DOE Industrial Hygiene Coordinating Committee Meeting
Nevada Operations Office
Las Vegas, NV
October 20-22, 1998
Industrial Hygiene Performance Measures
PROCESS AND ISSUES

A successful industrial hygiene performance measure should apply a consistent pressure from year to year to achieve the industrial hygiene purpose:

- To anticipate, recognize, evaluate and controls for workplace health hazards.
- To do this the effort should result in a complete and current documented comprehensive industrial hygiene baseline and history of potential exposures at all operations.

PROCESS USED AT OAKLAND OPERATIONS OFFICE

1. DOE/UC/LAB Steering Committee issues letter of guidance for Performance Measure development.
2. OAK Performance Measure Goal-setting Team issues guidance to negotiators
   - best features of performance measures at the 3 labs
   - consistency needed to achieve OAK's goals
3. Formal negotiations occur with each Lab
   - technical issues resolved with counterparts
   - overall performance issues resolved with management
4. Performance Measures are formalized in Contract with each Lab
5. Performance of Lab is measured
   - operational awareness of Lab activities
   - formal assessments/audits
   - end-of-year validation and assignment of score

MANAGEMENT vs. INDUSTRIAL HYGIENE BIAS

Management

Management understands outcome related measures; like, # of over exposures or injuries, that are easily measured using exiting data collection systems.

Industrial hygiene

Outcome oriented measures do not measure industrial hygiene's success at its mission, prevention, unless the measured operations have been fully characterized and measurements are made at a statistically valid frequency.

This is generally not possible for the following reasons:

- Few if any facilities have been fully characterized,
- Operations are not generally regular enough to allow statistical monitoring;
- Resources are limiting and,
- Most industrial hygiene injuries do not become evident until years after exposures occur.

Therefore, industrial hygienists prefer process measures that evaluate how well or fully industrial hygiene identifies, evaluates and prescribes controls for potential exposures.

POSITIVE vs. NEGATIVE PM
"# of exposure evaluations" vs. "# of over-exposures"

Negative Measures

Advantages

I. Easily understood
II. Trackable with generally available data systems
III. Only positive data must be recorded

Disadvantages

I. Using the number of over exposures as the measure can be a negative motivation for industrial hygienists to do there job of identifying new exposures.
II. Data can be under reported manipulated to make statistic look better.
III. Unnecessary sampling can be done or inappropriate samples included in the data set to increase the denominator size of ratio data like the number of over exposures over the total number of exposure measurements made.
IV. Not preventative - exposures have already occurred after being measured.
V. Industrial Hygiene can be penalized for finding over exp osures which is its job.

Positive Measures

Advantages

I. Rewards Industrial Hygiene for looking for and identifying potential exposures
II. Preventative

Disadvantages

I. No readily available data collection systems
II. Negative data must be recorded

Successful Performance Measures have the following characteristics:

I. Measurable Statistics
- A collection and analysis tool
- Motivation to collect the data
- Data validation

II. Achievable Goals
- Allow for uncontrollable variability
- Reasonable acceptable range of values
- Allow for professional judgment

III. Flexibility
- Measurement procedures must include methods for adjusting Performance Measure and its goals during the performance period

- Contractor point of contacts and the scoring subject mater expert can and do negotiate the meaning of measure wording and final score
- Trust between the measuring and measured parties is critical

Example of Performance Measure Evolution
First year (95-96)

2.b -Occupational Safety and Health (Formerly 2.1.c)

2.b -Occupational Safety and Health Hazards are recognized during Occupational Safety and Health assessments and serious and imminent danger situations are appropriately mitigated. (Weight = 4%)

Assumptions:

- Data will be collected for the period of July 1, 1996 through June 30, 1997.
- The severity of events is to be considered in the evaluation. Imminent Danger situations and Serious violations are as defined by the OSHA Field Inspection Reference Manual and by Section 13(a) of the Occupational Safety and Health Act.
- The performance measure allows time for dialogue between SLAC and DOE, on a case-by-case basis, to determine whether a violation is to be classed as "serious."
- Subcontractor operations/personnel are included if the subcontractor is performing part of the Laboratory's operations. Construction work is included, however subcontractors are excluded if they are "servicing" the Laboratory (e.g., copy machine vendor or other transient construction workers). covered under 29 CFR 1926).

Gradient:

- Meets Expectations:
  - 70% of operations have documented evidence of annual safety inspection. All high hazard operations are inspected annually.
  - Imminent Danger situations are mitigated immediately upon discovery.
  - All Serious Violations are mitigated or corrected within 5 working days or an agreed-upon schedule. Until mitigation, equivalent protection or abatement will be implemented to ensure protection of workers.
- Exceeds Expectations - 80% of operations have documented evidence of annual safety inspection. All high hazard operations are inspected annually.
- Far Exceeds Expectations - 90% of operations have documented evidence of annual safety inspection. All high hazard operations are inspected annually.

Example of Performance Measure Evolution
Second Year (96-97)

Performance Criteria: 1.1

- Exposures of personnel to chemical, physical and biological hazards will be adequately controlled.

Performance Measure: 1.1a

- The number of personnel exposures exceeding 25% of the accepted PEL, STEL or TLV will be maintained in statistical control within 3 sigma.

Performance Assumptions:

- An Industrial Hygiene Management Plan (IHMP) to qualitatively identify, characterize and document exposure risks is prepared and executed.
- Exposures with the potential for exposure above ½ the TLV, PEL and/or STEL as identified during execution of the IHMP are evaluated.
- Exposure is defined as the concentration in the worker s breathing zone without regard for respiratory protection as described in 29 CFR 1910 and the American Conference of Governmental Industrial hygienists.

