

# PSD FY 11 Management Review

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Andrew Ackerman, Steven Hoey  
EMS/OHSAS Management Review  
January 5, 2012

# AGENDA

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- Overview - Hoey
- Operations Review - Ackerman
- Construction Review - Hoey
- Goals for FY12 - Hoey
- Summary/Senior Management Evaluation - All

# Purpose of Review

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- Are the programs:
  - Effective in achieving goals?
  - Adequate to recognize, evaluate, and control risks?
- Are the objectives suitable to manage risks and improve the program?

# Background

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- Light Source Directorate Management reviews
  - NSLS began 2005
  - NSLS-II began 2008
- FY 10 First PSD Mgmt. review (combined NSLS & NSLS-II now the Photon Science Directorate)
- Directorate Reorganization into PSD 10/1/10
  - Training moved to PSD Business Division
  - QA moved to PSD Business Division

# Scope of Work PSD (changing circumstances)

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- PSD activities over next couple of years (FY12-13) will include:
  - Operating NSLS
  - Constructing NSLS-II – including 6 ID Beam lines
  - Design and Constructing of additional beam lines
  - Beneficial & Operational Readiness Evaluations (ring bldg nearly complete)
  - Technical Equipment Installations (ongoing)
  - Instrument Readiness Reviews
  - Commissioning of Linac, Booster and Storage Ring
- Additional activities will soon follow (FY14 -15), including:
  - Constructing additional beam lines
  - Start of operations of NSLS-II
  - Decommissioning NSLS

# Scope of PSD ESH Responsibilities

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## CONSTRUCTION

Assure all Environmental, Safety and Health Aspects for Construction

- Ring Building, LOB's, Sub-Station Upgrade and Chilled Water Upgrade
- Technical Equipment installation
- ~250 contractors

## DESIGN & COMMISSIONING

Assure that the Conventional Facilities, Accelerator and Experimental components are designed to meet all ESH criteria

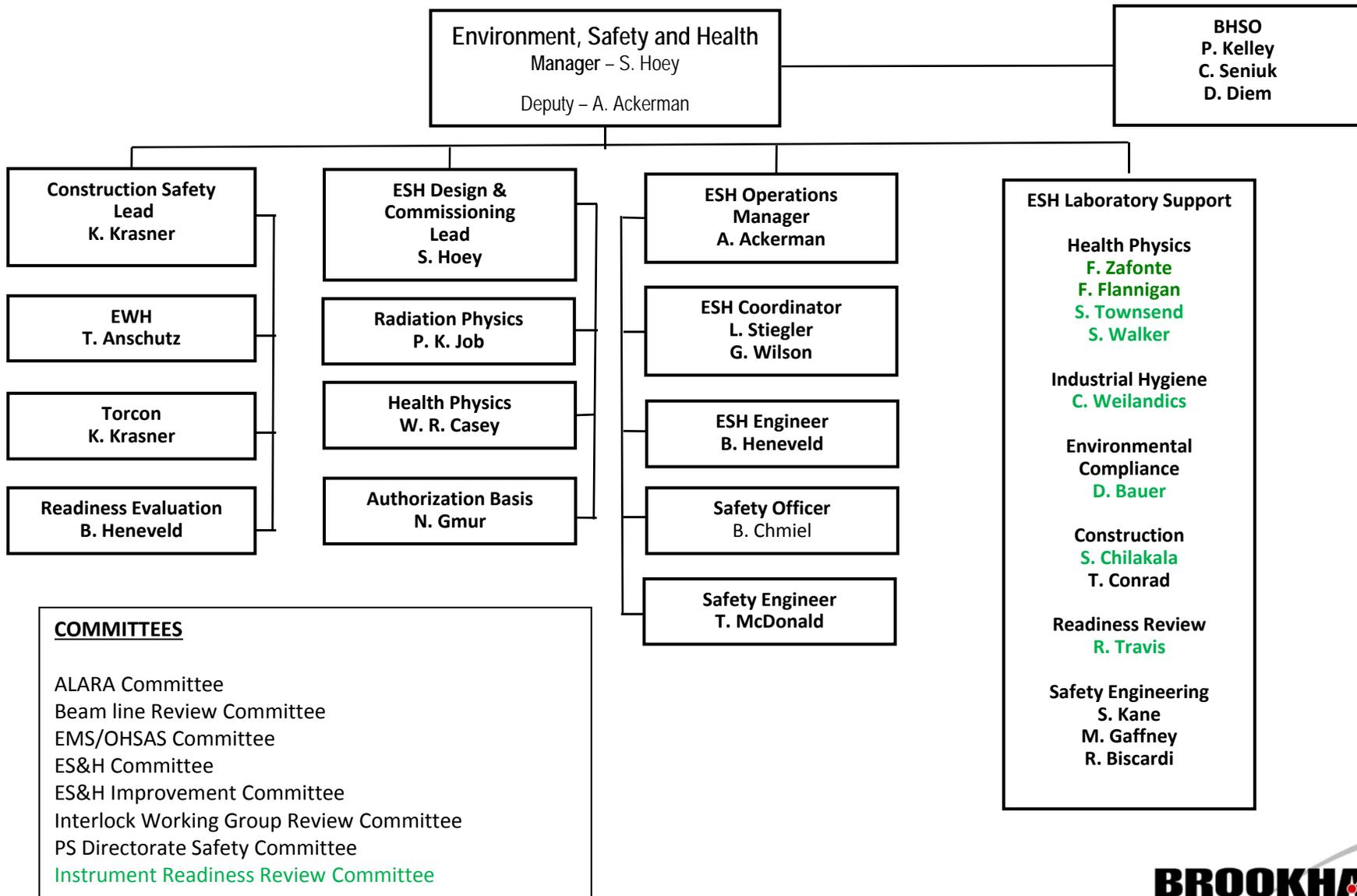
- Code compliance
- Incorporate lessons learned from complex operations
- Radiation shielding & ALARA
- Commission facilities to operate within Authorization Basis

## OPERATIONS

Assure all Environmental, Safety and Health Aspects for Operations

- NSLS, SDL, R&D support areas, assembly areas and NSLS-II facility.
- Operate within existing Authorization Basis.
- Staffing PSD >400, Users up to 2200

# Environment, Safety and Health Organization



# PSD Safety Record

	Hours Worked	Recordable Cases	Recordable Rate	DART Cases	Dart Rate
PSD Staff FY11	733,211	0	0	0	0
Contractors FY11	471,174	1	.42	2	.84
BNL			1.37		.88

# Photon Sciences Directorate

## Operations ESH

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- **Management Systems**
- **Facilities**
- **Performance Measures**

# ESH Program Responsibilities

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- Experiment safety review
- Work planning support
- Emergency planning
- Environmental management
- Hazardous waste management
- Industrial hygiene
- Industrial safety
- Radiation safety
- Safety system configuration control
- Self-assessment
- Risk assessment
- Interlock testing (radiation & laser)
- Tier I inspections
- Compliance audits
- Training
- Quality assurance
- Configuration management

Search

NSLS  BNL

Find people (by last name)

[Advanced search](#)

- About the NSLS
- NSLS Newsroom
- Facility Information
- User Information
- Industrial Users (NEW)
- ESH&Q (Safety)
- Training
- A-Z Index
- Directory
- Job Opportunities
- Contact Us

- Quick Links**
- Become a New User
  - Beamline Guide
  - Machine Status
  - Operating Schedules
  - PASS System
  - Publications

**Related Websites**

  - NSLS UEC Homepage
  - NSLS-II Homepage
  - CFN Homepage
  - BNL Homepage
  - Lightsources.org

## Light Sources Directorate EMS/OHSAS Documents and Links

The Light Sources Directorate follows the BNL requirements in the SBMS Program and Subject Areas for [EMS](#) and [OHSAS](#). The links below contain information that is specific to the Directorate in these areas.

The Light Sources Directorate follows the [BNL Environmental, Safety, Security and Health \(ESSH\) Policy](#).

### Planning

- [NSLS Significant Environmental Aspects Matrix](#)
- [NSLS-II Significant Environmental Aspects Matrix](#)
- [NSLS QA Manual](#)
- [NSLS-II QA Manual](#)
- [Policies and Requirements Manual](#)
- [EMS, FUA and SAD/ASE Checklist for Directorate Reviews](#)
- [Job Risk Assessments](#)
- [Facility Risk Assessments](#)
- [ESH Improvement Plans](#)

### Implementation and Operation

Each employee has an associated Roles, Responsibilities, Accountability and Authority (R2A2) listing for their position. Control of Documents is governed by the NSLS QA manual listed above.

- [NSLS Process Assessments](#)
- [Worker Qualification Matrix](#)
- [NSLS Training Requirements](#)
- [NSLS-II Training Requirements](#)
- [NSLS Job Specific Environmental Training](#)
- [Outline of Light Sources Directorate EMS/OHSAS Communication](#)
- [Key Contacts List](#)
- [EMS/OHSAS Committee](#)
- [EMS FAQs](#)
- [OHSAS FAQs](#)
- [Work Planning and Control](#)
- [Local Emergency Plans](#)

### Checking and Corrective Action

- [NSLS QA Manual](#)
- [NSLS-II QA Manual](#)
- [Assessment Tracking System](#)
- [PRM 1.2.0 Environmental, Safety, and Health Inspections](#)
- [PRM 1.1.1 Injury and Incident/Accident Investigations, Critiques and Occurrence Reports](#)

### Management Review

- Management Review [presentations](#) and [minutes](#)

## FY11 Activity

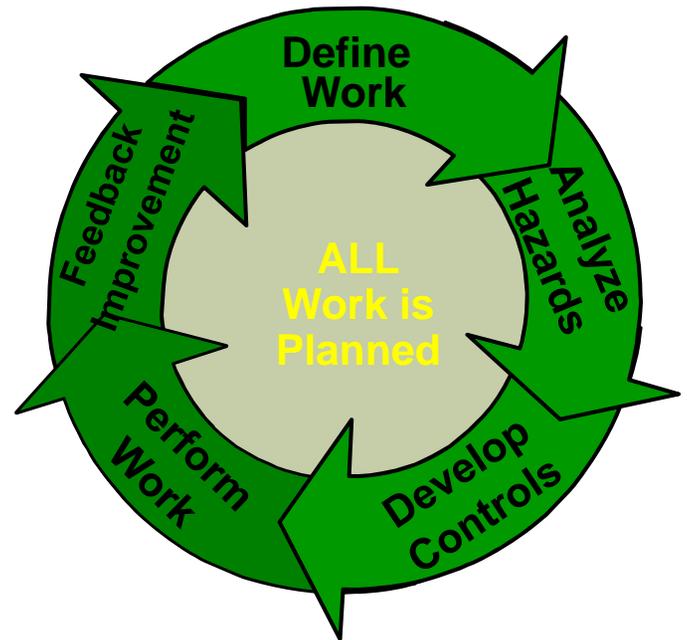
- 19 JRA's reviewed / revised
- 2 Process Assessments reviewed / revised
- 2 New Process Assessments completed
- 2 P2 proposals progressed
  - Motion sensor lighting
  - Sonoxide HVAC water treatment
- Internal audit: No PSD findings

