Update on Safety Progress Since the
NIST Blue Ribbon Commission on Management and Safety II (BRC II) Report
and
Proposal for the Formation of a VCAT Subcommittee on Safety

Rich Kayser
Chief Safety Officer
Office of Safety, Health, and Environment (OSHE)

Tony Haymet
VCAT Member

Visiting Committee on Advanced Technology

Gaithersburg, MD

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Agenda

NIST

- OSHE Mission
- NIST SH&E Priorities
- NIST SH&E Metrics
- NIST External Assessments
- OU Hazard Review Program Highlights
- Summary

VCAT

- Proposal for a VCAT Subcommittee on Safety

OSHE Mission

What:

- To partner with the rest of NIST to make safety, health, and environment (SH&E) integral core values and vital parts of the NIST culture.

How:

By working with the rest of NIST to:

- Develop and maintain NIST's SH&E management systems;

- Implement NIST's SH&E management systems; and

- Provide oversight of and continually improve NIST's SH&E management systems and their implementation.

Why:

- To protect employees, associates, and visitors from occupational injury and ill health;

- To minimize NIST's impact on the environment and to conserve natural resources; and

- To comply with applicable SH&E laws, regulations, and other requirements.

NIST SH&E Priorities

- Continue to develop and implement NIST's SH&E management systems
  - Develop and deploy SH&E programs

- Implement a comprehensive NIST assessment program
  - Provide feedback to NIST management and staff on how NIST's systems are working
  - Make adjustments as needed

- Improve performance through data-based SH&E management
  - Implement metrics

BRC II Recommendations:

- Develop a suite of metrics

- Establish an audit mechanism

NIST SH&E Metrics

Metric v. Measure

- Metric: More abstract, higher-level, more subjective attributes, e.g., personal health

- Measure: More concrete, lower level, more objective attributes, e.g., weight, amount of exercise, blood pressure, glucose and cholesterol levels

Fundamental purpose of metrics

- To improve performance

Keys to success

- Leadership commitment to continual improvement
- Shared goals
- Team effort by NIST as a whole

Factors in selecting metrics

Potential impact

- SH&E impact , including SH&E culture
  - Risk
- Compliance
- Efficiency

Alignment with management priorities

Practical considerations

- Program maturity / formalization
- Suitable frequency
- Mechanics
- Balance

NIST SH&E Metrics (cont'd)

- **Safety Culture:** Effectiveness of incident reporting and investigation

- **Safety Management System Development:** Progress of SH&E program development and deployment

- **Hazard Management:** Effectiveness of hazard management practices with regard to select carcinogens and other hazardous chemicals

- **Ionizing Radiation Safety:** Effectiveness of ionizing radiation safety program implementation in radioactive material facilities

- **Fire and Facilities Safety:** Effectiveness of collaboration between OSHE and OFPM on fire and life safety issues in construction and renovation projects

- **Environmental Management:** Effectiveness of environmental management practices

Incident Reporting & Investigation Measures

- **Primary Measure**:
  - Average completeness of incident investigation reports

- **Additional Measures**:
  - Percentage of OUs with implementing procedures for reporting and investigating incidents
  - Percentage of OU staff trained on OU implementing procedures
  - Percentage of OU staff performing incident investigations who have completed incident-investigation training
  - Percentage of initial incident reports submitted to IRIS "on time"
  - Average length of time to submit incident investigation reports (from date of incident)
  - Number of incident investigations open beyond 20 days, 40 days, 60 days, … (from date of incident)

- **Future Measures**:
  - Percentage of corrective actions taken
  - Percentage of corrective actions taken on time

External SH&E Assessments Since BRC II

External

- Evaluation of NIST's occupational safety and health program by the Department of Commerce Office of Occupational Safety and Health

- Annual assessments of the reactor facility by independent Safety Assessment Committee
  - Industrial safety added to scope

- Peer review of reactor operations and maintenance by the International Atomic Energy Agency (in process)

- Annual inspections of the CNST NanoFab by external safety experts

- Peer evaluation of MML safety program implementation by Oak Ridge National Laboratory

- Annual external audit of NIST's radioactive materials licenses
  - "Deep cut" assessment scheduled for summer 2012

- Regular external audits and inspections by regulatory authorities

Combined External/Internal

- Assessment of the NIST Hazard Review Program
  - Completed June 2012

Assessment of NIST Hazard Review Program

Rationale:

- The NIST Hazard Review Program is at the heart of NIST's efforts to conduct its work safely
- Program has been fully implemented by the OUs for 1-2 years

Initial Scope:

- NIST Laboratory OUs

Approach:

- Commission an independent third-party review of the NIST-level hazard review program and OU implementing procedures
- Have internal assessment teams review selected hazard review documents and conduct field assessments

Deliverables:

- Strengths and opportunities for improvement at all levels: NIST, OU, individual hazard reviews

Next steps:

- Analyze the results
- Identify and take actions at all levels to strengthen NIST's management of hazards

Recent / Next Steps on SH&E Assessments

- Have hired an expert SH&E assessor to lead and manage NIST's SH&E assessment program

  - Lead, arrange, and coordinate SH&E management-system and operation-level internal and external assessments

  - Provide feedback to NIST management and staff on strengths and opportunities for improvement

  - Provide technical support to effect improvements

- Formalize NIST's overall SH&E assessment program

  - Finalize NIST's written assessment program

  - Finalize NIST's corrective and preventive actions program

  - Develop and implement near- and longer-term SH&E assessment plans

OU Hazard Review Program Highlights

NCNR	Provided an NCNR-specific course to all NCNR staff on hazard identification, assessment, and control
CNST	Completed 46 OU-level hazard reviews for all CNST labs and lab activities
MML	Deployed a sophisticated hazard review and approval database system that can produce reports by building, person, room, hazard, etc.
PML	Developed and implemented a harmonized hazard review policy after the NIST realignment combined parts of 5 different OUs into the new PML; reassessed all hazard reviews
EL	Implementing significant changes to its hazard review program (over 400 hazard reviews per year) based on a comprehensive self assessment of the entire EL safety management system
ITL, PML, and OISM	Collaborating on the development of briefing/training materials to communicate hazard review results effectively to all occupants of Building 225 at NIST Gaithersburg, both laboratory and non-laboratory staff
Boulder Labs	Evaluated and revised the Boulder hazard review program for the third time
OFPM	Conducted 350+ job hazard analyses over the past 2 years with in-depth reviews by OFPM's in-house safety group

Summary

- NIST has a balanced, initial set of metrics and measures in place

- NIST has implemented a variety of assessment mechanisms to obtain independent third-party feedback

- NIST has hired an SH&E assessor to lead and manage its SH&E assessment program

- NIST has made significant progress in other key SH&E areas, such as hazard reviews