Safety and Health Program

The BHSO Safety and Health Program consists of the following program elements:

- Fire Protection;
- Industrial Hygiene/Safety;
- Construction;
- Nuclear and Radiation Safety;
- Transportation Safety;
- Federal Employee Occupational Safety and Health (FEOSH); and
- Accelerator Safety

The major objectives of the Safety and Health Program are to:

- Provide safe workplaces, and working conditions that do not adversely affect worker health;
- Assure compliance with applicable statutory and regulatory safety requirements;
- Ensure all BSA work is conducted safely;
- Identify safety and health risks and have BSA reduce them with practical and economical solutions; and
- Ensure that employee exposure to radioactive and hazardous materials, physical agents and contamination is limited to As Low As Reasonably Achievable (ALARA) levels.

X. Data Analysis Activities

BHSO tracks and analyzes pertinent ES&H information obtained through BHSO's ES&H operational awareness activities and provides valuable feedback to BSA, DOE senior management and other BHSO customers and stakeholders. BHSO data analysis activities include:

- Review and approval of occurrence reports;
- Tracking occurrence report corrective actions;
- Review and approval of Operational Readiness Reviews, Readiness Assessments, Accelerator Readiness Reviews;
- Analysis and approval of Design Modifications;
- Review and approval of ES&H implementation plans;
- Trend analysis of results from Operational Awareness activities;
- Review of BSA Self-Assessments;
- Analysis of BSA performance in relation to the ES&H performance measures in the Contract; and
- Root cause analysis of special investigative reports.

OMD has the primary responsibility for analyzing ES&H information and providing the necessary feedback. OMD staff document their ES&H activities by providing input into a weekly report. The report documents key issues, occurrences and events, activities and information on facility status. A copy of this report is provided to the BHSO senior staff (Site Manager, Deputy Area Manager and Division Directors).

An Issues Management Program a database program, is also used to track and trend operational awareness data. Data in the Issues Management Database is sorted under various parameters in order to identify emerging trends. Data from such analyses will is also shared with BSA in an effort to reduce or minimize the potential for future accidents

OMD staff also track contractor commitments and corrective actions made based on BHSO operational awareness activities or critiques/analysis from events/issues management in the BSA Action Tracking System (ATS). The DOE ORPS database is also used to track commitments for corrective actions made following reportable events. BHSO staff periodically analyze data from assessments, surveillances, ORPS reportable events, and BSA self-assessment activities (i.e., Tier I, institutional self-assessments and BSA ES&H assessments) to identify trends, recurrent issues, and patterns that may indicate programmatic weaknesses.

XI. Feedback

Feedback is an important element of PBM and ISM. The following provides the various mechanisms through which BHSO provides feedback on ES&H activities and issues.

A. Feedback to BSA

Feedback from BHSO to BSA of ES&H oversight results involves two separate responsibilities. The first involves verifying that the Laboratory has implemented appropriate internal ES&H feedback management systems. These systems might include programs such as self-assessment, ES&H commitment tracking and occurrence report lessons learned distribution. Verification is accomplished through routine Operational Awareness activities performed by the FRs and SMEs.

The second responsibility is to implement a BHSO system to ensure that results from BHSO's operational awareness program are properly provided to the BSA. ES&H feedback from BHSO is provided to BSA in the following ways:

- BHSO Tri-Annual Feedback Report and follow-up management meeting;
- BHSO Senior Managers' meetings (two times per week) with BSA Director;
- BHSO management provides feedback to BSA ES&H management at other numerous regularly scheduled meetings;
- For cause meetings with BSA management and personnel are held as needed to discuss significant occurrences or time sensitive issues;
- In the course of performing day-to-day operational awareness activities, BHSO FRs, SMEs, and FPDs routinely provide immediate guidance and information on observed deficiencies and recommendations to correct deficiencies to BSA personnel. Most of these exchanges involve minor issues and are transmitted and tracked in an informal manner. Items of significance are captured in routine BHSO reports.
- Monthly meetings with BSA to address environmental compliance issues;
- Approval or comments on BSA safety documentation or implementation plans when required by DOE directive;
- BHSO personnel discuss BSA event/issue and occurrence reports with BSA facility and ES&H personnel, provide comments, and approve the reports; and
- BHSO personnel are authorized to exercise Stop Work Authority as delegated by the Contracting Officer to terminate any activity and/or to order the shutdown of a facility for

any situation that poses an imminent threat to the safety of BSA personnel or the public, or that would damage facility equipment or the environment.

B. Feedback to DOE

1) Feedback to the Office of Science (SC)

BHSO reports through SC to the Secretary of Energy. BHSO provides informal and formal periodic reports (i.e. Project Assessment and Reporting System) to the representatives of the SC regarding all activities at BSA including ES&H. These reports identify events, issues, emerging concerns, and impediments to effective program implementation that require resolution. In addition, BHSO provides periodic status reports regarding the Operational Awareness Program.

2) Feedback to the Office of Environmental Management (EM)

Feedback to the EM Site Federal Project Director is provided via senior staff meetings and routine interactions with EM staff located at BHSO. The EM Site FPD is responsible for coordination with EM HQ.

4) Feedback to the Office of Health, Safety and Security (HSS)

BHSO provides information to the Office of Environment, Safety and Health Office regarding status of important issues, status of corrective actions from previous assessments, and emerging issues and concerns (i.e. Occurrence Reporting, Price Anderson Act information).

C. Feedback to Stakeholders

BHSO is committed to sharing important ES&H information with stakeholders including State and local governments, labor unions, other Federal agencies and the public. Through BHSO's Stakeholder and Community Involvement Programs, BHSO uses a wide range of mechanisms to share information including mailings, meetings, newsletters, briefings of officials, and periodic reports.

