

EENS 2007 ESH Management Review

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SIXTY YEARS
OF DISCOVERY
1947-2007

BROOKHAVEN
NATIONAL LABORATORY



Purpose of Meeting

- Both the EMS ISO 14001 and the OHSAS 18001 Standards require a senior management review annually to assess the ESH performance for each program
- The main objective is to identify key improvement opportunities and determine if the ESH programs are effective and adequate

Meeting Agenda

- Overview of EENS ESH Management System
- Review of ESH Related Assessments
- Discuss Stakeholder Communications
- Review Organizational ESH Performance
- Status of ESH Objectives and Targets
- Status of EENS Corrective and Preventative Actions
- Follow-up Actions from 2006 Management Review
- Review Legal/Regulatory Changes
- Make Recommendations for Improvement

EENS ESH Management System

- EMS and OSH Objectives and Targets have been integrated
- The 2 committees have been combined into one ESH Committee
- The Management Review is now integrated
- The documented Management Systems are still separate
- The EENS ESH Management System resides on the [Research Operations Website](#)

EENS ESH Management System

- **Mixed feedback on usefulness of JRA's and FRA's**
 - Incorporate JRA's into the Experimental Safety Review or maintain separately?
 - Feedback on JRA/FRA issues?
- **Next step for Process Assessment Forms and Operational Control Forms**
 - Hazards and controls are identified in Facility Use Agreements (FUA), environmental aspects are reviewed in work planning (Work Permits and ESR's)
 - Are these documents still necessary for a successful EMS Program?
 - **Feedback on EMS Documentation?**

ESH Related Assessments

■ Internal EMS/OSH Audit Results

- No EENS Related Findings
- 5 Noteworthy Practices: Newsletter, ESSH Policy Tracking, New Employee Orientation, Lab Hood inventory and Program Flow-down

■ 2007 BNL IH Topical Assessment

- Numerous chemical related issues such as damaged containers, legacy/expired chemicals, CMS inaccurate, flammable storage issues, chemical testing not performed as required and hazardous dry particulates being weighed on benches
- No departments were singled out, all need improvement in these areas
- EENS Actions to date: Re-inventoried all chemicals to update CMS, disposed of legacy chemicals, updated all testing and performed a Flammable Liquid Storage Assessment

ESH Related Assessments

- **External EMS/OSH Audit Results**
 - No EENS Findings
 - One Noteworthy in the area of staff Awareness/Training
- **2006 NYSDEC RCRA Audit**
 - No BNL findings (first time since 1990), one concern over proper handling of nano-wastes
- **IH Confined Space Audit**
 - EENS currently has no confined spaces
- **Cryogen Safety Assessment**
 - Deficiencies and actions entered into EENS Family ATS
 - ODH Calculations, PPE Postings and ESR updates
 - Actions are 75% complete
 - EENS participation in Cryogen PPE Committee

ESH Related Assessments

- **EENS Flammable Liquid Storage Assessment**
 - Building 815 D-wing only
 - Deficiencies and actions entered into EENS Family ATS
 - Some actions have been initiated 70% complete
- **Chemical Safety Inspection Report**
 - No EENS Specific actions were required
 - Many issues were similar to IH Topical assessment findings for chemicals
- **Internal Controlled Documents Self-Assessment**
 - ESH Controlled Documents maintained by RO assessed, no deficiencies found
- **Multi-Topic Environmental Compliance Audit**
 - No findings

ESH Related Assessments

- **Lock Out/Tag Out Self-Assessment**
 - Currently no EENS Personnel perform LOTO
 - Electrical Work Permits issued for energized work for testing, troubleshooting and voltage measurements only
- **DOE Contractor Assurance Assessment**
 - Focused on self-assessment process and lessons learned
 - Actions: EENS designated Bob Lofaro as the Self-Assessment Coordinator and Patrick Sullivan as the Lessons Learned Coordinator
- **Extent of Condition for Calibration Assessment**
 - Balances, Out of Tolerance (OOT) notifications not acted on from previous calibration
 - Actions: All OOT notifications submitted for PI's to review

ESH Related Assessments

■ Integrated Safety Management Evaluation

- EENS Issues: hazards and controls in ESR's need to be more rigorous, flammable material limits not established, soldering not identified as a hazard in the ESR, baseline exposure monitoring incomplete and worker planned work not sufficiently addressed
- Actions:
 - ESR's reviewed during the ISM Evaluation have been revised and now include reviews by appropriate SME's such as Fire Safety and the hazards and controls were clarified as needed
 - Soldering inventory has been generated and IH monitoring initiated
 - Lead solder replaced with lead-free solder where appropriate
 - Baseline IH exposure monitoring identified and updated during ESR review and development
 - The Work Planning and Controls Subject Area was revised