# ISM

## FY 11 Work Planning Overview

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- **Operations**
  - ~40 Enhanced Work Plans; 100's reviewed
  - Manager & 25 Work Control Coordinators
  - Primary Reviewer (ESH)
- **Science**
  - ~ 1200 Safety Approval Forms
  - Experiment Review Coordinators (ESH)
  - Operations Coordinators (Operations)
  - Extended Reviews
    - 'Energetic' materials
- **Science Facility**
  - 21 NSLS laboratories (BNL ESR's)
  - 25 NSLS II work areas (9 labs)



# Photon Sciences Directorate

## Operations ESH

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- Management Systems
- **Facilities**
- Performance Measures

## PSD Facilities Floor Area (square feet)

725	National Synchrotron Light Source	162,156 123,644 (Exp. Floor)
726	Mechanical Support	3,519
727	Mech/Magnet Measurement	3,519
729	Source Development Lab	8,018
902/905	Magnet test and assembly, vacuum	22,690
703	Exp. Facilities Div.; 9 labs	7,360
945	Vacuum lab	4,068
832	RF, magnetic measurement	7,895
820	Front Ends Diagnostics	5,700
740	NLS II Ring Building (P1 – 4)	223,120
740+	Injector, RF, Service, Compressor	86,800

FY10 Footprint	224,925
FY11 Footprint	534,845
137% increase	

> 4/5's 'Ready' for PSD Installation

Bldg. 740

- **BORE**

- Life safety systems
- Utilities
- Habitable space

- **Work Planning**

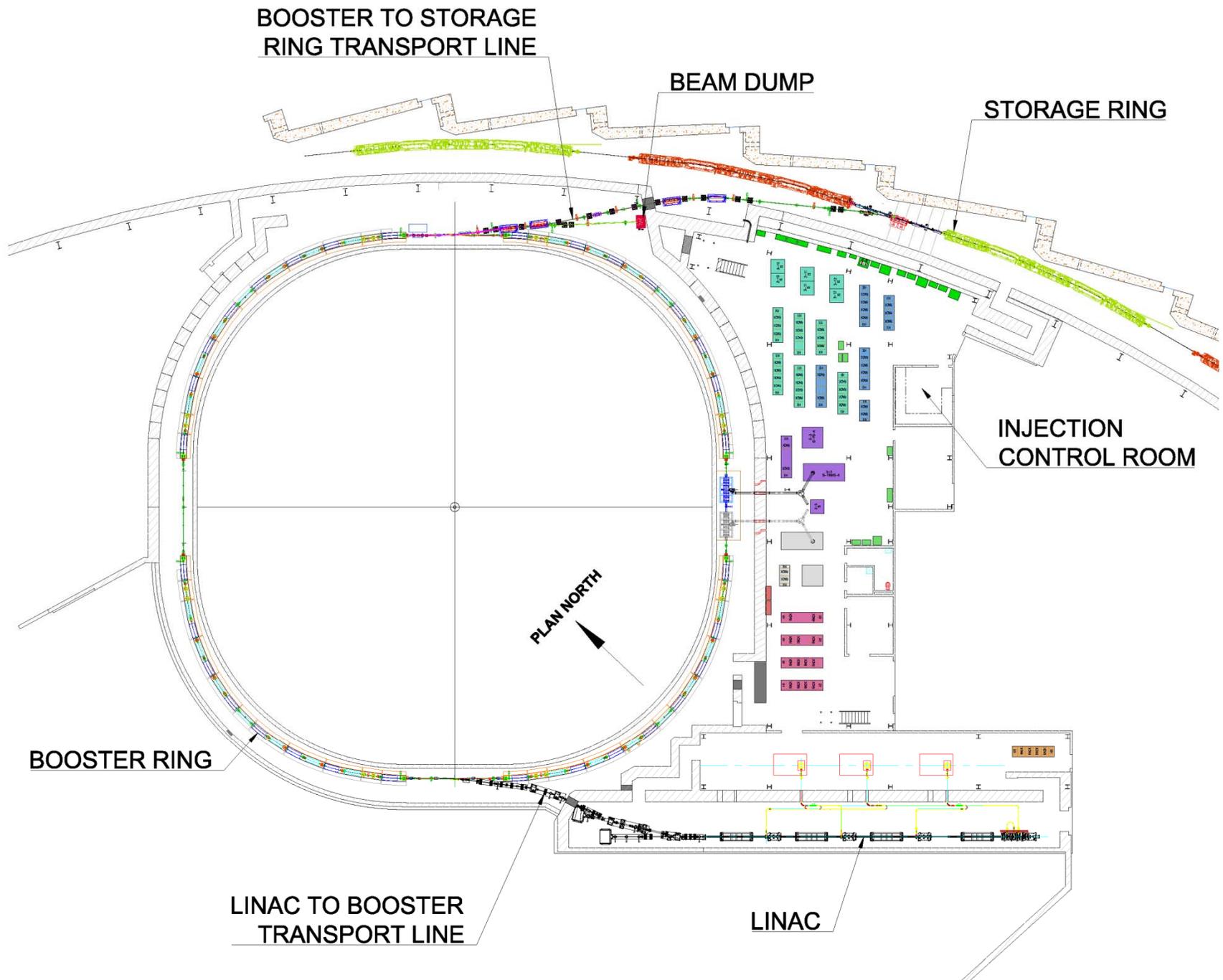
- Installation work is 'construction – like'
- Controls; worker qualification
- **Coordination** is the real challenge:

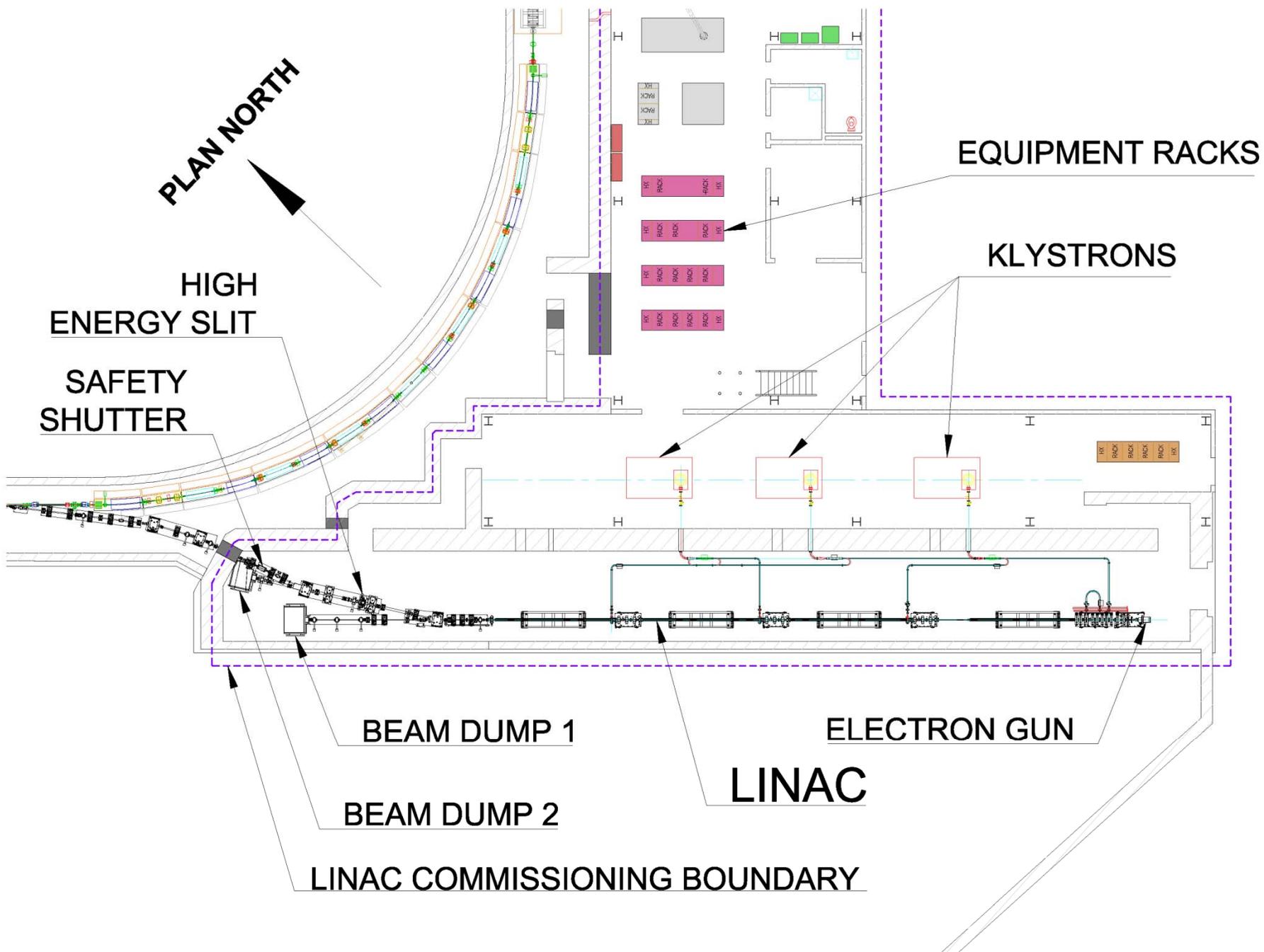
Construction & Installation

- **Access**

- Restricted to 'safe zone'
- Training, hard hats, safety shoes, eye protection
- Visitor escorts

