This presentation is part of the periodic senior management review of ESSH performance related to the EMS and OHSAS management systems in the Physics Department.

The purpose is to assess management system effectiveness and identify opportunities for improvement.

**Agenda**

- Scope and overview of the management systems
- Hazard and environmental aspects identification
- Review of related assessments
- Financial investments and stakeholder concerns
- FY06 performance versus goals
- Proposed FY07 goals
- Management feedback
EMS and OHSAS Scope

- NPP Work (Office & Experiments) in Buildings 510, 832
- ATF Operations & Experiments in Building 820
- BES in Buildings 510
  - BES now part of CMPMSD (FY06)
  - Projects/Personnel in 510 are still in Physics EMS & OHSAS
    - May change in FY07
    - Continuing migration to CMPMSD
Operating Mechanisms

- Hazards, Environmental Aspects & Controls identified & reviewed via ESRs & work planning
  - Part of ISM – ESRs use that “language”
- ECR reviews all ESRs for Environmental component
- All ESRs have Pollution Prevention plans
- ESRs’ content “linked” to Job Risk Assessments
  - Applicable JRAs identified and listed in each ESR
  - ESRs also give a risk assessment for each hazard
- Information distribution
  - Web pages
    - http://www.phy.bnl.gov/~safety/EMS; ...OHSAS; ...ESRs
  - New employee handout
  - Topic at weekly Physics Department management meeting
  - All-hands meetings
  - ESSH Committee Meetings
  - Group Safety Coordinator (GSC – Worker Committee) meetings
  - Group leader meetings
Hazards & Environmental Aspects

Hazards:
- Hazardous or Toxic Materials
- Electrical Energy
- Flammable Gases and Liquids
- Flammable or Combustible Materials
- Temperature Extremes
- Ionizing Radiation
- Non-Ionizing Radiation
- Radioactive Materials
- Operating Vehicles
- Housekeeping Hazards
- Working Environment Hazards

SEAs:
- Regulated Industrial Waste Generation
- Hazardous Waste Generation
- Radioactive Waste Generation (sealed sources)
- Storage/Use of Chemicals & Radioactive Materials
- Liquid Discharges
JRA Risk Summary

Summary of Physics Department JRAs

Risk Level

Office Work: Negligible
Manual Lifting: Acceptable
Vehicle Use: Acceptable
Compressed Gas: Acceptable
Machine Shop: Moderate
Electrical Routine: Acceptable
Electrical High: Moderate
Electronic Shop: Acceptable
Hand Tool: Acceptable
Haz Materials: Acceptable
Haz Chemical: Acceptable
Routine Chemical: Acceptable
Satellite Area: Moderate
Furnace Operation: Acceptable
Lasers: Moderate
Cryogenic: Moderate
Wire Chamber: Moderate
Scintillation Detector: Moderate
Solid-state Detector: Moderate
Vacuum: Moderate
Magnetic Field: Moderate
RGD: Moderate
Rad Source: Moderate
ATF Startup: Moderate
Disper Radioactive: Moderate

Highest Risk Level Identified in Each JRA
Assessments During FY 2006

- 10/05 – EMS/ OHSAS Internal Audit
  - Finding: Did not include costs in management review
- 11/05 – OHSAS Registration Audit
  - No findings – registration approved
- 12/05 – BURF review: email response
- 12/05 – EMS/OHSAS Internal Assessment
  - Finding: Battery terminals not taped in Universal Waste Area
- 1/06 – Nuclear Safety Audit
  - Excluded Physics after examining our source inventory – included % of nuclear facility
- 2/06 – EMS/OHSAS Internal Multi-topic Audit
  - Finding: Objectives/targets need measurable quantities
  - Noteworthy: Showed continual improvement by updating JRA following reportable injury
- 6/06 – EMS/OHSAS Surveillance Audit
  - No findings
- 6/06 – Corrective Action Verification Audit from PAAA Noncompliance (ATF)
  - Finding: Checklist not fully completed as required
Assessments During FY 2006

6/06 – BNL IA&O Independent Assessment of ATF
- Finding: Checklist not fully completed as required
- Finding: Need to add information (or reference) to SAD from COO

6/06 – OSHA Verification Audit
- Items that had been fixed were again out of compliance: need increased Tier 1 vigilance

8/06 – Radiological Work Controls Assessment
- Bypassed Physics based on our response

9/06 – Hazardous/Radioactive/Mixed Waste Management Internal Assessment
- No findings during audit: report not issued yet

9/06 – Compressed Gas, LOTO, Interlocks Assessment
- Report not issued yet
- Finding: Outdoor flammable gas storage area had dry leaves around cylinders
- Finding: In same area, cardboard dumpster within 25 feet of cylinders
Assessments During FY 2006

Work-specific Assessments

- **NEPA**
  - Aerogel detector project (PHENIX)
  - CdZnTe Crystal growth (still under review)

- **NESHAPS**
  - Time-of-Flight detector assembly, test and verification project (PHENIX) (completed)

- **Identified IH Assessments/Monitoring Needs**
  - Lead on various lab surfaces
  - Mercury in chemistry lab
  - Non-ionizing radiation exposure (mostly ATF)
  - Silica exposure from glass-bead cleaner
  - Noise exposure in 820 High Bay
  - Chemical exposure monitoring (chloroform, benzene, others)
Financial Investments & Stakeholder Concerns

