Getting Started with Industrial Hygiene

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IOSH, Trinidad Hilton
• Mother of a 4 year-old, Kierra-Leigh
• BSc Major in Environmental and Natural Resource Management and Minor in Biotechnology, First Class Honors.
• Licentiate member of the Faculty of Occupational Hygiene (LFOH) and holds the Certificate of Operational Competence in Occupational Hygiene (CertOH, with Credit) from the British Occupational Hygiene Society (BOHS).
• Board Certified Industrial Hygienist (CIH) from the American Board of Industrial Hygienist (ABIH).
• 14 years’ experience in BP in the field of IH with a wide experience base in both upstream and downstream operations within BP (UK Hull Refinery Research, Sullom Voe Terminal, Texas City Refinery, Cherry Point Refinery TAR, Deep Water Horizon oil spill response).
• Industrial Hygienist at BP Trinidad and Tobago LLC responsible for leading the identification, assessment and overall management of Industrial Hygiene risks for the Trinidad Region.
Industrial Hygiene - No harm from chemical, physical, biological or ergonomic hazards in our working environment. Industrial Hygiene, properly applied, recognizes all health hazards in our environment, assesses the risks and protects us from them by either eliminating or controlling exposures to a level that cannot result in harm.

**Noise Vibration**
Noise, sometimes described as unwanted sound, can cause a variety of effects ranging from annoyance through to a permanent loss of hearing. Vibration, too, can cause a variety of uncomfortable or disabling effects.

**Temperature**
Our bodies rely on controlling our internal temperature to vary no more than a few degrees Celsius either side of 37°C. Excessive heat or cold can tip the body's equilibrium with potentially severe consequences.

**Radiation**
Broadly classified into 2 types - ionizing (X-rays, nuclear etc.) and non-ionizing (radio waves, microwaves, infrared etc.). Ionizing forms are generally more hazardous than non-ionizing but both can have serious adverse health effects.

**Chemical**
Chemicals are vital to life but exposure to some can cause harm. Examples include process chemicals such as benzene and hydrogen sulphide, as well as naturally occurring materials like asbestos and silica.

**Ergonomics**
Man and machine working in perfect harmony with their environment is the goal. Good design is essential. Without this there can be physical and mental stresses on the individuals involved.

**Biological**
Biological agents, such as viruses or bacteria are responsible for many diseases. These can include for example food poisoning, or the pneumonia-like symptoms of Legionnaires disease.

**Anticipation, Recognition, Evaluation, Control**
Why IH?.....The Right thing to do...

https://youtu.be/0k7GPWBoCa0
Routes to becoming an IH (US)

- American Board of Industrial Hygiene - CIH

**Eligibility:**
- Accredited BSc (4 years)
- IH coursework (including Ethics)
- 4 years IH practice
- Professional references (at least 1 CIH)
Routes to becoming an IH (UK)

• British Occupational Hygiene Society – CertOH, DipOH
  • (i) CertOH:
    • Accredited BSc, Personal Learning Portfolio, Oral Exam
    • 6 modules, Personal Learning Portfolio, Oral Exam
  • DipOH:
    • CertOH, Professional Experience Portfolio, Researched Essay, Oral Exam
    • Accredited MSc, Professional Experience Portfolio, Oral Exam
Roles and Responsibilities of an IH

HAZARD IDENTIFICATION
IH hazards and risks are identified, assessed and managed.

RISK ASSESSMENT
Participate in the entity, asset, facility and task based risk assessments.

IH MONITORING PLAN
Define and maintain an annual IH Monitoring Plan to assess and periodically validate occupational exposures.

EXPOSURE ASSESSMENT/ DATA ANALYSIS
Review, analyze, assure quality of industrial hygiene monitoring data and define appropriate control measures.

HEALTH PLAN
Develop an annual Health Plan to manage risks

INVESTIGATIONS
Investigate and recommend mitigation measures and remedial actions where non-conformances or unacceptable occupational exposures are identified. Inform Oc. Health.

CONTRACTOR MANAGEMENT
Review, evaluate and select suitable vendors for the provision of industrial hygiene technical services.

IH RECORDS
Validate that proper records are maintained and are accessible.

LESSONS LEARNED
Ensure industrial hygiene lessons learned and best practices are communicated to key stakeholders that relates to the procedure.

INTERVENE AND ESCALATE
Intervene and escalate as appropriate where health risks may not have been appropriately prioritized or managed.

TRAINING/ COACHING
Workforce training on IH risk and coaching in the field.
## Getting Started “Toolkit”

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Hazard Identification

First steps to effective risk management
Systematic approach
Quantitative/Semi-quantitative

Hazard categories: chemical, physical, biological, ergonomics, human factors, psychological

Input: regulatory requirements, internal and external audit findings, emerging risks, lessons learnt, past incidents, health concerns, historical monitoring data and group anonymized medical data etc.

Output: inventory of prioritized health hazards
Exposure Assessment

EXPOSURE ASSESSMENT STRATEGY

- Start
  - Basic Characterization
    - Exposure Assessment
      - Meets acceptable criteria
        - Periodic reassessment
      - Data is non-existence, incomplete or insufficient
        - Further Information Gathering
      - Does not meet acceptable criteria
        - Control
## Risk Assessment and Prioritization

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<th>Right People: Appropriate mix of expertise (Operations, Engineering, Maintenance, HSE etc)</th>
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<td>Risk identification</td>
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<td>Risk ranking (severity vs probability)</td>
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<td>Risk actions</td>
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<td>Periodic review (significant changes to process, materials, processes etc.)</td>
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<td>IH risk assessment tools – COSHH, Heat Stress, HAV Calc, Manual Handling, Noise Calc etc.</td>
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Health Risk Management and Implementation

- Health Risk Register
- Health Plan
- Health in Contracts
- Program Development and Implementation (*Hierarchy of Controls*)
- Performance Management
Monitor and Review

- **Self-verification** – test implementation and effectiveness of controls
- **Contractor Oversight** – test health requirements for contractors are implemented
Why IH in Emergency Response?
Industrial Hygiene in Emergency Response

- Plan, Respond, Stabilize, Recovery
- Scenario-based
- Assessment of Resources
- Tiered-approach
- Tested
Useful Websites:
• AIHA: https://www.aiha.org/Pages/default.aspx
• BOHS: http://www.bohs.org/
• HSE UK: http://www.hse.gov.uk/pubns/mdhs/index.htm
• NIOSH: https://www.cdc.gov/niosh/
• ACGIH: https://www.acgih.org/
• AIOH: https://www.aioh.org.au/
• CCOHS: http://www.ccohs.ca/

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