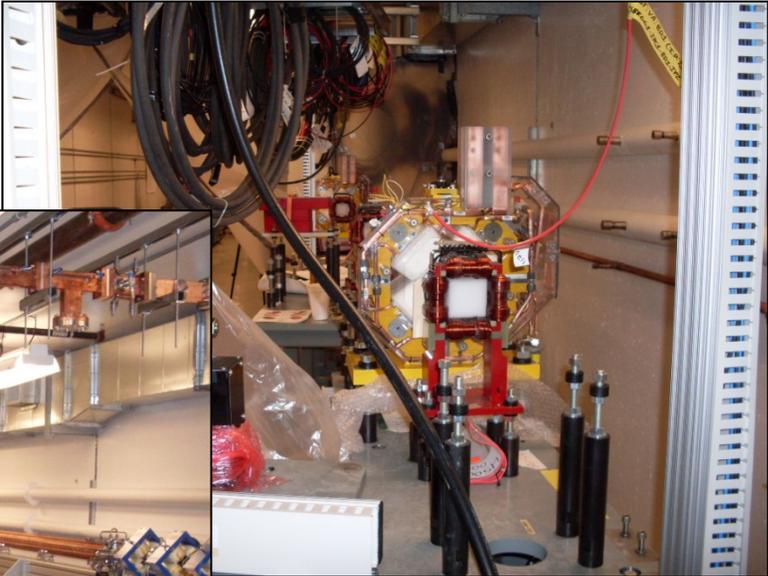






# NSLS II Linac

December 29, 2011



# NSLS II Storage Ring and Experiment Floor

December 29, 2011



# LINAC Commissioning Accelerator Readiness Review (ARR) Planning Status

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- ARR Dates: February 27, 28, & 29 (2.5 day review)
  - Safety Systems 100% complete
  - LINAC substantially complete
- ARR Documents:
  - 16 Posted to Web
  - 7 Approved (ready to post)
  - 14 Incomplete



## Accelerator Readiness Review: NSLS-II Linac

February 2012

Brookhaven National Laboratory

[Linac Commissioning Plan of Action](#)

[Agenda](#)

[Presentations](#)

[Reviewers](#)

[Final report](#)



[NSLS-II Construction Cam](#)

### Radiation Protection

- [Operator Response to Radiation Alarms during Commissioning](#)
- Radiation Instrument Calibration Procedure
- [Interlock Bypass for Injector Building Berm](#)
- [Radiation Protection Requirements for Linac Commissioning](#)
- [Supplemental Shielding Specifications](#)
- [Radiation Fault Study](#) (with critical steps defined)

### Electrical Power Distribution

- Electrical Installation Inspection Report

### Interlocks

- Linac PPS Search and Secure Procedure
- Linac PPS Specifications and Schematics
- Linac PPS Verification Checklist

### LOTO

- System Specific Procedures
- Critical Device LOTO Procedure

### Instrument Readiness Review

- IRR Procedure

### Environment Protection

- [Soil Sampling Procedure](#)
- Water Sampling Procedure

### Operations

- [Linac Commissioning Plan](#)
- Linac Conduct of Operations
- Linac Commissioning Sequence (with critical steps defined)
- [List of Qualified Operators for Linac Commissioning](#)
- Reporting of Events at Non-Construction Sites
- Yellow Tag Procedure
- [Procedure to Operate the NSLS-II Linac with 3 Klystrons](#)
- [Response to ICT Interlock](#)
- [Operation with Repetition Rate >1 Hz](#)
- Linac Startup/Shutdown Procedure

### Emergency

- Building 740 Linac Emergency Response

### QA

- Engineering Design
- Document Control
- Temporary Procedures

### Accelerator Safety Order

- [Linac Commissioning Safety Assessment Document](#)
- [Linac Commissioning Accelerator Safety Envelope](#)
- [Unreviewed Safety Issue Determination](#)

## ARR Team

### Member Contact Information

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Name	Phone Number	Affiliation	Email Address
Jim Floyd	(510) 486 - 4499	LBNL <i>(Chairman)</i>	<a href="mailto:jgfloyd@lbl.gov">jgfloyd@lbl.gov</a>
Tom Barkalow	(630) 252 - 9243	ANL	<a href="mailto:barkalow@aps.anl.gov">barkalow@aps.anl.gov</a>
Steve Davey	(630) 252 - 5311	ANL	<a href="mailto:scd@zimbra.aps.anl.gov">scd@zimbra.aps.anl.gov</a>
Ian Evans	(650) 926 - 2628	SLAC	<a href="mailto:evans@slac.stanford.edu">evans@slac.stanford.edu</a>
Henry Kahnhauser	(631) 344 - 7509	BNL	<a href="mailto:kahnhaus@bnl.gov">kahnhaus@bnl.gov</a>
Raymond Karol	(631) 344 - 5272	BNL	<a href="mailto:karol@bnl.gov">karol@bnl.gov</a>
Peter Kelley	(631) 344-5784	DOE – BHSO	<a href="mailto:pkelley@bnl.gov">pkelley@bnl.gov</a>

- Management Systems
- Facilities
- **Performance Measures**

# ESH Performance Measures

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- Progress on ESH Targets
- Assessments and audits
- Tier I
- Traffic violations
- Injuries
- Events
- Radiation exposure
- Hazardous waste generation

# ESH Performance Measures

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- **Progress on ESH Targets**
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# ESH Improvement Plan

## FY11

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- Goals
  - PEMP
  - Institutional OHSAS / EMS
  - Audits
  - Other department specific issues
- Annual Plan
  - Assigned (personnel performance appraisal)
- FY11 PSD Improvement Plan
  - 1 primary goal
    - Control the risks associated with expanding operations and accelerator installation work in 740
  - 5 additional goals

# ESH Improvement Plan

## FY11; Ongoing and Additional Goals

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- **Further implement the beam line hazard analyses.** *(Continued from FY10; Complete)*
- Define User material transport requirements; establish needed resources. *(FY10; Continuing)*
- Re-evaluate laboratory steward assignment. *(FY10; Continuing; Cognizant Space Managers)*
- Define worker qualification objectives. *(FY11; Continuing)*
- Establish a tracking mechanism for near miss events. *(FY11; Continuing)*
- Define an 'Authorization Basis Strategy' through development of Linac and Booster Commissioning Safety Assessment Documents and Accelerator Safety Envelopes. *(FY11 Complete)*
- Submit the Torcon DOE VPP application. *(FY11 Complete)*
- Implement Area PPE Postings *(FY11 Complete)*
- **Evaluate Machine Shop Safety** *(FY11 Complete)*

# Beam Line Hazard Analyses

## Human Performance

- Develop
  - Identify and characterize
    - ‘routine’ tasks
    - ‘error likely’ situations
  - Meet with Local Contact at each line (ESH & Training Coordinator)
  - Controlled (annual review)
  
- Implement
  - Post
  - Reviewed with BLOSA

HAZARD INFORMATION PLACARD			
Location	Area Name	Room #	
NSLS Bldg. 725			X7B
HAZARD WARNINGS			
 	 Use Gas Cabinet Follow SOP LS-ESH-0048	 Limit quantities at beamline to < 250 ml Use PPE – safety glasses, nitrile gloves	 CRYOGENS  <i>PPE for cryogen use:</i> Long pants or skirt covering the ankles and closed shoes are always required Pouring small (5 liters or less) volumes of LN2 between open containers: Safety Goggles Gloves (Cryo or Heavy Leather) Long Sleeve Shirt or Lab Coat Never pour from above chest level  Pressurized transfer of LN2 or LHe, - Or - Pouring > 5 liter volumes of LN2 between open containers: Face shield along with either Safety Glasses (w/ side shields) or Goggles Gloves (Cryo or Heavy Leather) Long Sleeve Shirt or Lab Coat Never pour from above chest level  Training required for LN2 fill station
•Compressed Gas Training – (TQ-COMP GAS1 or NSLS User Training) •Transport cylinders using a cylinder cart •Properly secure cylinders •Wear safety glasses with side shields when connecting lines •Leak check gas lines •Flash arrestor for flammables gas			
<b>FIRE HAZARDS:</b> Small quantities of flammable gas or solvents <b>RADIATION HAZARDS:</b> NONE <b>HEALTH HAZARDS:</b> Toxic gases in gas cabinet			
<h3>BNL Chemistry Dept</h3> <h3>General Electric - Piscataway</h3>			
CONTACTS		Phone	Emergency Phone
BEAMLINE MANAGEMENT		Jon Hanson 4378	(631) 929-0319 (631) 255-2884
ALTERNATE CONTACTS		Gong Zhou 4343	(267) 608-5666
		Rui Si 4343	(443) 319-3002
CONTROL ROOM	2550	Pager: Dial 3456, wait for tones, 5824, then call back #	
<b>Special Instructions:</b> Soldering: Use a designated area. Periodically clean surfaces. High Temperature Heater: Be aware of warning signs High Pressure Sample Cell: Wear Safety Glasses			
ISOLATION LOCATIONS FOR UTILITIES: Main breakers on front of hutch. Water valves (2) on sawtooth wall.			

# Machine Shop Review

- 7 PS Directorate machine shops; 1 Magnet Division Shop
  - Bldg 725; Rm's 2-190A, 1-124, 1-204
  - Bldg's 726, 703, 801, 832, 902
- April, 2011: Visited each; surveyed equipment; interviewed manager.
- Evaluated training; general and machine specific checklists
- Findings
  - Well organized; manager commitment to safety
  - Posting not standardized (*resolved*)
  - PPE meets SBMS
  - Working alone consistent with PS policy

	PHOTON SCIENCES DIRECTORATE BROOKHAVEN NATIONAL LABORATORY	Report No. <b>000752</b> Date: 04/29/2011 Prepared By: Andrew Ackerman
	GENERAL REVIEW FORM	
	<b>TYPE OF REVIEW:</b> <input checked="" type="checkbox"/> Self-Assessment	
<b>TITLE:</b> <p style="text-align: center;"><b>PSD Machine Shop Management Self-Assessment</b></p>		
<b>PARTICIPANTS:</b> Randy Abramowitz, James Biancarosa, Dennis Carlson, Raymond Ceruti, Mary Anne Corwin, Thomas Dilgen, Anthony Lenhard, Andrew Mingino, Charles Nielson, Robert Scheuerer.		
<b>DISTRIBUTION:</b> The "Participants" listed above and: Michael Buckley, Robert Chmiel, Nick Gmür, Brian Heneveld, Steven Kane, Steven Dierker, George Goode, Diane Hatton, Steven Hoey, Erik Johnson, Peter Kelley, Tom McDonald, Ed Nowak, Qun Shen, Lori Stiegler, Christopher Weilandics, Ferdinand Willeke, Gabrielle Wilson.		
<b>Introduction</b> This report is prepared to document review of the PSD machine shop use and safety requirements. PSD manages seven machine shops; a manager is assigned for each. PSD personnel have access to an eighth shop that is managed by BNL Magnet Division personnel. PSD staff use of that shop is managed by a PSD Supervisor. Locations of each shop follows: Bldg 725; Rooms 2-190A, 1-124, 1-204 Bldg 726 Bldg 703 Bldg 801 Bldg 832 Bldg 902 The information presented in this report was gathered through visits to each location and interviews with the shop managers.		

