Industrial Hygiene

Art, Science or Voodoo?

Presented by:

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Objectives

At the completion of this session, the participants will:
- Know what is the practice of industrial hygiene and the skills needed to practice industrial hygiene.
What is Industrial Hygiene?

The control of occupational health hazards that arise as a result of or during work.
The Art of Industrial Hygiene

Skills Needed:

- Detective
- Communicator
- Politician
The Basics of an IH Process

- Identify Hazards & Risks
- Conduct Sampling
- Analyze Data
- Write Reports
- Write Programs

Start Over!
1. Identify Hazards & Risks

Acceptable Levels & Regulations

- Company specific guidelines
- Other research or publications
1. Identify Hazards & Risks

Chemicals

- Health Hazard Assessments
  - Safety Data Sheets (SDS)
  - Employee Interviews
  - Purchasing Dept. Documents or Interviews
  - Process Diagrams (i.e., midstream products)
1. Identify Hazards & Risks

Chemicals

- What state do the chemicals exist in?
  
  - **Vapor**: Gaseous form of substances that are normally in the solid or liquid state (at room temp and pressure).
  - **Gas**: Material that has very low density and viscosity.
  - **Mist**: Suspended liquid droplets generated by condensation from the gaseous to the liquid state. Mist is formed when a finely divided liquid is suspended in air.
  - **Dust**: Solid particles generated by handling, crushing, grinding of materials. Dusts will settle under the influence of gravity.
  - **Fume**: Airborne particles formed by the evaporation of solid materials. Example – metal fumes emitted during welding.
1. Identify Hazards & Risks

Route of Entry

- Inhalation
- Ingestion
- Absorption
- Injection
1. Identify Hazards & Risks

**Agents**

- **Physical**
  - Noise
  - Vibration
  - Temperature extremes
  - Radiation
  - Pressure extremes
  - Ergonomic stressors
1. Identify Hazards & Risks

Agents

- Biological
  - Viruses
  - Bacteria
  - Fungus
  - Mold
  - Parasites
  - Any living organism that can cause illness or disease in human beings
1. Identify Hazards & Risks

Tasks & Time

- Job Safety Analysis (JSA) or Job Hazard Analysis (JHA)
- Standard Operating Procedures (SOP)
- Daily Reports
- Ask employees
2. Write Programs

- Chemical or Agent Specific
- Purchasing
- Sampling Strategy
- Medical Surveillance
- Where should they be?
  - Safety & Health Manual
  - Process Manuals
2. Written Programs

Chemical or Agent Specific Program

- Be sure to include:
  - Monitoring strategy
  - Medical Surveillance (where required by OSHA or company policy)
  - Training (frequency and content)
  - Emergency testing (IH and Medical Surveillance)
2. Written Programs

Sampling Strategy

- Written Program should include:
  - Areas where samples will be taken
  - Equipment to be used
  - How the sample will be taken (sampling method)
  - Length of time for sampling
  - Who will conduct sampling
  - Frequency of the sampling
Sampling Pitfalls

- Not doing it
- Not using the right
  - Method
  - Media
  - Equipment
- Not Calibrating the equipment
Analysis

- Accredited Laboratory
  - AIHA
- Proper Method (examples)
  - OSHA
  - NIOSH
- Chain of Custody (example)
Results

- Consistent Units
- Can be measured against the Regulations
- Signed off/Verified by Lab Personnel

Warning: Check the results! Labs aren’t perfect either.
Communication

- Final Report
- Posting Pages
- Employee Notification
- Employee Meetings
Are We Finished?

- Write Reports
- Identify Hazards & Risks
- Write Programs
- Conduct Sampling
- Analyze Data

Start Over!
Now What?

- Update processes/programs based on hierarchy
- Update written programs
- Update Medical Surveillance Program
- Re-train
Hierarchy of Controls

Engineering controls
- Eliminate agent or task
  - Engineering (isolation of agent or employee; process ventilation)

Substitution
- Substitute another agent or task

Administrative Controls
- Improve work practices
  - Administrative (e.g., rotation of employees)

Personal Protective Equipment
- Examples: Hearing Protection, Hard Hat, Safety Shoes, etc.
Recordkeeping

- IH Sample Results
- IH Report
- Medical Testing
  - Emergency
  - Follow-up
  - Routine Surveillance
How Long?

- 30 Years...
  - past the last date of employment for the employee(s) that were monitored
Evaluation of Program

- Regularly evaluate groups of information for trends or needs
- Set up company specific guidelines based on larger group of data – eg own OELs
Questions?