- Funded through Department Operating Budget
  - ~2 FTE for entire ESSH program
  - One lost-time injury (~a month) – required a temporary worker
- No External Stakeholder Concerns Communicated or Identified
EMS Targets

- Review all work for environmental aspects; include PP and waste minimization in all work; include ECR in all reviews
  - Reviewed 48 ESRs & 2 PEPs
  - 23 ESRs had SEAs identified
  - All had pollution prevention plans
  - ECR reviewed all ESRs and PEPs
- Perform methylene chloride inventory and contact users to ensure proper disposal
  - Identified 4 labs with methylene chloride containers
  - Disposed of container from one lab
  - Essential use in other labs; discussed use/storage/disposal
- Reduce lead by disposing or recycling 1000 pounds of excess
  - Collected and sent ~2,900 lbs of lead for recycling
- Recycle obsolete electronic equipment as part of BNL’s participation in the FERRC
  - Recycled “truck load” (~20 cubic yards) of equipment
OHSAS Targets

- Reduce lead by disposing or recycling 1000 pounds of excess
  - Collected and sent ~2,900 lbs of lead for recycling
- Review 3 Job Risk Assessments for office jobs
  - Reviewed JRA for each injury – determined no changes needed
  - Discussed ergonomics/work practices with workers in each office injury
  - Arranged for ergonomic reviews of work areas
  - Ergonomic reviews in work areas not involved in injuries
- Review 2 Job Risk Assessments for specific laboratory jobs
  - Observed a specific lab sub-task “Startup of ATF” and created PO-JRA-025
  - Dispersible radioactive materials JRA performed PO-JRA-026
  - Reviewed electrical JRA with all electrical workers on permit PO-JRA-006-1
    - Follow-up from arc-flash incident at another department
- Review Job Risk Assessments for tasks associated with an injury
  - Investigation of two office injuries. Met with employees
  - Met with employees for ergonomics evaluation
  - Discussed injury resulting from car accident on site
  - Critique of office injury. Employee tripped over mat and pulled ligaments in ankle
  - Discussed Carpal-tunnel injury with employee and supervisor
OHSAS Targets (cont’d)

- Create a matrix that relates Experiment Safety Reviews to Job Risk Assessments
  - Posted on ESR web page as part of status workbook 10/24/05
  - Did not find any use for the ESR/JRA matrix; matrix deleted on 5/30/06

- Meet with all laser users to discuss safety issues
  - Reviewed laser operations with individual users and LSO (twice)
  - Reviewed and approved new laser installation

- Meet with all compressed gas users to discuss safety issues
  - JRA ranking and OSHA violations
  - Discussed specific CG requirements with individual users during Tier 1
  - Still more work needed – not all users contacted
“Non-target” Accomplishments

- Met with ATLAS to discuss ESH program concerns at CERN.
- Inspected all satellite areas with ECR. All were compliant. Refreshed a few labels.
- Tried to share Hg-X excess with Depts. that use Hg. HWM will use it in “831 Piping” project. P2 action, since we were going to dispose of the Hg-X.
- Disposed of ~80 radioactive sources being to reduce unneeded inventory. Part of legacy waste reduction. HWM assisted with disposal forms.
- Updated LEPs for 510 and 820 due to new Evacuation Zone numbers. Declared 832 to be “void” since Physics has moved out and is no longer responsible for 832.
- Cleanup in basement identified large number of PMTs. Dispose of as HW or IW due to potential Pb, Cs and Hg content.
- Included radioactive materials in our sealed source inventory.
- Included a plan to deal with a leaking gas cylinder in the “Emergency Procedures” section of ESRs that use compressed gases.
Injury Statistics

Physics Department Injuries

Fiscal Year

Averages:
Recordable = 2.0 ± 1.3
Non-recordable = 5.3 ± 4.7
Total = 7.3 ± 4.6
Since 2002 = 5.0 ± 2.3
Physics Waste Generation

- Waste (lbs)
  - Haz + Ind (lbs)
  - Rad (lbs)
  - Mixed (lbs)

FY97 FY98 FY99 FY00 FY01 FY02 FY03 FY04 FY05 FY06
Proposed FY 2007 Targets

EMS-OHSAS

- Perform 2 Inspections of all Satellite and Universal Accumulation Areas with ECR
- Meet with Compressed Gas Users and Update JRA
- Meet with Office Workers and Update JRA
- Remove Compressed Gas Cylinders from Basement Storage Cages
- Survey 30% of Labs to identify Equipment that Needs NRTL Rating
- Dispose/Recycle 100 cubic yards of Excess Electronic Equipment (UMC)
- Discuss OSHA Issues and Noncompliance Consequences with Group Safety Coordinators
Management Feedback

- Are the Systems Effective and Adequate in terms of:
  - Policy commitments?
  - Achieving objectives & performance measures?
  - Identifying SEA, impacts & Risks?
  - Resource allocation, information systems & organizational issues?

- Are Objectives & Targets Suitable in terms of:
  - Environmental impacts & injury/illnesses?
  - Meeting regulatory requirements?
  - Should additional objectives/targets be established?

- Recommendations for Improvements?