# ESH Performance Measures

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- Progress on ESH Targets
- **Assessments and audits**
- Tier I
- Traffic violations
- Injuries
- Events
- Radiation exposure
- Hazardous waste generation

## Audits / Assessments

### 10 Total

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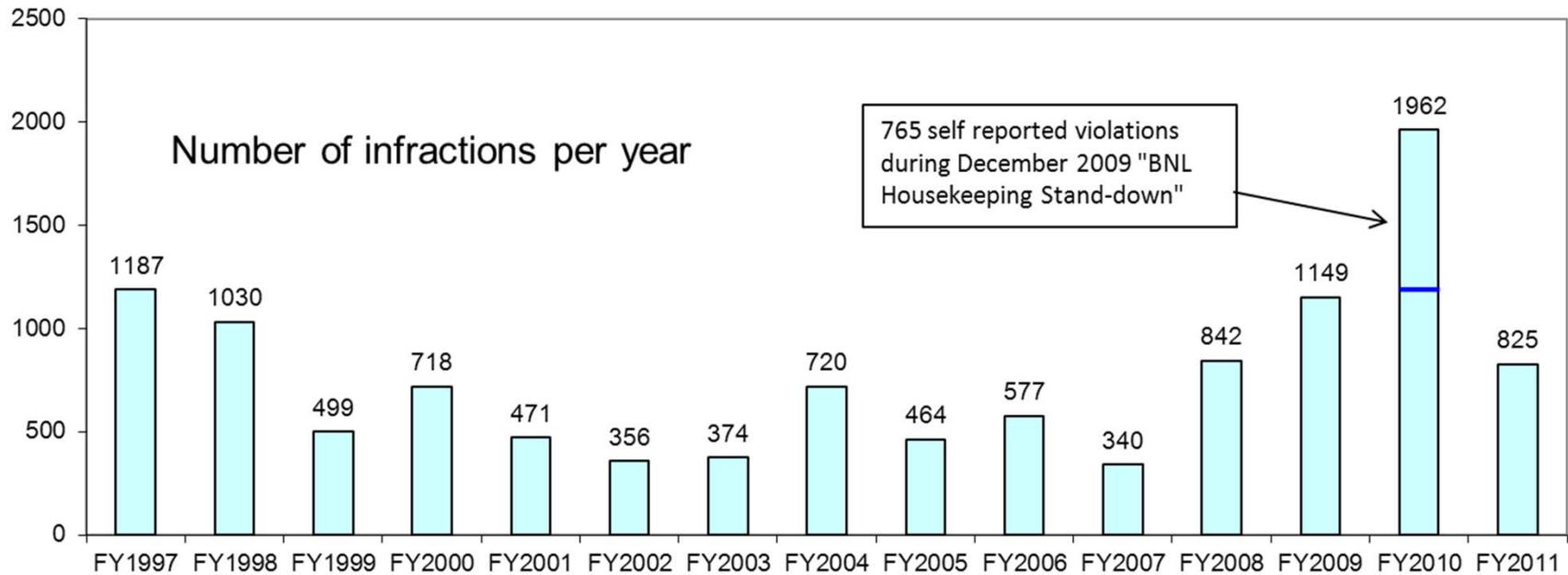
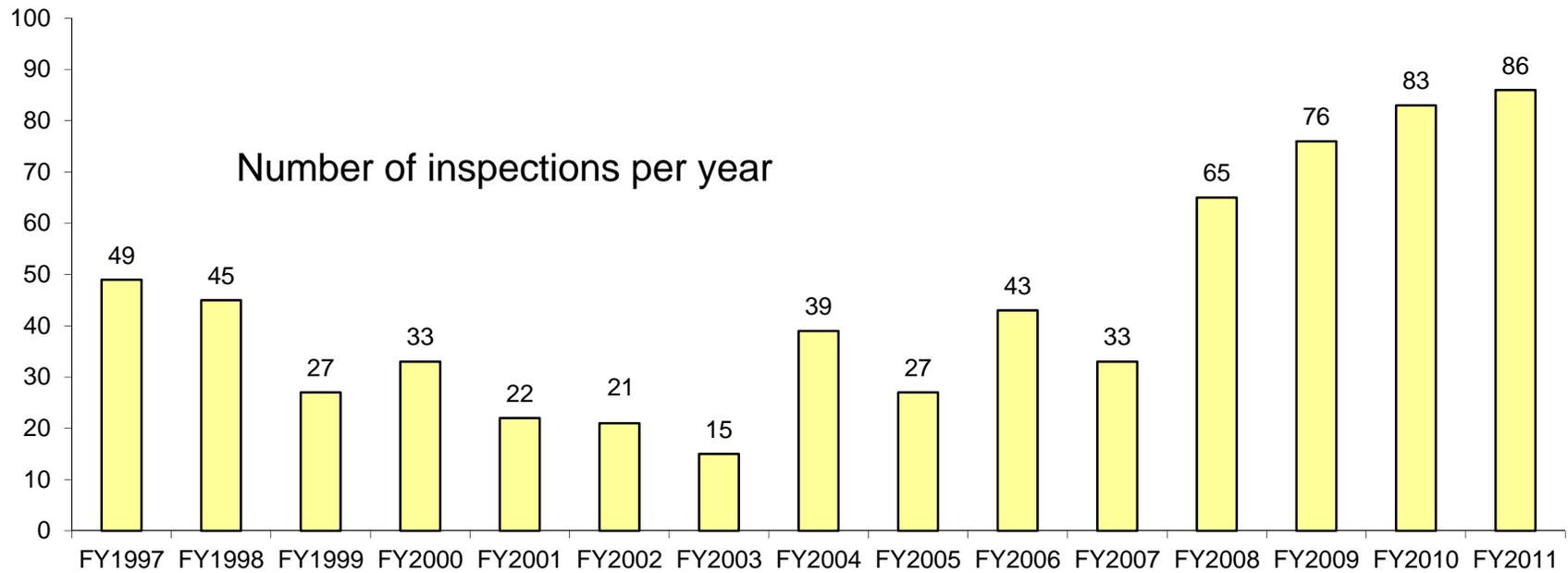
- NEPA Assessment
- Internal EMS/OHSAS
- BHSO Chemical Safety Program
- BHSO Nano-material Safety
- EPA Inspection
- Machine shop equipment safety
- Multi-topic SHSD
  - Biohazards
  - Compressed gas
  - Haz Mat Shipping
- IA&O Facility Safety Management System: Process Effectiveness

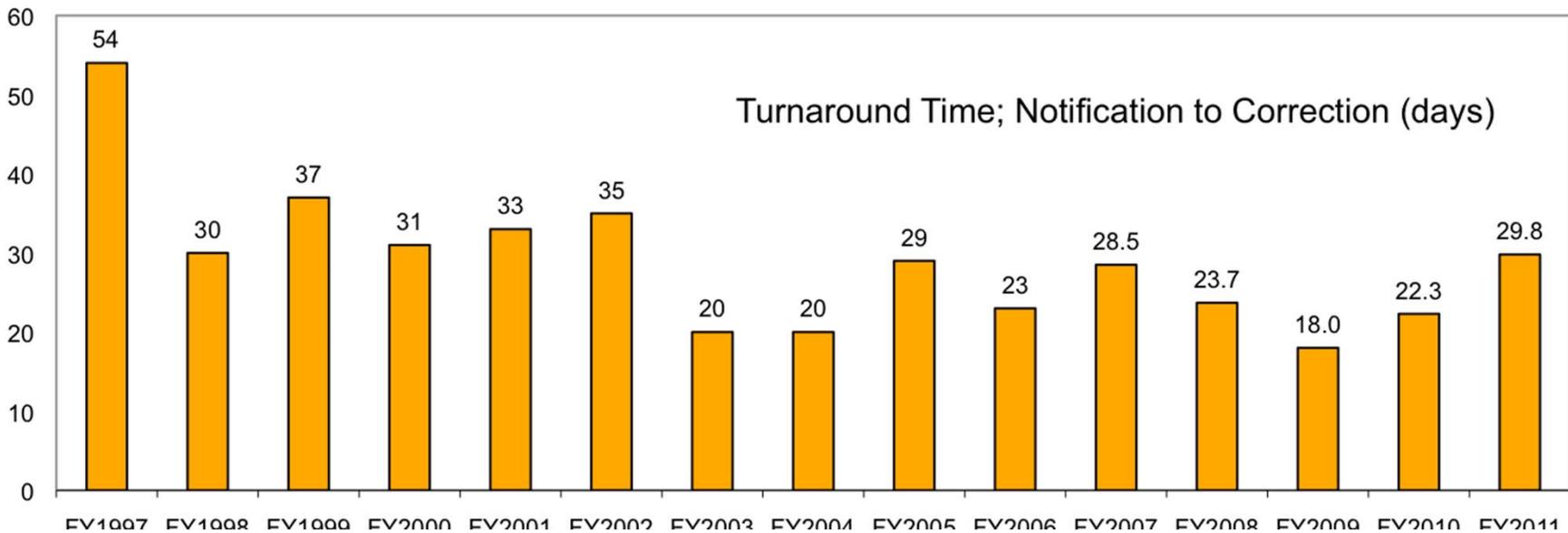
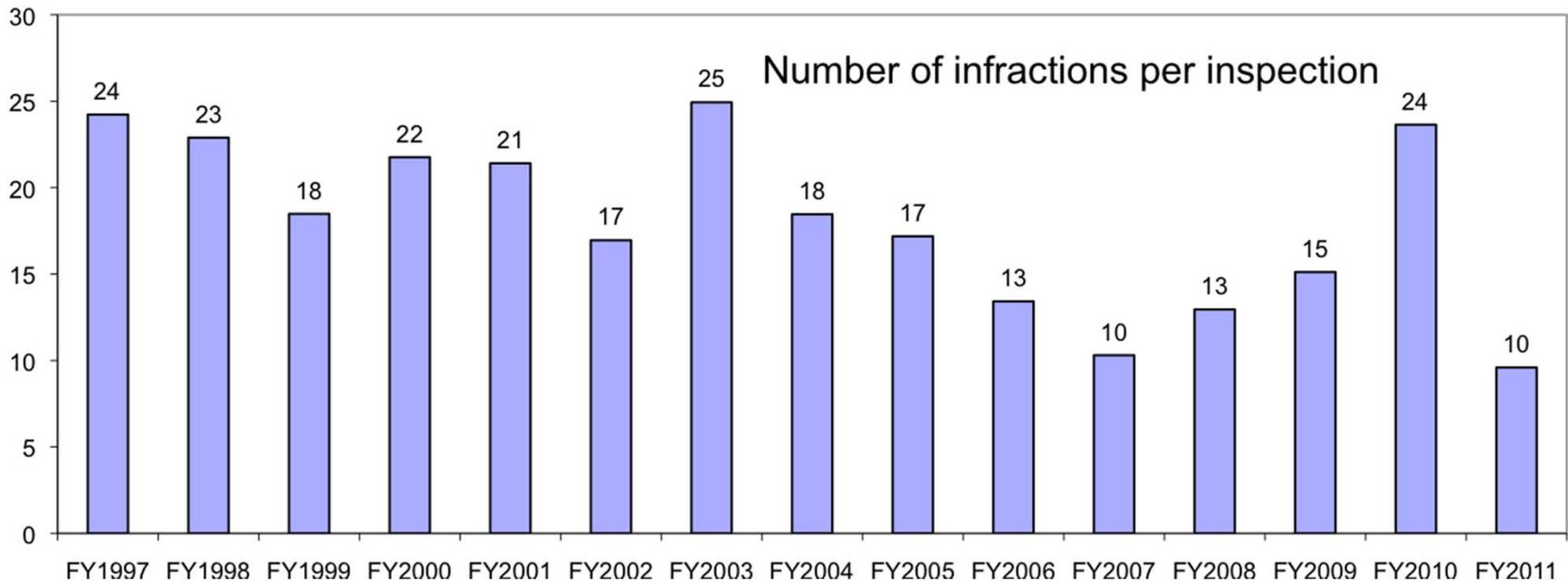
- Few findings
- Value
  - Self-assessment preparation
  - Bringing in additional expertise