ESH Related Assessments

■ EENS Internal ESH Self-Assessments

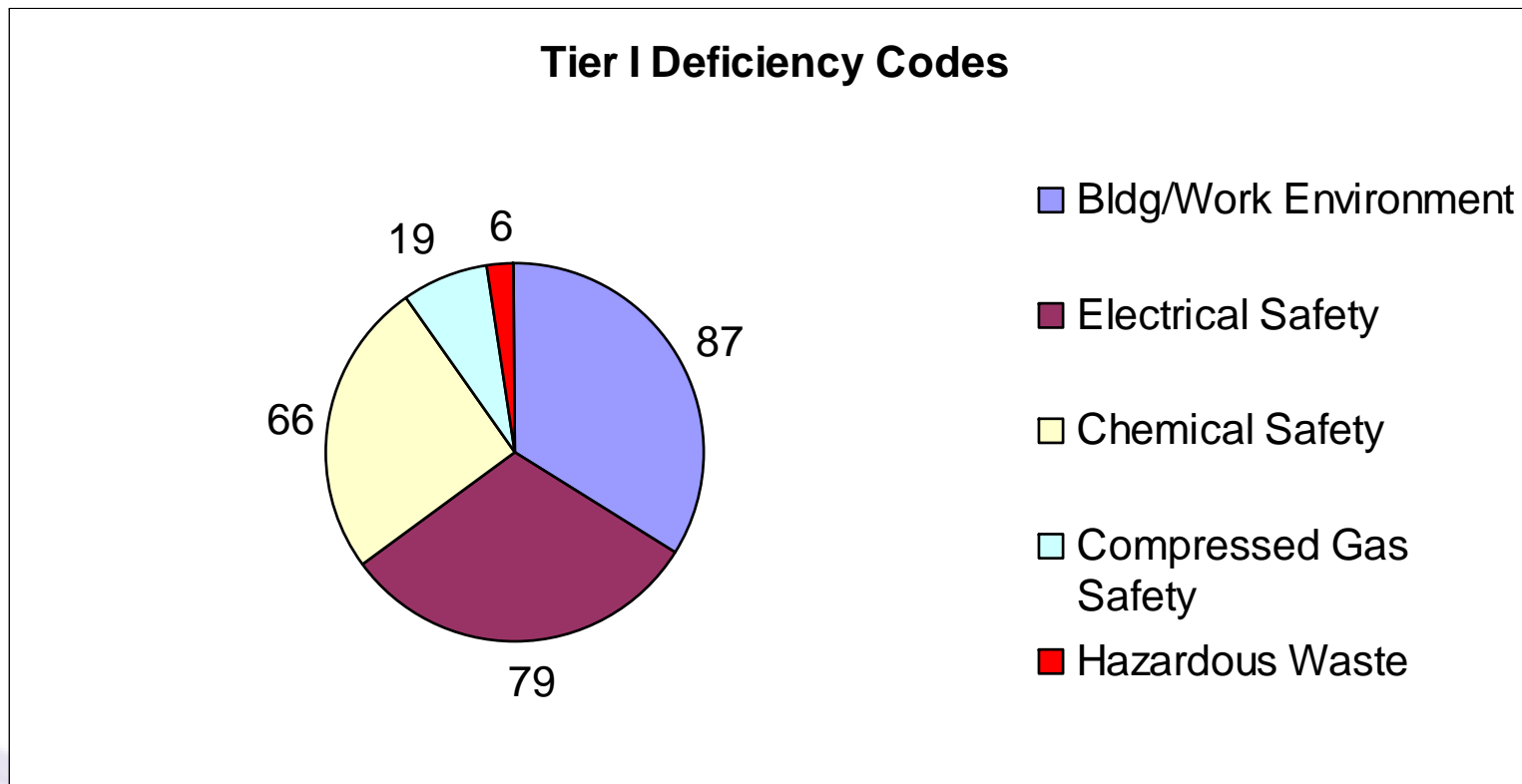
- Topical Assessments Developed to date: Electrical Safety, Chemical Safety, Fire Safety, Building Manager Requirements, Machine Shop Safety, Work Planning and Control (Operations), Stair and Ladder Safety
- Assessments completed: Electrical Safety, Chemical Safety, Stair and Ladder Safety, Machine Shop Safety and Building Manager Requirements
- Additional assessments to be developed: Nano-Safety, Cryogen Safety, Investigate Incidents/Accidents/Injuries, Personal Protective Equipment and Transfer of Haz/Rad Material Onsite are proposed