XII. DOE-BSA Contract and Performance Measures

The DOE contract with BSA became effective January 5, 1998 and BSA assumed operational responsibilities of BSA on March 1, 1998. The new performance based contract requires BSA to use a Performance Based Management System for Laboratory oversight. The Performance Based Management function is managed at BHSO by BMD.

A key feature of the BSA and DOE contract are Performance Measures. Performance Measures are developed to satisfy specific outcomes outlined in the contract for evaluating BSA performance. In order for both BSA and DOE to receive the maximum benefit and use from the Performance Measures, the process requires attention to ensure that the measures for the current fiscal year are on track and that measures for the succeeding fiscal year are developed to reflect DOE's goals and objectives. Careful perusal of the pertinent Acquisition letters, the

DOE Strategic Plan, DOE's mission for BSA and best practices from other DOE facilities and private industry are at the heart of developing the critical outcomes and performance measures.

ES&H Performance Measures currently constitute a major portion of the Operational Excellence Critical Outcome measures. The success of selecting the appropriate ES&H Performance Measures depends on trending and performance analysis of ES&H data and implementation of lessons learned and corrective actions from BSA, around the DOE complex and industry.

At the close of each performance cycle, BSA submits a self-assessment to BHSO that evaluates their own performance against the agreed upon measures. BHSO's acceptance of BSA's self-assessment occurs after rigorous evaluation and discussion within BHSO and with BSA.

XIII. BHSO Self Assessment

An organizational level self-assessment is conducted yearly to measure performance against established goals and objectives and to implement any corrective actions necessary for improvement. This BHSO Self-Assessment Procedure identifies the components necessary for a comprehensive self-assessment and recommends a systematic process to follow for planning and conducting a self-assessment at BHSO. The BHSO Self-Assessment process consists of developing a Self-Assessment Plan at the beginning of the fiscal year and completion of a Self-Assessment Report at the end of the fiscal year.

END

Preparer: _____

Date: _____

Procedure Coordinator: _____

Date: _____

Division Director: _____

Date: _____

Deputy Site Manager: _____

Date: _____

Table 1: State and Local Environmental Statutes, Regulations and Others

Resource Category	Legislation	Citation	Responsible Agency	Potential Applicability/Permits	
Air Resources	Prevention and Control of Air Contamination and Air Pollution	NYCRR, Title 6, Chapter III Subchapter A	New York State Department of Environmental Conservation	Permit required prior to construction or Modification of air contamination source. Implements Title V "Site Permit" Regulations.	
	Air Quality Classification	NYCRR, Title 6, Chapter III Subchapter B and C	New York State Department of Environmental Conservation	Identifies classification levels based upon predominant land use, and air quality standards for common air pollutants	
	National Emissions Standards For Emissions of Radionuclides Other Than Radon from DOE Facilities	Code of Federal Regulations Title 40, Chapter I, Part 61 Subpart H	United States Environmental Protection Agency	Establishes standards for radioactive air emissions	
	Water Resources	State Pollutant Discharge Elimination System	NYCRR, Title 6, Chapter X Subchapter B, Article 3	New York State Department of Environmental Conservation	Permit Required prior to construction or modification of a water discharge source
		Classifications and Standards of Quality and Purity	NYCRR, Title 6, Chapter X Subchapter B, Article 2	New York State Department of Environmental Conservation	Establishes ambient water quality standards
		Releases of Hazardous Substances	NYCRR, Title 6, Chapter X Subchapter D, Part 595	New York State Department of Environmental Conservation	Establishes spill notification requirements
		Hazardous Bulk Storage Regulations	NYCRR, Title 6, Chapter X Subchapter D, Part 596	New York State Department of Environmental Conservation	Registration required for bulk storage of material
		Application for Long Island Wells	NYCRR, Title 6, Chapter X Subchapter D, Part 602	New York State Department of Environmental Conservation	Requires permit for installation of groundwater monitoring and supply wells
		Registration of Petroleum Storage Facilities	NYCRR, Title 6, Chapter X Subchapter D, Part 612	New York State Department of Environmental Conservation	Permit required for operation of major petroleum storage facility

Table 1 (cont.): State and Local Environmental Statutes, Regulations and Others

Resource Category	Legislation	Citation	Responsible Agency	Potential Applicability/Permits
Water Resources	Drinking Water Supplies	NYCRR, Title 10, Part 5	New York State Department of Health, and Suffolk County Department of Health Services	Establishes Public Drinking Water Supply Standards
	Water Pollution Control	Suffolk County Sanitary Code Article 7	Suffolk County Department of Health Services	Agreement to comply with groundwater protection regulations
	Toxic and Hazardous Materials Storage and Handling Controls	Suffolk County Sanitary Code Article 12	Suffolk County Department of Health Services	Agreement to comply with groundwater protection regulations
Hazardous and Solid Waste	Solid Wastes	NYCRR, Title 6, Chapter IV Subchapter B	New York State Department of Environmental Conservation	Establishes Solid and Hazardous Waste Management Regulation and Permitting requirements
Biotic Resources	Pine Barrens Protection Act		Central Pine Barrens Joint Planning and Policy Commission	Establishes limits for development in certain areas of Suffolk County's' Pine Barrens
	New York State Wild, Scenic and Recreational Rivers Act		New York State Department of Environmental Conservation	Establishes standards for activities conduct in or near designated waterways
	Endangered and Threatened Species of Fish and Wildlife; Species of Special Concern	NYCRR, Title 6, Chapter I Part 182	New York State Department of Environmental Conservation	Establishes species protection requirements
	Trees and Plants	NYCRR, Title 6, Chapter I Part 182	New York State Department of Environmental Conservation	Establishes flora management standards