# ESH Performance Measures

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- Progress on ESH Targets
- Assessments and audits
- **Tier I**
- Traffic violations
- Injuries
- Events
- Radiation exposure
- Hazardous waste generation





## Tier I Summary

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- Entire directorate within one program since 2008
- Substantive inspections
- Core team and Area Representatives
- Findings assigned, tracked, and trended
- Engaged with the lab-wide improvement effort

# ESH Performance Measures

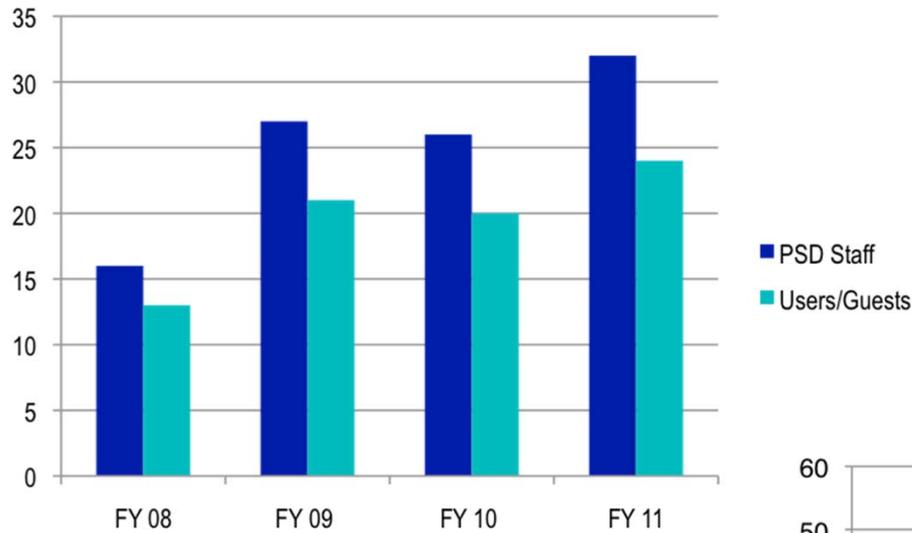
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- Progress on ESH Targets
- Assessments and audits
- Tier I
- **Traffic violations**
- Injuries
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# PS Traffic Violations

## Non-construction

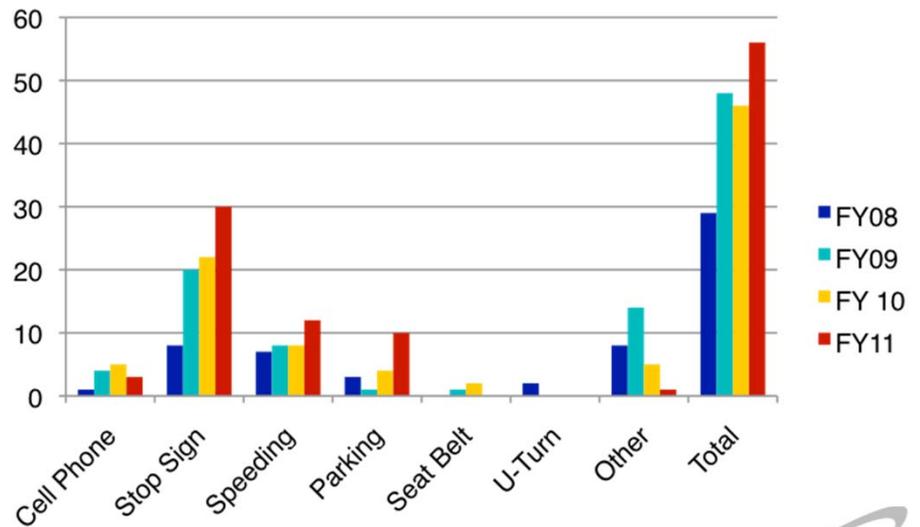
PSD Traffic Citation Distribution FY08-FY11



Last Year: New laboratory traffic citation process rolled out

Result: No obvious impact

PSD Traffic Citation Type FY08-FY11



# ESH Performance Measures

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- Progress on ESH Targets
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- Traffic violations
- **Injuries**
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## PSD Injuries (Not Construction) FY 11

**10 Total**

- |   |                          |                     |
|---|--------------------------|---------------------|
| • <b>Cut finger</b> (razor; sutures)        | User                     | 1 <sup>st</sup> Qtr |
| • Ankle strain (first aid)                  | Staff                    | 1 <sup>st</sup> Qtr |
| • <b>Cut finger</b> (screw; first aid)      | User                     | 2 <sup>nd</sup> Qtr |
| • Knee strain (existing)                    | Staff                    | 2 <sup>nd</sup> Qtr |
| • Bumped head (first aid)                   | Beamline Staff (non-BNL) | 3 <sup>rd</sup> Qtr |
| • <b>Cut finger</b> (VME Crate; first aid)) | Staff                    | 3 <sup>rd</sup> Qtr |
| • Ankle strain (first aid)                  | User                     | 3 <sup>rd</sup> Qtr |
| • Back strain (first aid)                   | Staff                    | 3 <sup>rd</sup> Qtr |
| • <b>Cut finger</b> (Cable Tray; sutures)   | Contractor (job shopper) | 4 <sup>th</sup> Qtr |
| • <b>Cut finger</b> (razor; first aid)      | User                     | 4 <sup>th</sup> Qtr |

**No Recordable or DART**



### Location

725

### Injury

Laceration to left index  
finger

### Description:

A graduate student user was using a razor knife to cut a plastic sample holder. The tube broke causing the knife to slip and cut his left index finger. He was transported to the Occupational Medicine Clinic by Fire/Rescue. The OMC determined that further medical evaluation was warranted and Fire/Rescue transported him to the hospital where he received sutures.

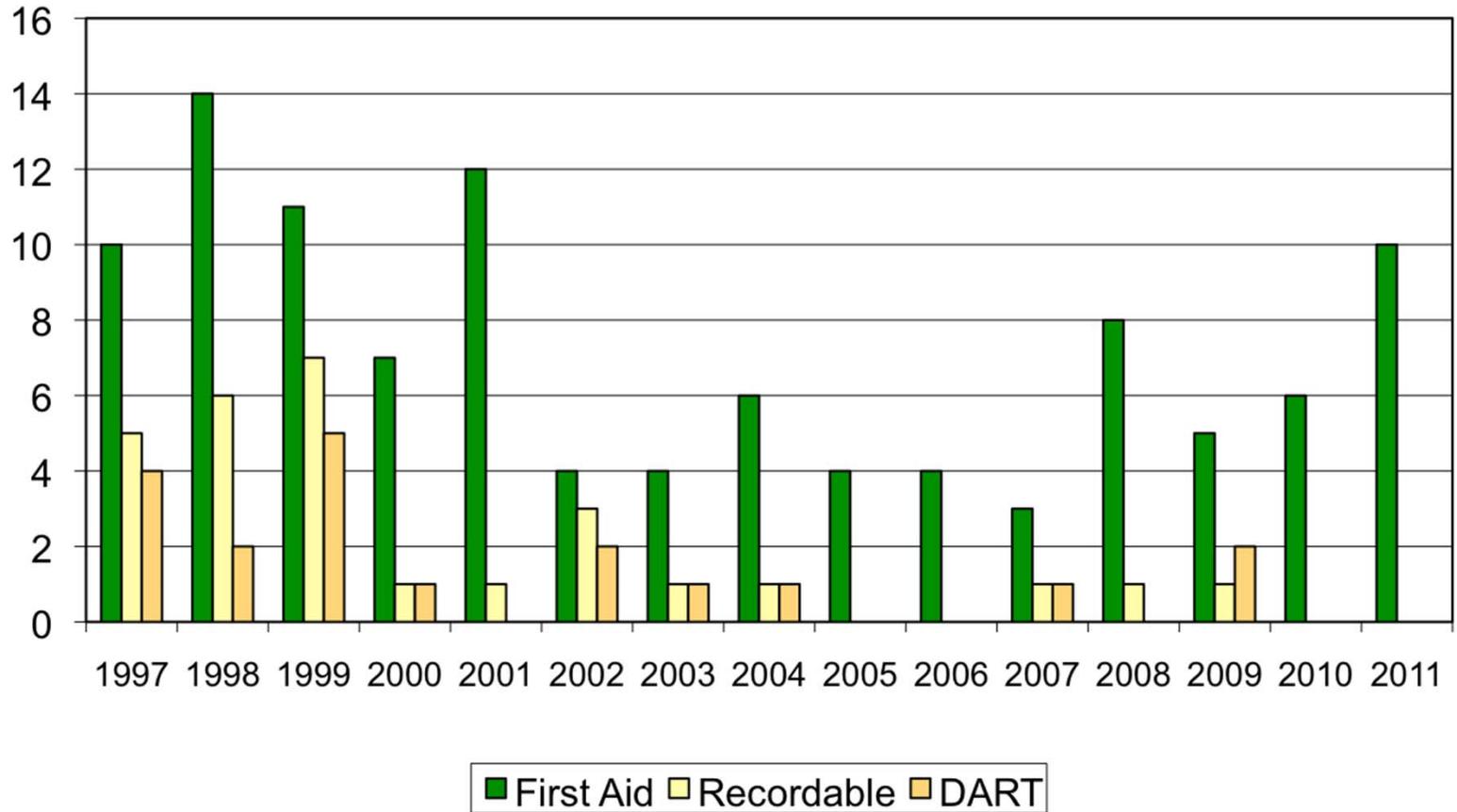
### Analysis/Cause:

The user was inattentive to the task at hand. He was tired from having been at the beamline for an extended time as he was having difficulty with his apparatus. With little beam time remaining (time pressure), he tried to fashion a new sample reaction chamber from the equipment and tools at hand.