ESH Related Assessments

- **Tier I Program: Quarterly inspections of 13 buildings/areas, office space done annually**
- **Tier I Repeat Deficiency Improvement**
 - In FY06 there were 38 EENS deficiencies repeated at least once
 - In FY07 there were 23 EENS deficiencies repeated at least once
 - 40% decrease in repeat deficiencies
- **Tier I Participation**
 - SME FY2007 attendance Average was 28%
 - PI FY2007 Attendance Average was 65%
 - Improved participation will enable deficiencies to be better addressed
 - **Feedback on Attendance?**

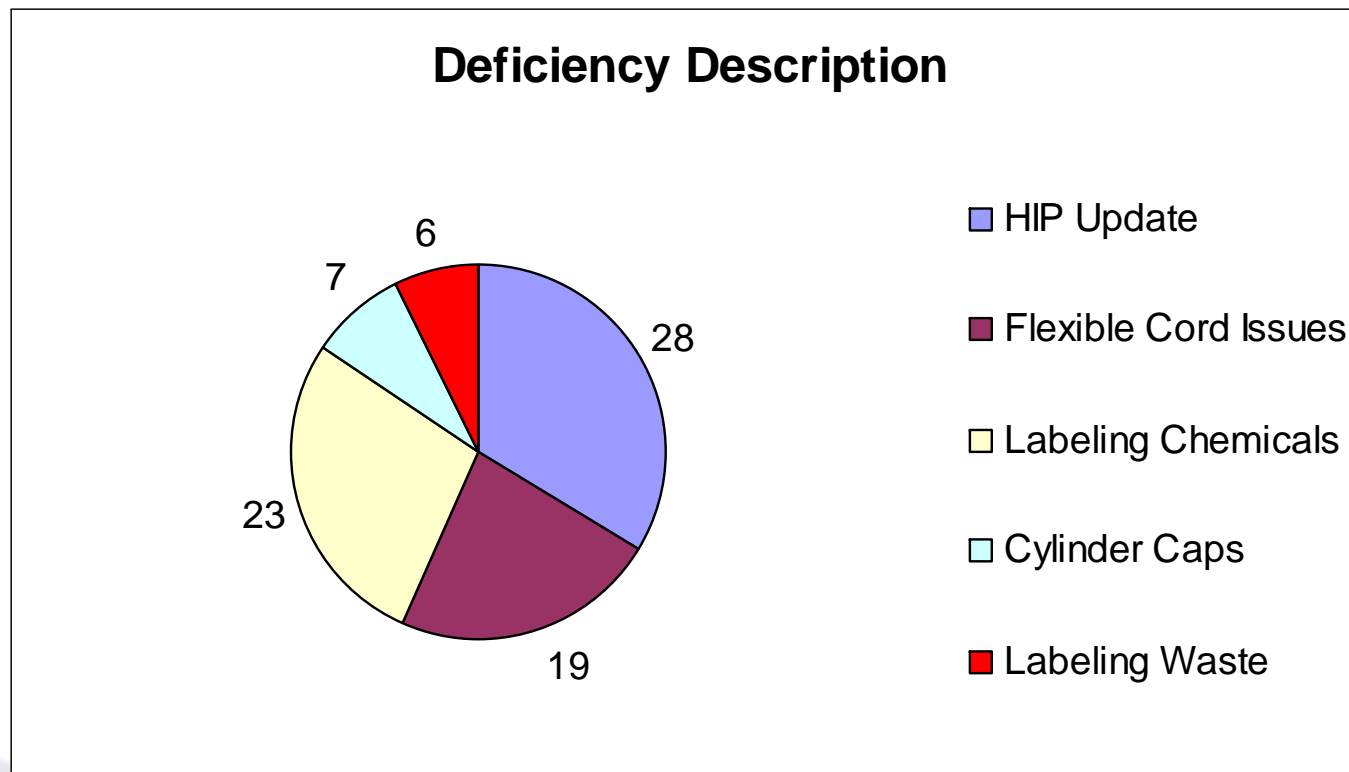
ESH Related Assessments

- Tier I Trends (Top 5 EENS issues by Deficiency Code)



ESH Related Assessments

- Tier I Trends (Top 5 EENS issues by deficiency description)



