Industrial Hygiene and the Safety System
Overview

• What is a system?
• Components of a safety system
• Components of an industrial hygiene system
• Linking systems
  – tools – equipment, checklists, layouts
  – legislation
  – documentation
Overview

• Risk assessments
• Training
• Management of change
• Maintaining the program
What is system?

• A group of related objects that form a whole
• A framework of processes and procedures used to ensure that an organization can fulfill all tasks required to achieve its objectives
• An occupational health and safety management system (OHSMS) enables an organization to control its occupational health and safety risks and to improve its performance by means of continuous improvement.
• Occupational safety and health is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in employment.
Industrial Hygiene

• Occupational or Industrial Hygiene is the discipline of anticipating, recognizing, evaluating and controlling health hazards in the working environment with the objective of protecting worker health.

• commonly referred to as AREC
Components of a Safety System

• LOTO
• confined space
• working at heights
• material handling
• electricity
• fire
• chemical handling
Components of an IH System

- air quality
- noise exposure
- heat stress
- vibration
- radiation
- chemical handling
- ventilation
Common links

- legislation
- documentation
- management
- training/education
- indicators
- equipment
Common tools

- checklists
- process mapping
- audits
- risk assessments
- inspections
- investigation
- hazard recognition
- controls
Tools

Process map
conduct a walk-through survey of the process
record potential risks
take photos of location and current practices
Look at the Process

• Part of the walkthrough survey is a process review

• Review SOP, are they followed?

• Are there documented procedures

• Are they followed?
Walk Through Survey

Product reception risks

• incompatible chemicals
• ventilation requirements
• PPE required
Walk Through Survey

Laboratory risks
• incompatible chemicals
• ventilation requirements
• PPE required
• fumehood requirements
• equipment for analysis
• waste collection
Walk Through Survey

Product handling risks

• splashes
• air quality
• dusts
• noise
• exposure levels
Walk Through Survey

Inspection risks

• radiation
• noise
• lighting
• vibration
• handling risks
Walk Through Survey

Packaging risks
  • lighting
  • handling risks
Walk Through Survey

Warehousing risks

- lighting
- handling risks
- segregation
Walk Through Survey

External risks

• molds
• legionella
Job Hazard Analysis

- JHA Form.xls
- risk matrix.xls
- Safety checklist.doc
Chemical Inventories

• Review MSDS, labels, etc., for hazards, PPE, exposure information

• New chemical approval process
  – what are the safety risks
  – what are the IH risks

• System to add, remove and management chemicals in the inventory

• New chemicals may required new PPE, testing equipment, handling procedures
Equipment Review

- Part of the process review
- Know the equipment and operation in the workplace
- Is it noisy, gives off fumes, gases, vapors or chemicals?
- Is it properly maintained?
- Is it being operated within normal parameters?
Monitoring & Sampling

• Often sampling is required to get a clear picture of what is a hazard
• The survey should lead you to sample for the proper chemicals, noise, radiation
• It should also lead you in the right direction, who, when, where to sample
• Need to follow the proper sampling techniques, use suitable instruments and sample media
Some IH Equipment

1. Noise Meter & SLM
2. Air Pump & Filter Media
3. Passive Air Sampler (Badge)
4. Gastec
5. Heat Stress Monitor
6. Indoor Air Monitor
7. CO Monitor
8. Light Meter
9. ToxiRae
10. ELF Survey Meter
11. Microscope
12. Velocity Meter
Sampling

• Who should sample?
  – internal personnel trained to sample
  – external personnel to do sampling

• Training
  – air, noise, heat stress sampling relatively easy to learn
  – vibration, radiation more complex
Summarize

• summarize and group findings
• compare to existing safety systems
• include maintenance plans
• assess risk as per work schedules
• determine requirements
  – legal
  – internal
Legal requirements

Occupational Health and Safety Act

Internal Responsibility System

• 2 The foundation of this Act is the Internal Responsibility System which
• (a) is based on the principle that
• (i) employers, contractors, constructors, employees and self-employed persons at a workplace, and
• (ii) the owner of a workplace, a supplier of goods or provider of an occupational health or safety service to a workplace or an architect or professional engineer, all of whom can affect the health and safety of persons at the workplace,
• share the responsibility for the health and safety of persons at the workplace;
Legal requirements

• WHMIS program
  – management of controlled chemicals

• TLVs under ACGIH

• Restriction on use of chemicals
  – 58 Where a biological, chemical or physical agent or a combination of such agents is used or intended to be used in the workplace
Next Step - Evaluate the Risk

Industrial hygiene responsible

• evaluates the risk based on the information collected, professional opinion and recommends control methods to management

Again this will depend on:

– Nature of the hazard, (chemical, physical, biological)
– Magnitude of Exposure, (how much, how many people)
– Duration of Exposure, (acute vs chronic, STEL)
– Individual Susceptibility, (need to look at allergies, sensitization)
How to link the systems

• Review current systems
• Conduct walk through survey
  – assess potential exposure areas
    • workers, maintenance, lab, admin
• Record data on process map
• Record gaps – what is? what should be?
• Assess risks using ranking criteria
• Assign recommended actions to fill gaps
How to link the systems

• Use existing tools safety checklists, equipment lists, management of change process, inventories (PPE, chemical)

• Assess expertise requirements
  – in house personnel
  – hired consultant

• Review equipment lists
  – rent, buy
  – cost, complexity, frequency of use

• Implement work procedures
How to link the systems

Integrate:

• Update/develop chemical inventory
• Update/develop audit protocol to include IH components
• Update/develop sampling program
How to link the systems

Integrate:

• Institute a Management of Change program which incorporates both Safety and Industrial Hygiene systems

• Develop a Control Plan
  – [Generic Control Plan.doc](#)

• Develop a common audit checklist