Industrial Hygiene

Art, Science or Voodoo?

Presented by:

Ed Parsons
Outreach Coordinator
Gulf Coast Safety Institute
Objectives

Attendees Will:

1. Describe what the practice of industrial hygiene is; and

2. Recognize the basic requirements and approach to meet required industrial hygiene program elements
What is Industrial Hygiene?

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

https://www.youtube.com/watch?v=VlsLoqtep6k
The Art of Industrial Hygiene

• Skills Needed:
  - Detective
  - Communicator
  - Politician
The Basics of an IH Process

1. Identify Hazards & Risks
2. Conduct Sampling
3. Analyze Data
4. Write Programs
5. Write Reports

Start Over!
1. Identify Hazards & Risks
Acceptable Levels & Regulations

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

Health Hazard Assessments

1. Safety Data Sheets (SDS)
2. Employee Interviews
3. Purchasing Dept. Documents or Interviews
4. 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

Physical Agents

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

Biological Agents

• Viruses
• Bacteria
• Fungus
• Mold
• Parasites
• Any living organism that can cause illness or disease in human beings
1. Identify Hazards & Assess Risk
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

1. Monitoring Strategy
2. Medical Surveillance
   - required by OSHA or company policy
3. Training
   - frequency and content
4. Emergency Testing
   - IH and Medical Surveillance
2. Written Programs
Sampling Strategy Elements

1. Areas where samples will be taken
2. Equipment to be used
3. How the sample will be taken - sampling methods
4. Length of time for sampling
5. Who will conduct sampling
6. Frequency of the sampling
Sampling Pitfalls

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

- Accredited Laboratory
  - AIHA
- Proper Method
  - OSHA
  - NIOSH
- Chain of Custody
Sampling 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?

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

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
  - Isolation or Exhaust 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
Preservation - How Long?

- Exposure: at least 30 years
  - Sample results, collection method, analytical methodology, summary of interpretation data, SDS or chemical identification, where used and when used
- Medical: 30 years past last date of employment
Evaluation of Program

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