ESH Related Assessments

■ EENS Management Observations

- ALD, Department Chairs, Division Managers and Support Office managers participated
- ALD required to perform 36 hours per year
- Chairs required to perform 24 hours each per year
- Division Managers and Support Office Managers required to perform 12 hours each per year
- A total of 193 observations were made for the directorate out of 3,187 for the laboratory
- FY08 PEMP Requirement
- **Feedback on value added?**

External Stakeholder Communications

- **No direct stakeholder concerns were identified**
- **Who is interested in EENS Research?**
 - Elected officials and their staffs (federal, state and local), agency representatives, key policy makers, employees, academic institutions, Lab's Community Advisory Council, community and environmental leaders, science writers and reporters, newspaper editorial personnel, general public
 - Examples specific to the Contaminated Sediment Cleanup Programs include: Riverkeeper, Gowanus Canal Community Development Corporation, Gowanus Canal Conservancy, Newtown Creek Alliance and Passaic River Coalition

External Stakeholder Communications

- **What topics have been of most interest in FY2007?**
 - Elected officials and General public (educational institutions, community groups)
 - Applied energy programs
 - Energy research and development
 - Homeland security initiatives
 - Global warming
 - Energy efficiency
 - Expect the above interests to continue, along with increased interest in work connected with nuclear safety and nanoscience initiatives

External Stakeholder Communications

- **Examples of how EENS and the Lab inform stakeholders**
 - Partnering with Congressman Israel on the Homeland Security Technology Showcase and the Energy Security Taskforce
 - Providing opportunities to speak with researchers and staff:
 - Suffolk County Commissioner of Environment and Energy
 - Presentations / dialogues with the Community Advisory Council
 - Tours, Speakers Bureau
 - Participating on committees and boards
 - Promoting research papers / projects
 - Through communications with the Community Relations we have opportunities to share our work with stakeholders, please contact Jeanne D'Ascoli to discuss this further

EENS Organizational Performance

■ FY07 Injury Data

- EENS had one Recordable Injury (Slip, trip or fall related) from an ankle injury
- No DART Cases
- BNL TRC (Recordable Rate) was 1.87, EENS was 0.44 and the target was 0.65
- BNL DART (Days Away) Rate was 1.01, EENS was 0.0 and the target was 0.25
- No documented EENS First Aid Cases

■ One Injury/Illness Investigation

- Root Cause was related to Personnel Error
- Corrective Actions/Lessons Learned were not applicable
- Investigation was completed and closed with SME assistance

EENS Organizational Performance

■ Electronics Recycling

- In all, EENS recycled through BNL Programs:
 - 73 computers
 - 32 Printers
 - 71 monitors

■ Electrical Utilities

- Decrease in electrical usage from decreasing directorate footprint and vacating obsolete, inefficient buildings and energy saving initiatives.
- 8% decrease in kWh translated to a 10% cost reduction.
- Increase chilled water usage at 490A discovered and corrected, resulted in 48% reduction in usage

EENS Organizational Performance

■ Work Planning

- There were 8 new ESR's, 13 were closed out and there were over 66 additions/changes made to existing
- Currently there are 36 active ESR's
- The directorate issued a total of 75 Work Permits, 14 of which were annual renewals

■ IH Monitoring Baseline

- 80% of items entered into the IH Sampler were completed
- Several older baselines scheduled are no longer in existence and will be removed
- 10 out of 36 ESR's had chemical exposure assessments completed
- **Feedback on baseline monitoring?**

EENS Organizational Performance

■ Hazardous Waste/Industrial Waste Recycling

- As a result of several EENS cleanups, the following items were able to be reused:
 - Water treatment chemicals
 - Waste containers
 - Wooden pallets
- It was estimated that this effort saved approximately \$3500 in disposal and new purchasing charges.

■ Radiological Performance

- There were 16 RWP's in the Directorate for FY07, down from 24 in FY06
- The collective dose was 342 mrem in FY07, up from 276 in FY06

