PMCH 600  
INDUSTRIAL HYGIENE  
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WHAT IS INDUSTRIAL HYGIENE  
IDENTIFICATION, EVALUATION, & CONTROL OF  
TOXIC SUBSTANCES & HARMFUL PHYSICAL AGENTS  
IN THE WORKPLACE & IN THE ENVIRONMENT

• TOXIC SUBSTANCES  
  – CHEMICALS  
  – MICROBIOLOGICAL AGENTS  
• HARMFUL PHYSICAL AGENTS  
  – NOISE  
  – RADIATION  
  – ERGONOMICS/REPETITIVE MOTION  
  – HOT & COLD ENVIRONMENTS

Occupational Health Team  
• Occupational Physicians - Dr. Compton  
• Industrial or "occupational" Hygienists  
• Occupational Health Nurse  
• Microbiologist  
• Engineers  
• Safety Personnel  
• Ergonomists  
• Chemists & Lab Personnel  
  • radiation, toxicology, epidemiology
Industrial Hygiene Subject Matter

• What, How much, What is to be done???
• Identification of Hazards
  – experience
  – study
  – defined by client
• Evaluation of Hazards
  – Monitoring: sample collection & analysis
• Control of Hazards
  – engineering, admin., work practices, PPE

Typical IH Problems

• Survey flooded building for mold
• Health Hazard Survey in factory
• Indoor Air Quality (IAQ) evaluation
• Monitor asbestos/Pb removal at VCU
• Lead Inspection - adult/child protection
• Noise survey, printing plant
• OSHA/EPA Compliance consultation

Exposures to What

• Infectious agents
• Dusts
  – Asbestos, silica
• Volatile organic compounds
  – Benzene, ethylene oxide
• Metals
  – Pb, Hg
• Pesticides/herbicides
• Radiation

Exposure Limits

• OSHA PEL’s (permissible exposure limits)
• OSHA STEL’s (short term, 15 minutes)
• OSHA ceilings (instantaneous limits)
• OSHA BEI’s (biological exposure indices)
• ACGIH TLV’s (threshold limit values)
The Legal Framework
OSHA Standards

- PEL  Permissible Exposure Limit
- STEL  Short Term Exposure Limit
- Monitoring
- Methods of Control
- Respirators
- Hazard Communication
- Medical Surveillance
- Recordkeeping

OSHA BENZENE STANDARD

- Permissible Exposure Limits
  - 1 ppm; 8 hour TWA
  - 5 ppm 15 min. STEL
- Monitoring
- Methods of Control
- Respirators
- Medical Surveillance
  - Next slide
- Hazard Communication
- Employee Notification
- Recordkeeping

OSHA Benzene Standard on Web


MONITORING

- Air Monitoring
  - personal
  - area
  - real time
  - Laboratory Analysis
- Noise
- Lead - XRF
- Radiation
- Hot & Cold
Methods of Control

- Engineering Controls
- Administrative Controls
- Work Practices
- Personal Protective Equipment

Engineering Controls

Negative pressure containment
Administrative Controls

- Employee Rotation
- Ergonomic Hazards
- Noise
- Lead
- Carcinogen Issue - Prohibition

Work Practices

Personal Protective Equipment

- Respirators
- Protective Clothing
- Protective eyeglasses, shoes, etc.
- Hardhats

Respirators

- Quarter Mask
- Half Mask
- Full Facepiece
- Mouthpiece/Nose Clamp (no fit test required)

Hazard Communication

- Placarding & Labeling
- Material Safety Data Sheets
- Training & Education
- Chemical List

RESPIRATORS

- Use & Limitations
- Selection
- Protection Factors
- IDLH Atmospheres
- Fit testing, Fit factors
- Written Respirator Program
Medical Surveillance

- Done by MD, nurse, audiologist
- Need to know
  - what exposed to
  - levels of exposure - IH role
- Various medical tests
  - Pulmonary function tests
  - Blood lead levels, etc.

Hot & Cold Environments

ETHICS
IH WORKS FOR, REPORTS TO, & IS PAID BY EMPLOYER.
DUTY: PROTECT WORKERS
CONFLICTS INEVITABLE

Issues

- Who will determine whether to sample
- Who will sample
- Where will samples be collected
- Who will analyze
- Who will determine what is to be done
- Methods of control

Why Learn about IH

- Prevent injury and illness!
- Why learn about public health?
- Protect Safety & Health of Workers/Public
- Deal with public concerns/hysteria
- Avoid Liability
- Promote better relations among
  - Workers
  - Management
  - Community
  - Government
References

- www.aiha.org
- www.acgih.org
- www.abih.org
- www.osha.gov
- www.cdc.gov/niosh