### Corrective Actions:

The user was counseled on the proper use of hand tools including razor knives. The incident will be communicated to the scientific staff and user community through meetings and bulletins to raise awareness of the issue.

# PSD Non-Construction Injury Cases FY 97 to FY 11



# ESH Performance Measures

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- Progress on ESH Targets
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- Traffic violations
- Injuries
- **Events**
- Radiation exposure
- Hazardous waste generation

## Events

### FY 11 ORPS Categorizer Calls (non-injury) (not construction)

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Piranha; burst bottle; Haz waste management facility; [SCBNL](#); (closed)

Not reportable:

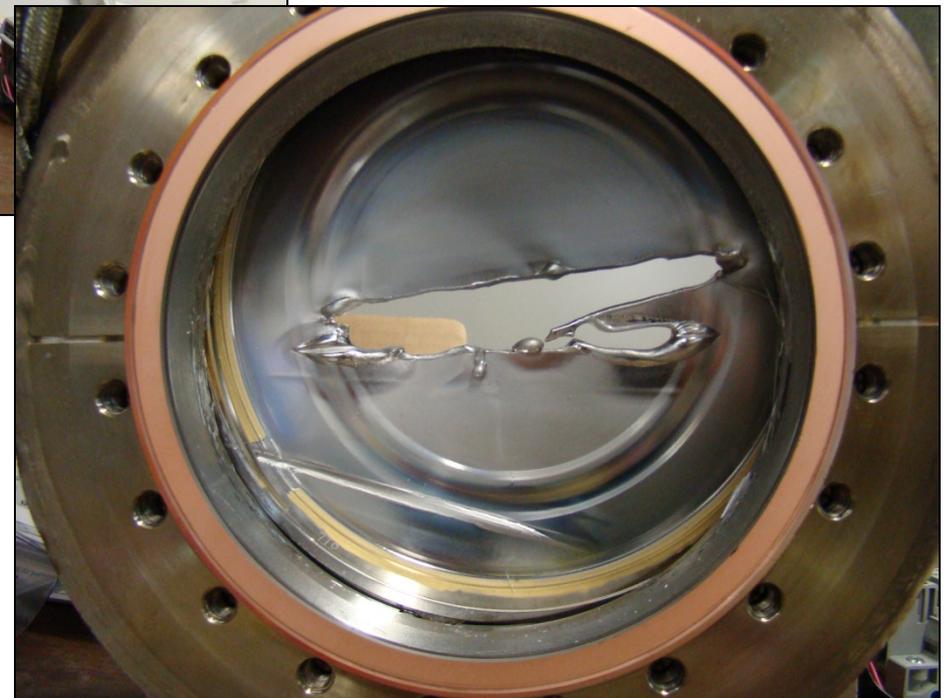
- PC board smoke; NSLS Computer Room
- Propylene glycol spill; Building 535 laboratory
- Propylene glycol spill; SDL exterior
- [Vacuum valve melt; X16](#)



NSLS X-ray Ring; X16  
'Front End'

DOE Lessons Learned

- Latent Error
- Equipment interlock installation mistake
- Needed wire placed in 1983; not connected
- Heat mask failed; valve in beam; fault generated, but no 'reach back'
- All critical equipment interlocks evaluated and placed on testing schedule.



# ESH Performance Measures

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- Progress on ESH Targets
- Assessments and audits
- Tier I
- Traffic violations
- Training
- Injuries
- Events
- **Radiation exposure**
- Hazardous waste generation

# Radiation Dose Measurements

## January to October 2011

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- Neutron Dose 0
- Deep Dose: 23 mRem on 4 TLD's

### TLD Badge counts

- ~284 issued each month
- 3402 for the year

**Collective Dose = 23 Person – mRem**

**2010**

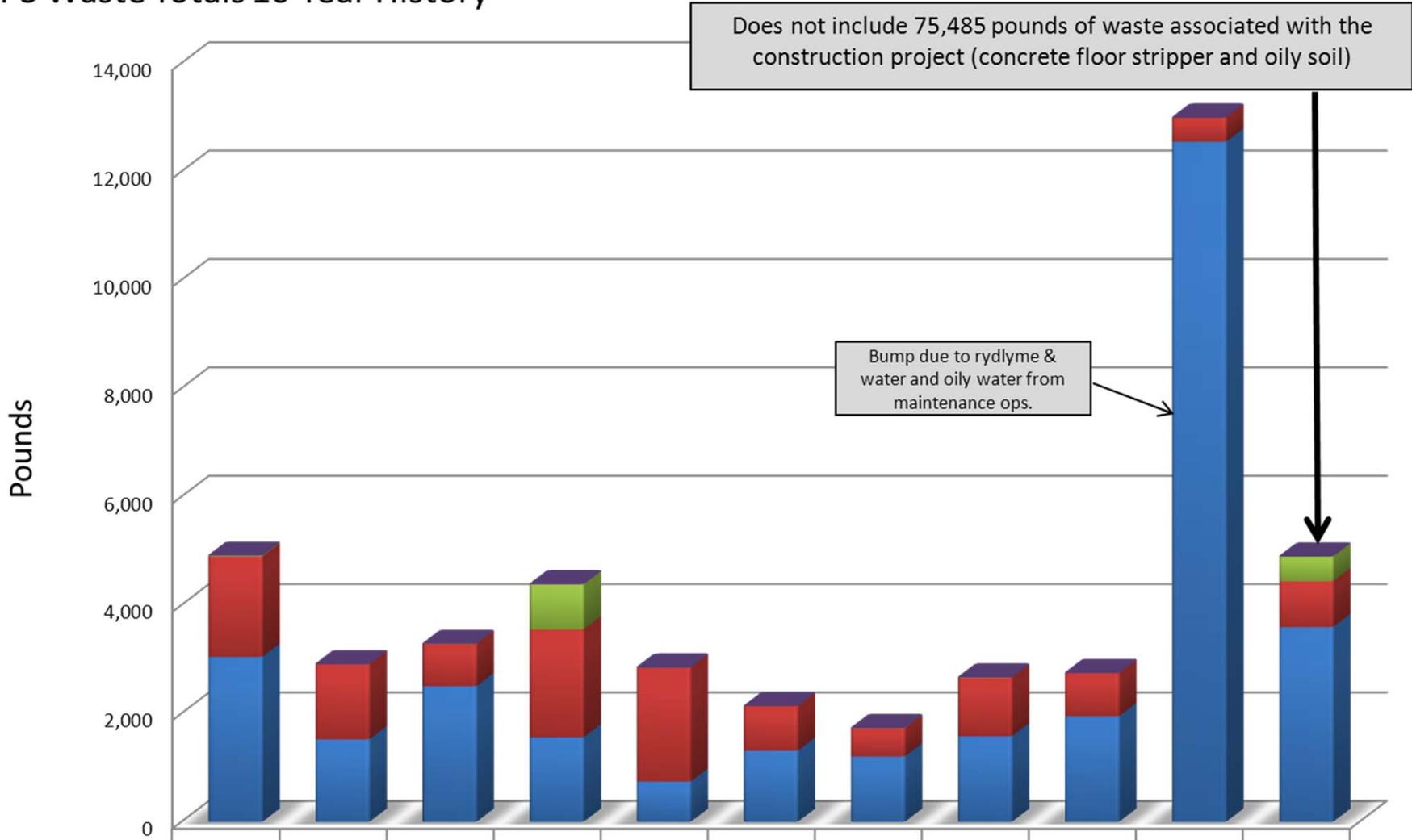
- 25 person-mRem
- No significant shielding changes during 2011

# ESH Performance Measures

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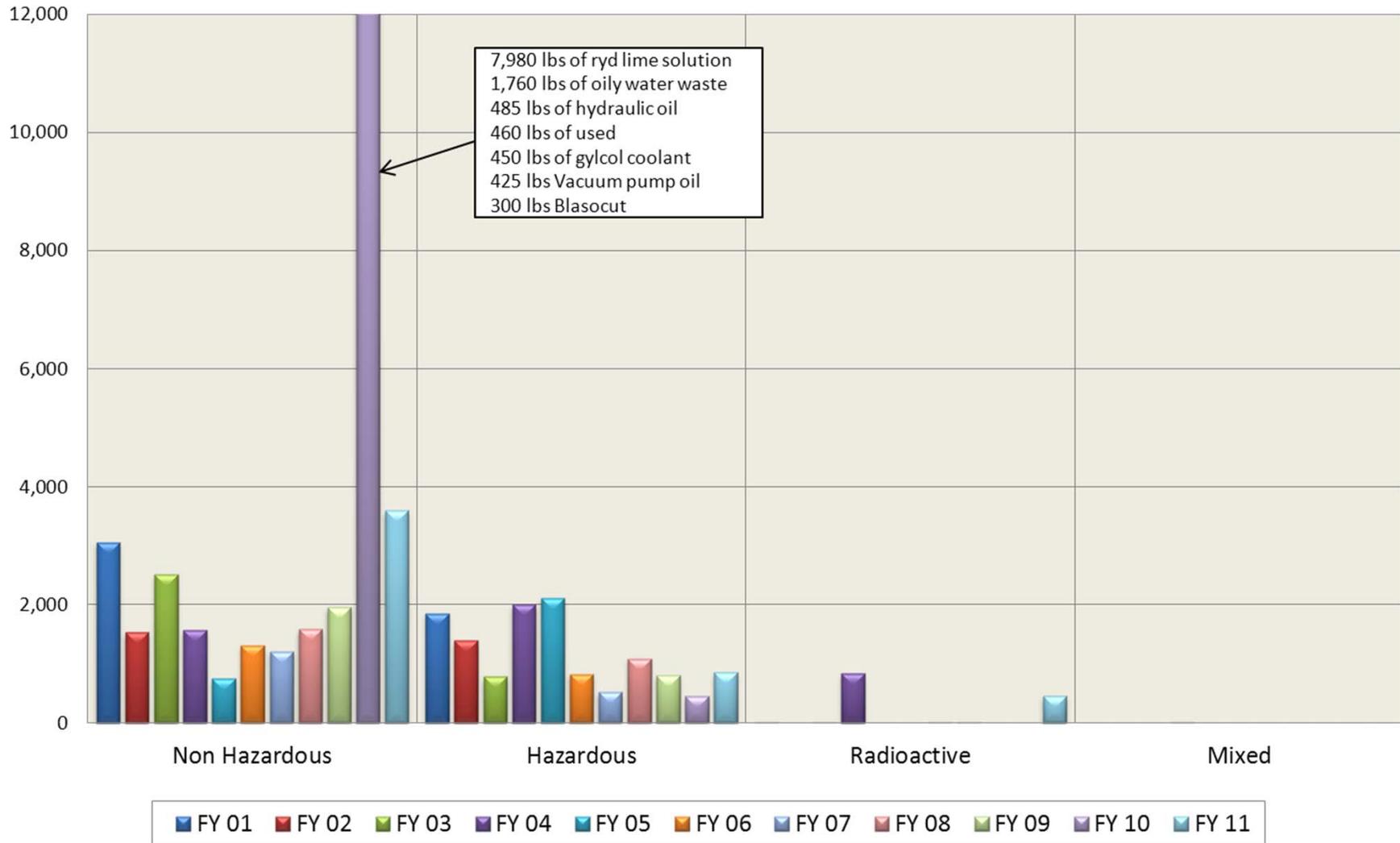
- Progress on ESH Targets
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- **Hazardous waste generation**