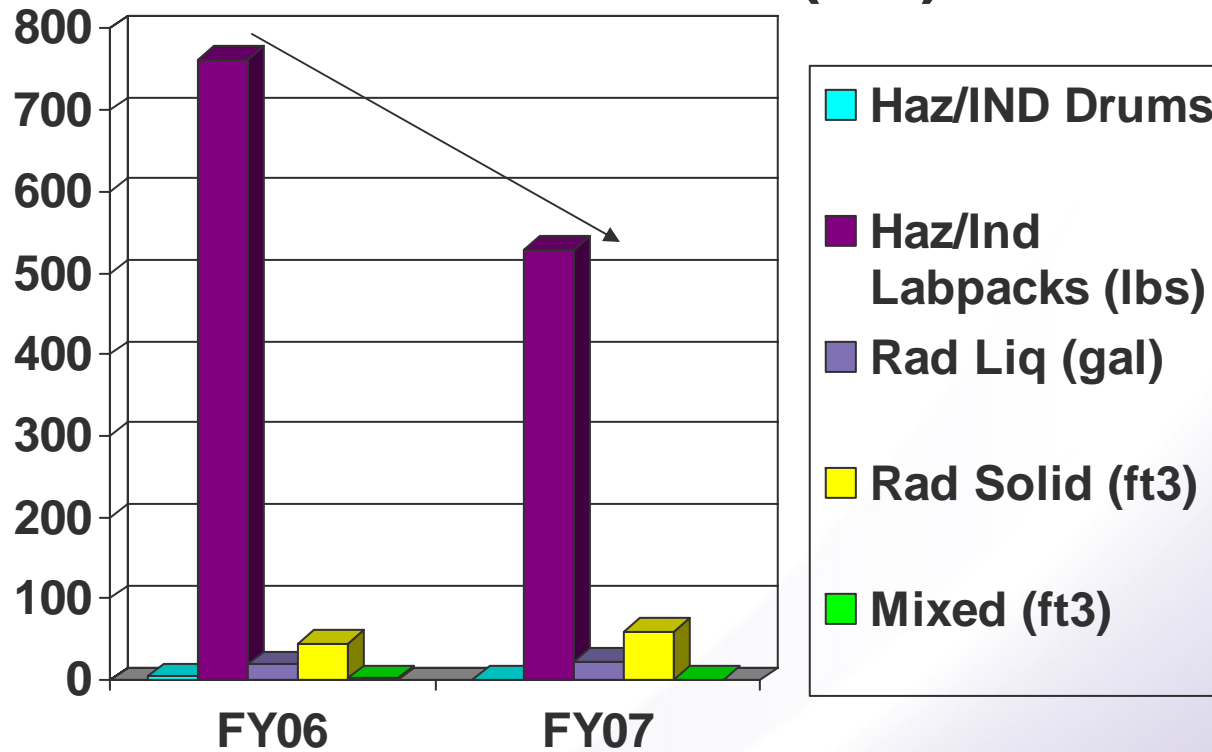
EENS Organizational Performance

■ S2/P2 Program Successes

- Building 487 Radiological Indicator Light (EENS \$)
- RADTEC AED (S2 \$ and EENS \$)
- Building 830 Lead Casks (EENS \$)
- Cat III Volt-meter Upgrades (EENS \$)
- Building 490D Ramp (S2/PE \$)
- Legacy Chemical Cleanup (S2/P2 \$ and EENS \$)
- EENS staff are very proactive in making suggestions
- Plexiglass holders for safety glasses in 815 (S2\$)