Performance Gradient:

- Far exceeds expectations- Decrease in exposure (> 4 sigma)
- Exceeds expectations- Decrease in exposures (> 3 sigma)
- Meets expectations- No significant change in exposures (+/- 3 sigma)
- Needs improvement- Statistically significant increase in exposure (> 3 sigma)

Example of Performance Measure Evolution
Midyear Adjustment (96-97)

Performance Measure: 1.1a

- Workplaces will be evaluated to identify, document and control exposures to chemical, physical stresses and biological agents.

Performance Assumptions:

- Immediate control measures (PPE, administrative controls or engineering controls) will be implemented when potentially excessive exposures are identified.
- IH evaluations can be subjective but will be written on survey forms and include an assessment of hazard potential and recommendations for interim controls until the hazard can be quantitatively evaluated and permanently controlled.

Performance Gradient:

- Far exceeds expectations - At least 95 percent of workplaces are evaluated and documented by September 31, 1997
- Exceeds expectations - At least 80 percent of workplaces are evaluated and documented by September 31, 1997
- Meets expectations - At least 70 percent of workplaces are evaluated and documented by September 31, 1997
- Needs improvement - Less than 70 percent of workplaces are evaluated and documented by September 31, 1997

Example of Performance Measure Evolution
Third Year (97-98)

Performance Measure: 1.1a

- Initial workplace evaluations of all remaining (from the 1996-1997 comprehensive survey) SLAC operations to identify, document and control exposures to chemical, physical stresses and biological agents will be completed. Potential exposures from an appropriate number of operations identified by the comprehensive SLAC evaluation with significant exposure potential (exceeding 1/2 the applicable exposure limit) will be measured using NIOSH or OSHA methods.

Performance Assumptions:

- Immediate control measures (PPE, administrative controls or engineering controls) will be implemented when potentially excessive exposures are identified.
- Initial IH evaluations can be subjective but will be written on survey forms and include an assessment of hazard potential and recommendations for interim controls until the hazard can be quantitatively evaluated and permanently controlled.
- Measurements of personnel exposures will be prioritized based on risk and of sufficient quality and quantity to characterize Ceiling, Short Term and 8-hour time-weighted-average potential exposures of the exposed population and be made at the primary point of absorbtion; i.e., breathing zone, ear level or skin, as appropriate.

Performance Gradient:

- Far exceeds expectations[1] - At least 75 percent of operations with significant exposure potential are measured by September 30, 1998
- Exceeds expectations[1] - At least 60 percent of operations with significant exposure potential are measured by September 30, 1998
- Meets expectations[1] - At least 50 percent of operations with significant exposure potential are measured by September 30, 1998
- Needs improvement[1] - Less than 50 percent of operations with significant potential exposure significant exposure potential are measured by September 30, 1998

[1] Exact percentages may vary depending on the total number of operations with significant exposure potential found after the completion of all initial evaluations,the frequency at which that work is done and the complexity of the required sampling.

Example of Performance Measure Evolution
Fourth Year (98-99)

Performance Measure: 1.1a

- Initial workplace exposure evaluations of operations with significant exposure potential (exceeding 1/2 the applicable exposure limit) not completed during the 1997-1998 survey comprehensive will be completed. Exposure evaluations will document and prescribe controls for exposures to chemical agents, physical stresses and biological agents. Vulnerable1 controls (controls which could fail due in time due to age, lack maintenance or the failure to use them properly) will be periodically evaluated to assure their continued effectiveness.

Performance Assumptions:

- Immediate control measures (PPE, administrative controls or engineering controls) will be implemented when initial exposure identify potentially excessive exposures (potential exposures for exceeding 1/2 the applicable exposure limit).
- Initial exposure evaluations will be written on survey forms and include an assessment of hazard potential and recommendations for controls.
- All SLAC initial exposure evaluation and control measurements will use NIOSH or OSHA methods and appropriately calibrated (per manufacturer recommendations, national consensus standards, or accepted practice) instruments.

Performance Gradient:

- Far exceeds expectations - All2 initial exposure evaluations of operations with significant exposure potential are completed. A control and personnel exposure monitoring plan for operations with

vulnerable1 control systems is developed by September 30, 1999 and all2 local exhaust hoods preventing exposures have been evaluated or monitored within the performance period.

- Exceeds expectations - All2 initial exposure evaluations of operations with significant exposure potential are completed. A control and personnel exposure monitoring plan for operations with vulnerable[1] control systems is developed by September 30, 1999 or all[2] local exhaust hoods preventing exposures have been evaluated or monitored within the performance period.
- Meets expectations - Initial exposure measurements are done for 95% of operations with significant exposure potential by September 30, 1999.
- Needs improvement - Initial exposure measurements are not done for 95% operations with significant exposure potential by September 30, 1999.

[1] A "vulnerable" control is an exposure control that was in place and operating when exposures evaluated but is subject to failure if not maintained or relies on training. Without it exposures would be higher and possibly excessive. Such controls include but are not limited to mechanical ventilation, personnel protective equipment and work procedures.

[2] The term "all" means those operations that actually occur during the performance period. Initial evaluations that were attempted but were not done because the operation did not occur will not be counted if supervision was notified of the need to evaluate them and monitoring attempts were documented.