# PS Waste Totals 10 Year History



	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11
Mixed	0	0	0	0.06	0	0	0	0	0	0	0
Radioactive	16	0	1.76	830.07	0.001	0	3.91	2	0	0	455
Hazardous	1,850.8	1,386.7	777.3	1994.132	2105.47	823.93	519.62	1082.35	796.86	446.79	845.00
Non Hazardous	3,043.8	1,522.7	2,504.9	1558.43	742.42	1311.06	1205.69	1579.13	1949.31	12549.52	3596.00

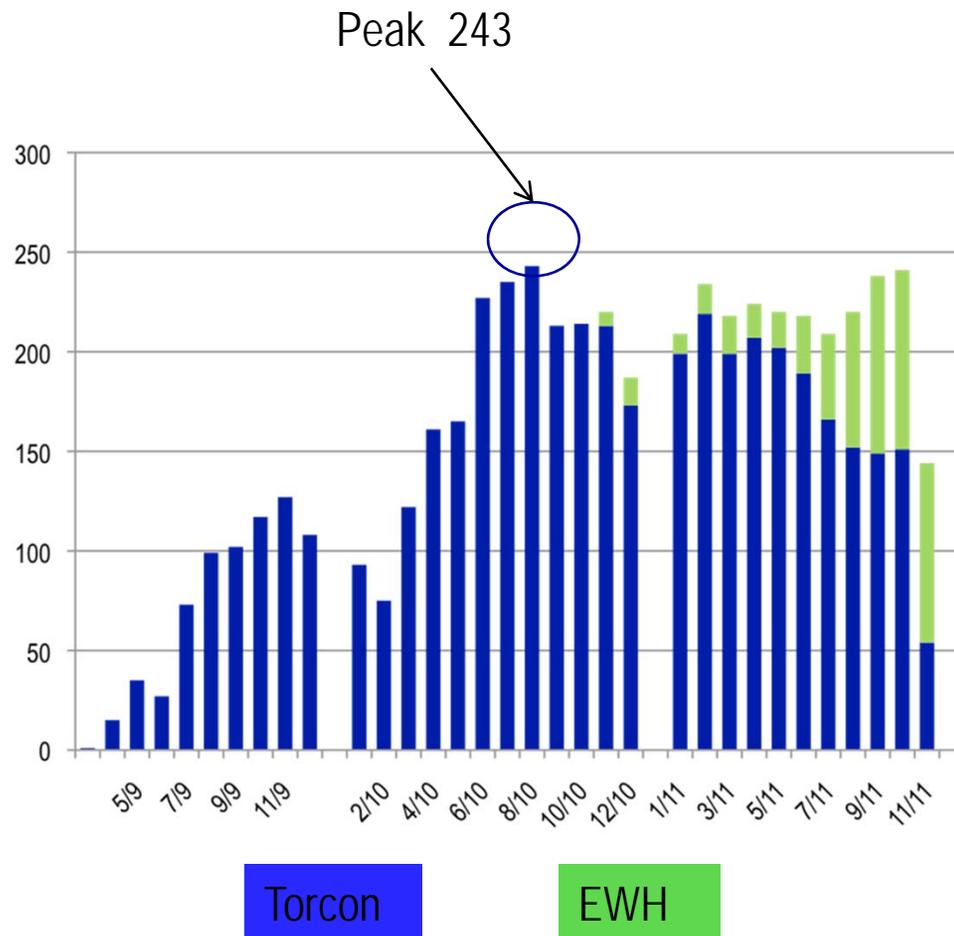
## PS 10 Year Waste History by Type of Waste in Pounds (not including construction project waste)



# PSD Construction



# Construction Manpower



- Manpower was expected to exceed 300, however peaked at 243 in late FY10:
  - Torcon finishes ring building in Feb 12 will go down to 50 for punch list
  - EWH will ramp up however overall manpower will decrease from peak in 8/10
  - Decrease in manpower equates to less risk exposure

# Construction Management System

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- Construction activities are governed by:
  - Approved ESH Plan – based on template, reviewed and approved by Lab with Project and BHSO input
  - Strict conformance to 10CFR 851 and OSHA 1926 & BNL Construction Safety Subject Area
  - Prime Contractor is responsible for implementation of program that flows down to all subs
  - Site is a CCIP, making prime responsible for subs (LL from CFN)
  - Phase Hazards Analysis (PHA's) cover all work activities (>200 PHA's in place)

# Construction – Progress on Targets & Objectives

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- Improve ESH performance of the prime contractor
- Establish a tracking mechanism for “near miss” events
- Leg break incident in FY09 resulted in 48 corrective actions many of which were designed to make improvements in the contractors performance. Results of these improvements were realized in FY 10 and FY 11
- Highlights:
  - Self Assessment program (contractor and lab)
  - Staffing Increases
  - Enhanced PHA’s
  - Modified Safety Incentive (90% goes to workers)
  - Enhanced Communication

# Construction Safety Record

- Significant improving trend in rates
- Goals established for Recordable and DART cases met for both DOE and General Industry in FY 11

	Hours Worked	Recordable Cases	Recordable Rate	DART Cases*	Dart Rate
Contractors FY09	60,208	2	6.64	1	3.32
Contractors FY10	331,424	3	1.81	1	0.60
Contractors FY11	471,174	1	.42	2	.84
Contractors FY12	34,168	0			
Contractors Cumulative	896,974	7	1.56 (Target: 1.8 / 4.7)	4	.89 (Target: 0.6 / 2.5)
Total Project Cumulative	2,499,062	8	0.64 (Target: 0.65)	4	0.32 (Target: 0.25)

# Construction Communications

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- Communications significantly enhanced in FY11
  - **Daily ESH Plan of day meetings** (includes ESH, site super and BHSO staff) review daily inspections, new/revised PHA's, upcoming work
  - **Weekly ESH Management meeting** with contractor senior mgmt and Project Management, discuss any ESH issues/solutions and gain management support for implementation
  - **Bi Monthly BHSO ESH meetings** to discuss ESH issues, surveillances, corrective actions etc.
  - **Weekly Construction status (with each prime)** overall status ESH is topic
  - **Monthly ESH** includes site construction safety, BHSO, ESH staff to keep everyone informed of construction site issues
  - Communications Lessons Learned being applied to LOB contractor

# Construction ESH Issues

- **Storm water control**

- Excessive rains in FY10 taxed storm water control temporary systems resulting in failures. Institution of weekly inspection program with Environmental staff
- Significant maintenance & modifications –
- permanent systems and vegetation established
- Significant Improvements in FY11

- **Coordination of contractors and installation staff**

- Coordination permit system established
- Enhanced PPE for install staff
- CF participation in install meetings



# Site Stabilization



# Construction

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- Progress on ESH Targets
- **Assessments and audits**
- Inspections
- Traffic violations
- Spills
- Injuries
- Events
- FY 12 Goals

# FY 11 Audits / Assessments – Construction

Total 63 (up from 29 for FY 10)

- Lehman Project Reviews (ESH construction focus) - 2
- Internal EMS/OHSAS
- External Liberty Mutual Monthly (12)
- External Zurich CCIP Assessments (12)
- External Kornegay
- BHSO Surveillances;
  - Inspections
  - Steel erection (2)
  - Interaction between contractors
- Construction QA assessments – 31\*

- \*Internal Self Assessment Enhanced:
  - Through PSD QA
  - 21 assessments for TC
  - 10 for EWH
  - Holds contractors accountable to ESH plan

# Construction

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- Progress on ESH Targets
- Assessments and audits
- **Inspections**
- Traffic violations
- Spills
- Injuries
- Events
- FY 12 Goals

## Construction Inspections

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- Construction Safety Inspections conducted daily for each primary construction site & equipment;
  - Ring Building
  - Lab Office Buildings
- Contractor's as well as NSLS-II CSE's perform daily documented inspections, All incoming equipment is inspected
- Inspection results are reviewed by management each day at the ESH plan of day meeting
- **FY11 – 500 daily inspections performed**
  - **38 Equipment inspection performed**

**Daily Inspections identify and document “near misses”**

# Construction

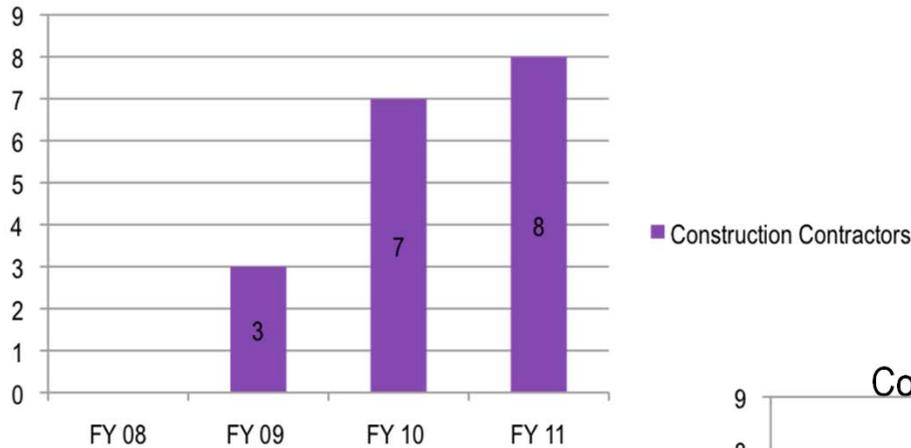
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- Progress on ESH Targets
- Assessments and audits
- Inspections
- **Traffic violations**
- Spills
- Injuries
- Events
- FY 12 Goals