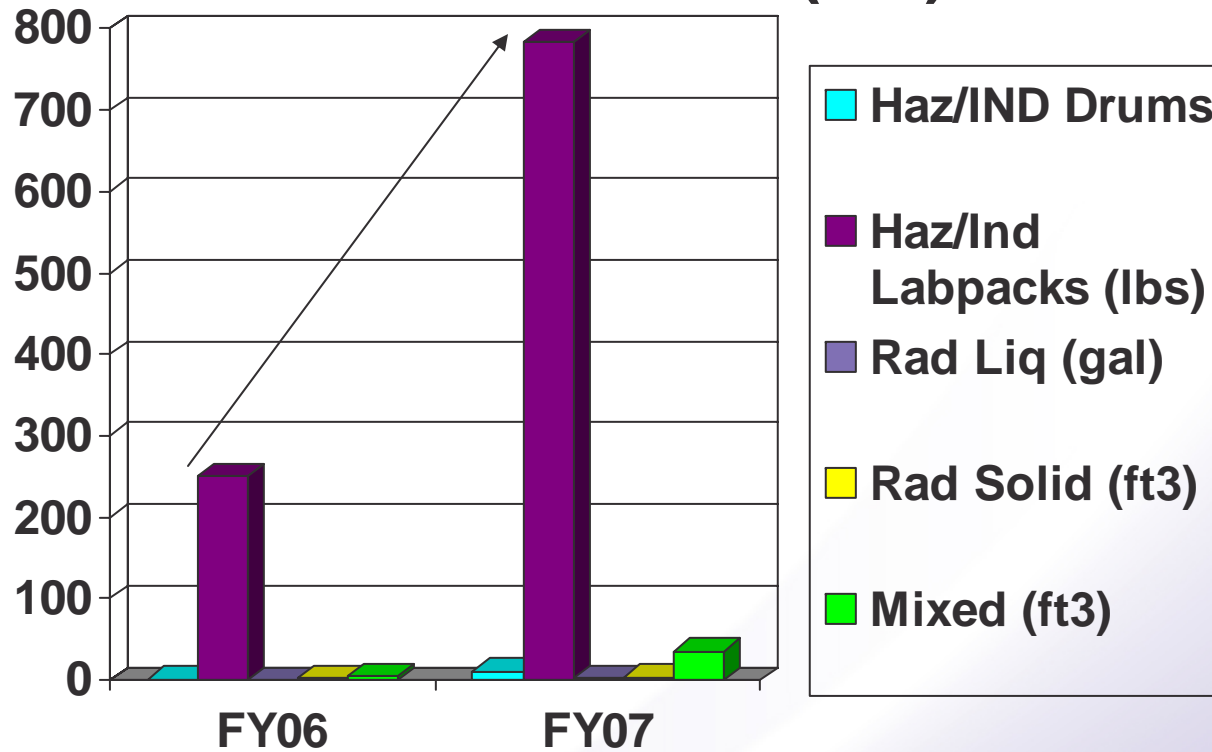
EENS Organizational Performance

■ Waste Generation Trend (EE)



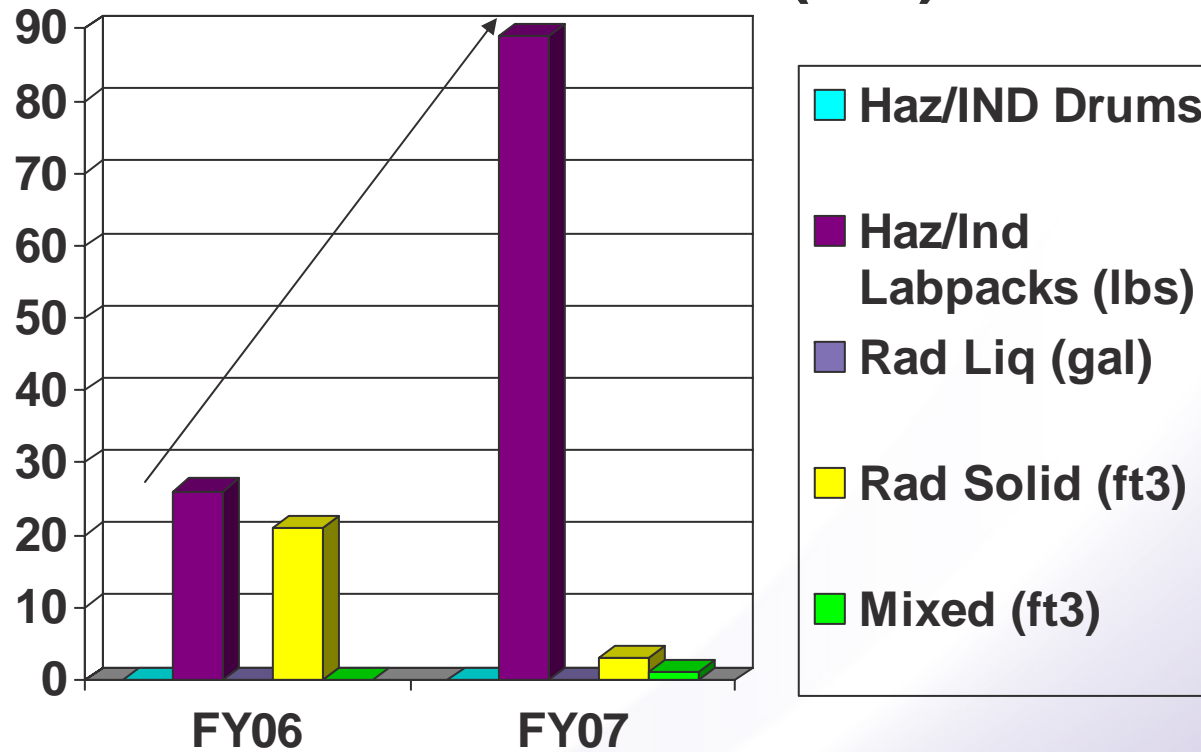
EENS Organizational Performance

■ Waste Generation Trend (NE)



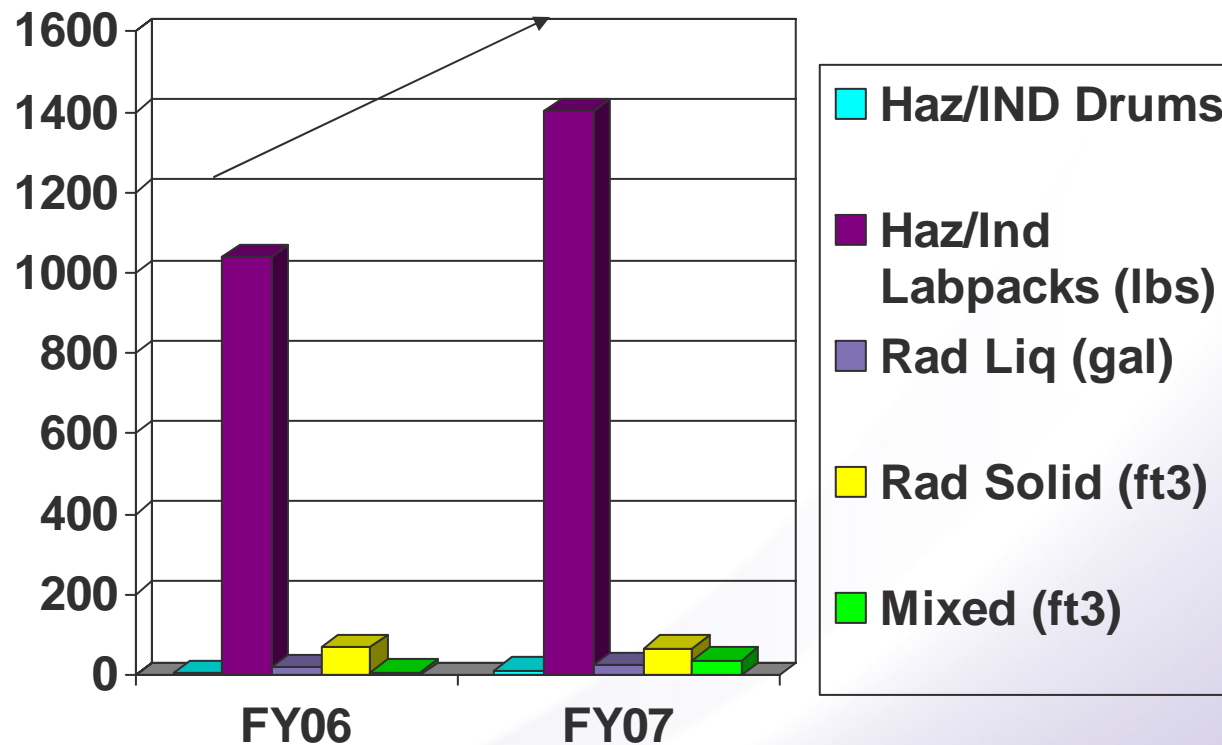
EENS Organizational Performance

■ Waste Generation Trend (NN)



EENS Organizational Performance

- Waste Generation Trend (EENS Cumulative)



EENS Organizational Performance

- **Waste Generation Factors**
 - Legacy Waste
 - Chemical Cleanups
 - Personnel transfers/terminations
 - FY08 Forecast estimates similar levels to FY07
- **Department Correlation Uncertainties**
 - Waste associated with personnel and not program
 - Waste management Rep used incorrect dept. code for co-mingled wastes
 - Personnel transfers/terminations
 - **Feedback on Waste breakdown?**

EENS Organizational Performance

- **Chemical Assessment and Inventory**
 - Performed by SHSD personnel to assess chemical safety and update CMS
 - Approximately 100 man-hours
 - Building 526 (12 hrs), 815 (47 hrs), 830 (18 hrs), 490A (10 hrs) and 12 hrs of reporting
 - Identified chemical issues such as improper storage areas, container conditions, testing and chemical expiration
 - Just in time delivery?
 - **Feedback on chemical reduction issues?**

EENS Organizational Performance

■ Chemical Cleanup Effort

- Approximately 600 individual chemicals were disposed of during the chemical assessment
- Equates to almost 800 lbs of material
- A 20% reduction for one chemical holder
- Partially paid for by the S2/P2 funding (\$3000)
- The remainder was charged back to the Research Operations Office budget approximately \$7000.