# Construction Traffic Violations

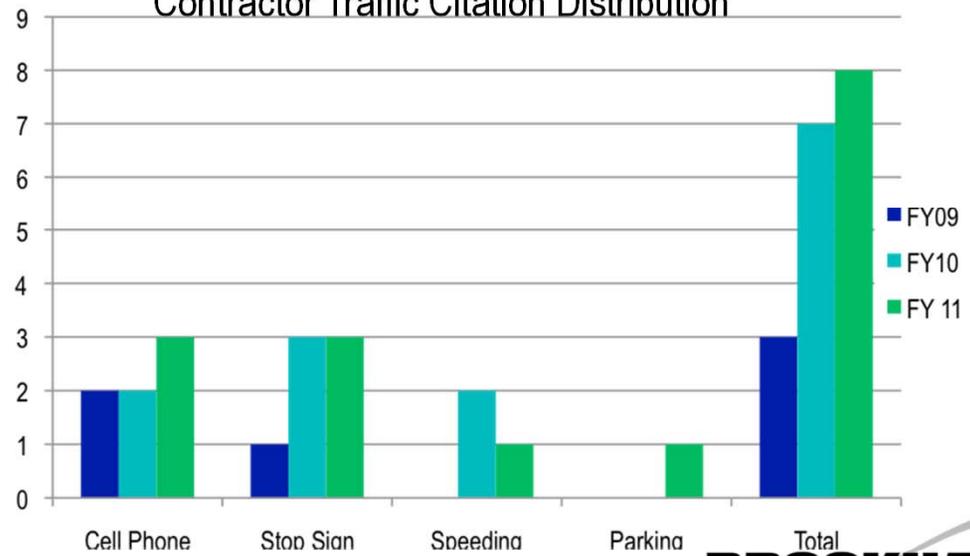
PSD Traffic Citations FY08-FY11

## Construction Contractors



**Last Year: Concerned that significant increase in contractor population would increase number of traffic citations**  
**Result: Unfounded; Traffic safety was emphasize with contractors; linked to safety incentive and engaged Safeguards and Security for focused enforcement**  
**Results have been positive**

Contractor Traffic Citation Distribution



# Construction

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- Progress on ESH Targets
- Assessments and audits
- Inspections
- Traffic violations
- **Spills**
- Injuries
- Events
- FY 12 Goals

## Construction Spills FY 11

### Five Spills Occurred:

-10/4/10 Five gallon pail of construction adhesive tipped over on soil. Generated two drums of waste (Occurrence)

-4/15/11 Excavators parked on outer ring road, fuel was topped off and when ambient temperatures increased overflowed through vents, Generated 12 drums of waste

-6/30/11 Truck leaked on soil diesel fuel (by trailers) < gallon, however legacy contamination identified, Generated 5 drums of waste

-7/8/11 Oily Sand Exposed to Rainwater and Leaked To Ground in two drums

-9/27/11 A small bucket of cleaner used for portable bathrooms at NSLS-II spilled from the back of a truck at Princeton and Rochester avenues.



**FY11: Five Spills ~ 12 gallons of material spilled; generated 21 drums of waste**

# Construction

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- Progress on ESH Targets
- Assessments and audits
- Inspections
- Traffic violations
- Spills
- **Injuries**
- Events
- Safety Incentive
- FY 12 Goals

# Construction Injuries FY11

10/07/10	Cut on L hand while loosening bolt with a socket wrench.	First Aid
10/08/10	Stung by a bee on his neck. Has a rash there. No anaphalaxis seen. He will report to his own doctor if it gets worse.	First Aid
10/21/10	While using a lever to align two pipe sections for welding in a trench, he strained his lower back, R side.	Lost Time
10/26/10	Small cut on R thumb by reciprocating saw that slipped.	First Aid
12/06/10	Struck by side of cart backing up as he was spotting it to hitch to a trailer.	First Aid
01/26/11	Slipped on ice covered by snow, fell on his right shoulder. No medical treatment needed.	First Aid
02/22/11	Clearing ice in Payloader, struck a manhole and thrown up into his visor and windshield, hitting head and left shoulder.	No First Aid
07/07/11	Set up his ladder on top of a cord. While climbing to first step, ladder rocked back and he caught himself w/ his left arm, breaking his wrist.	Recordable
08/16/11	Kneeling while grinding concrete floor in Ring Tunnel. Knelt on small rock and felt pain in his L knee in early morning. Went to First Aid office at end of day when pain persisted.	First Aid
09/22/11	Carrying a box with his partner in SB5, when it fell on his right foot in back of steel toe, fracturing it.	Lost Time

On-Site Medical (NYS EMT) provides medical treatment and drug/alcohol screening.

## Accidents – October 2010

## DART Injury NSLS-II Construction Site October 21, 2010

### Causes:

>The use of a pry bar in this application is warranted and has been used successfully in the past in similar operations. Using heavy equipment e.g., excavator to make small movements of pipe is impractical.

### Corrective Actions:

>All trades will be reminded that when moving heavy pieces of material, the worker should be aware of their body position and wearing the proper PPE for the task.

Location: NSLS-II Ring Building Construction Site  
Injury: Back Injury While Moving Steel Pipe

### Description:

A steam fitter was attempting to align a 40 ft length of stainless steel pipe prior to welding. The pipe had to be moved approximately 3/8". He was using an eight foot length of a 2x4 as a lever. As he pushed on the wooden lever he felt a sudden pain in his lower back. He immediately reported this to his supervisor and then reported to the on-site EMT. The EMT applied an ice pack to the area. Since it was near the end of the work day, the steam fitter went home and indicated that he would return to work the next day.

He did not return to work the next day. Instead he reported to his personal physician who diagnosed the injury as either a strained muscle or a herniated disc. The steam fitter was wearing the appropriate PPE for the task and his footing was adequate.



2x4 used as lever

Steel pipe being moved

## Accidents – September, 2011

## DART Injury NSLS-II Construction Site September 22, 2011

### Causes:

>The box slipped from the painters hand, apparently as a result of paint residue on his cotton gloves reducing the friction.

### Corrective Actions:

- >All trades should ensure that when manually moving pieces of material, their gloves are clean and adequate for the task.
- >All Trades should determine the weight of the material to be moved and not exceed 50#/person
- >When moving equipment determine if it can safety be moved manually (if within weight limit) or by mechanical means.

Location: NSLS-II Ring Building Construction Site  
Injury : Broken Foot

### Description:

At about 7:30 AM on September 22, 2011, a painter with Keller Painting [a subcontractor to Torcon - the general contractor at the National Synchrotron Light Source (NSLS) II ring building construction project, was injured. The painter and his partner were in the process of moving a box containing a cover to an electrical cabinet (approximately 150 pounds) so that they could complete painting steel columns. The had successfully moved one box and were in the process of moving a second box when the box slipped out of the hands of the painter and landed on the instep of his foot. He was taken to the on-site EMT and was then taken to a local hospital for further evaluation. An X-Ray revealed that one of the metatarsal bones in his foot was broken.

The painter was wearing appropriate ANSI approved safety shoes.



Two boxes containing electrical panel covers following their relocations

## Recordable Injury

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Recordable 7/7/11 – Broken wrist –  
step ladder positioned on cord and worker  
lost balance and fell



# Construction

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- Progress on ESH Targets
- Assessments and audits
- Inspections
- Traffic violations
- Spills
- Injuries
- **Events**
- FY 12 Goals

# Occurrence Reports - Construction

Date	Occurrence Report No.	Title (SC)
10/04/2010	SC--BHSO-BNL-BNL-2010-0027	Adhesive Spill*
7/7/1022	SC--BHSO-BNL-BNL-2011-0018	Contractor falls off ladder and breaks arm
9/13/11	SC--BHSO-BNL-BNL-201-0024	Lumber falls off roof
9/22/11	SC--BHSO-BNL-BNL-2011-0026	Painter injures foot

\*Adhesive spill was < EPA reportable quantities however contained (acetone, zylene, heptane and toluene) in amounts exceeding NYS DEC Chem bulk storage regs requiring a non routine report to state



# Construction

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- Progress on ESH Targets
- Assessments and audits
- Inspections
- Traffic violations
- Spills
- Injuries
- Events
- **FY 12 Goals**

# Construction FY11 Goals

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- **FY 11 Goals - Status**
- Continuously improve contractors construction safety program with a goal of reaching DOE construction averages for DART and TRC rates (.6 & 1.8) **Complete & Ongoing**
- Bring LOB contractor up to same level of “best in class” performance as Ring Building contractor **Complete**
- Complete application for DOE VPP for ring building contractor and conduct on-site evaluation – **VPP requirement removed from contract**

## PSD ESH Goals Summary Improvement

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### Continued from FY11

- User hazmat transport
- Worker qualification

### New for FY12

- Characterize lead (Pb) floor contamination in bldg. 725
- Establish a Radiation Safety Working Group/Committee; interpret NSLS II radiological and beam line requirements
- Continuously improve contractors construction safety program with a goal of reaching project cumulative DOE construction averages for DART and TRC rates (.6 & 1.8)
- Closeout Ring Building BORE Post Start findings
- Closeout of construction with no ESH issues
- Construction closeout/lessons learned

# ESH Issues Summary & Areas for Improvement for FY 12

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- **Tier I Program:** Monitor “time to correct infractions” and “repeats” take corrective action if necessary
- **Traffic Violations:** Monitor Traffic Violations as staff and contractor population increases and take corrective actions as appropriate, involve site security as necessary
- **Injuries:** Staff Performance excellent; Contractor performance improving continued vigilance necessary
- **Near Misses:** Injuries and events, near miss program needs further development
- **Transportation of Hazmat:** Complex wide challenge, need further program development
- **Management Observation Program:** Lab wide re-evaluation and enhancements ongoing

# Senior Management Evaluation

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- Evaluate the EMS & OSH Management Programs:
  - Are the programs:
    - Effective in achieving goals?
    - Adequate to recognize, evaluate, and control risks?
  - Are the objectives suitable to manage risks and improve the program?

# PSD FY 11 Management Review

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Presentation and Minutes will be posted at:

<http://www.nsls.bnl.gov/esh/EMS-OHSAS/>

Questions / Comments

Please sign the attendance sheet

- 
- backup

# Safety Incentive

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- Safety incentive modified to pass 90% to workers; period 2 months
- DART 100% loss; TRC 50% loss and violation fines

Contractor	Potential	Earned
Torcon	851,317	433,151
EWH	100,888	98,888