EENS Organizational Performance

■ Nanomaterial Update

- Currently, there are only 3 ESR's in the Directorate that identify nanomaterials as being used (all in solution)
- Implementation of all requirements in the Revised Interim Procedure, "Approach to Nanomaterial ESH" due by 12/31/07
- Major issues: Hazard identification and control, labeling material and wastes as nano
- EENS is Represented on the Nano Committee
- **Feedback on nanomaterial issues?**

EENS Organizational Performance

■ Traffic Safety

- Total traffic safety violations in FY06, 18
- Total traffic violations in FY07, 6
 - Only 1 since January 2007 (student/guest)
 - Traffic violation tracking started in quarterly newsletter in January 2007
- EENS defensive driver reimbursement program considered beneficial
- Feedback on traffic safety issues?

EENS Organizational Performance

- **Unwanted Material and Chemical (UMC) List and Legacy Cleanup Efforts**
 - List generated several years ago
 - EENS has made excellent progress
 - Completed items include
 - 830 highbay excess equipment
 - 490A plastic storage tanks
 - 526 combustion vessels
 - 815 excess equipment
 - Excess chemicals in all buildings

EENS Organizational Performance

- **Unwanted Material and Chemical (UMC) List and Legacy Cleanup Efforts (continued)**
 - Items that were made priorities by RO for FY08:
 - 801 MEL Hot Cells (EM/ADS funding FY08)
 - 830 (5) shipping casks, 2 have been recycled through Waste Management (P2 suggestion, EENS funded)
 - 830 legacy radioactive wastes (90% complete)
 - Other projects completed
 - 703 legacy cadmium cleanup
 - 703 radioactive source locker disposal
 - 830 legacy contaminated manipulator arms disposal
 - **Feedback on cleanup issues?**

Status of 2007 ESH Targets and Objectives

- All but one item on the list was completed ([See handout](#))
- Baseline Monitoring Target was not met, however, in several areas the work was not being conducted to allow monitoring
- Most of the Objectives, Targets and Actions were tracked in the EENS Family ATS
- Many items are now part of the way we do business and not necessarily considered improvements

Status of Preventative and Corrective Actions

■ Tracking Documentation

- BNL Institutional ATS
- EENS Family ATS
- Radiological Awareness Reports
- Price Anderson Amendment Act (PAAA) review
- EENS ESH Tier I Database (Previously Covered)
- Memo and E-mail (Not Trackable)

■ Corrective Action Handout

- Identify where Effectiveness Reviews are required

Follow-up Actions from 2006 Management Review

■ Suggestions from 2006

- OSH/EMS Awareness Presentations
 - Presentations given by e-mail to directorate, Department/Division/Directorate level presentations and the Directorate ESSH Newsletter
- Target an area needing attention
 - Housekeeping Target; RO worked with building 815 D-wing and 830 personnel on targeted cleanups
- Establish a Nano target
 - No target was developed as program revision was not complete
- More Electronic Reporting
 - Tier I database
 - EENS Family ATS

Future Changes/Legal Developments

■ OSH/EMS Program Changes

- Transition from 1999 OHSAS to 2007 OHSAS
- Transition will occur over the next three years
- Increased level of detail on required elements, move toward international recognition

■ SBMS Changes

- Interim Procedure “Approach to Nanomaterial ESH” requires full implementation by end of CY2007
- Proposed Compressed Gas Standard will require ODH Evaluations for gas cylinders
- Minimum Level of Dress and PPE evaluations are ongoing

Recommendations For Improvement

- **Suggested Objectives/Targets beyond Lab Level Suggestions**
 - Battery Recycling (laptop) Campaign was Suggested
 - Increase stakeholder involvement with EENS Researcher through Community Relations
 - Dispose of legacy material and move toward a just-in-time delivery concept (current CFN concept to be utilized in ISB)
 - Other suggestions
- **Policy Changes?**
 - [ESSH Policy](#)

Management Direction

■ Is the EENS ESH Program Effective

- Have we identified ESH hazards and impacts of EENS activities?
- Have we set realistic/consistent ESH goals?
- Do we incorporate operational controls to prevent/mitigate hazards?
- Are we monitoring ESH performance?
- Do we report and track non-conformances appropriately?
- Are we allocating resources for achieving performance goals?
- How well do we inform staff of ESH responsibilities?

Please complete questionnaire for documentation

EENS ESH Committee

- **A special thanks to those who serve on the EENS ESH Committee:**
 - Linda Bowerman
 - Bill Brown
 - Pat Carr
 - Jeanne Madaia
 - Paul Philipsberg
 - Ron Webster