Industrial Hygiene Studies for an International Oil & Gas Company in the Middle East

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Presentation Plan

• Challenges
• Description of Study
• What Did we Find?
• What did we Recommend?
• What Happened?
• Conclusions
Qatar Location
Challenges to the Hygienist

- Site accessibility and environments
- Climatic extremes
- Ethnic mix of workforce
- Range of skills and expertise of workforce
- Variability of ‘safety culture’ between sites and employers
Description of Study

- Health Risk Assessment and IH Baseline Study
- Carried out over 18 months
- International oil and gas company
- Review all work tasks over 7 operational areas
- Assess current workplace health risks
- Identify appropriate risk mitigation measures
- Develop electronic database
Description of Study [contd.]

- Team of Hygienists
- Baseline health risks established for workers and others
- Variety of monitoring tools used
Description of Study [contd.]
Description of Study [contd.]

<table>
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<th>Likelihood of occurrence</th>
<th>Rating</th>
<th>Trivial</th>
<th>Minor</th>
<th>Serious</th>
<th>Major</th>
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<td>Often/Frequent</td>
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<td>Unlikely/Remote</td>
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Operational Areas

• Onshore
  – Industrial City
  – Headquarters
  – Refinery
  – Gas Processing
  – Medical Centers
  – Dukhan Fields [oil & gas]
  – Heliport
Operational Areas

• Offshore
  – 3 Production Station 2 [oil, gas & condensate]
  – Drilling Rigs
  – Halul Island [oil terminal]
Mesaieed Industrial City
Onshore Oil Field
Offshore Production Platforms
Off-shore Drilling Rig
Halul Island
Potential Health Risks

• Physical (e.g. noise, heat)
• Chemical (e.g. VOCs, H$_2$S)
• Biological (e.g. Legionnaires Disease, hepatitis)
• Ergonomic (e.g. VDT, manual handling)
• Psychological (e.g. stress, fatigue)
• Miscellaneous (e.g. snakebites, scorpion stings)
Potential Health Risks
Potential Health Risks
Monitoring Carried Out

- **Airborne**
  - Hydrocarbons
  - Hydrogen Sulphide
  - Perchloroethylene
  - MTBE
  - Ethyl & Methyl Mercaptan
  - Sulfur Dioxide
  - Welding Fume
  - Dust
  - Methyl Methacrylate
Monitoring [contd.]

• Physical
  – Noise
  – Vibration [Hand-Arm, Whole Body]
  – Thermal
  – Ionising Radiation [X-ray, α, β, γ]
  – Non-ionising Radiation [Electromagnetic Fields, UV]
Monitoring [contd.]

• Other
  – Psychological [e.g. stress, fatigue]
  – Ergonomic [VDT, Manual Handling]
Monitoring [contd.]
Monitoring [contd.]
Monitoring [contd.]
What did we Find?

• Substantial risk mitigation possible by:
  – Consistent & standard management systems; i.e. improvements to ‘systems management’
  – Engineering controls, e.g.:
    • Local exhaust ventilation systems
    • Cool rest/work areas
  – Emergency showers and eye wash stations (with temperature control and provision of constant water supply)
Key Health Risks

- Heat
- Noise
- VDT Workstations
Specific High-Risk Activities

- Spray painting with isocyanate-based paints - heliport
- Medical, nursing and emergency staff working with body fluids (HIV)
- Ionising radiation (production / maintenance staff and radiographers / dental surgeons / patients
# Task Controls - Report

**Working Environment Area**

On Shore  

**Location**

Telecommunications

**Task**

Responsible for maintenance and installation of telecoms for QP offices, QP vehicles, field stations and Dukhan Township.

**Personnel**

Employee  

Notes: 13 Technicians plus one senior staff

<table>
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<tr>
<th>Hazard</th>
<th>Agent</th>
<th>Exposure</th>
<th>Control Type</th>
<th>Control Measures</th>
<th>Risk Level</th>
<th>Actions/Comment</th>
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<tr>
<td>Chemical</td>
<td>Hydrogen Sulphide</td>
<td>Inhalation</td>
<td>Systems</td>
<td>Warning alarms set at 10pm</td>
<td>Moderate</td>
<td>Monitoring not Required</td>
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</table>

**Monitoring / Actions:**

- Add CtrlMeas. Not Required
- New Risk Low

**Actions/Comments**

Monitoring of Hydrogen Sulphide levels at selected locations indicate that the problem is not as great as believed.

23 April 2006

May 16, 2006
Dental X-ray
Control Room
Scorpions & Snakes
What did we Recommend?

• Prioritised recommendations
Supervision & Training

• Health risk benefits do not reflect money and resources invested
• More coordinated supervision and training programs across organization
• Train the trainers
Hazardous Agents

- More effective & extensive data capture on location of hazardous substances e.g. asbestos and PCBs
- Develop programs for hazardous substance management
- More extensive personal monitoring for hazardous substances [e.g. noise, air]
- Use data with health surveillance, risk management and employee training programs.
What Happened?

• Implementation at local level
• Client identified some 50 specific actions
• Management and employee involvement
Conclusions

- Middle East poses challenges to the Hygienist
- Physical, managerial, climatic and skill level challenges
- Health risks and risk mitigation solutions similar to elsewhere in the world
- Careful & sympathetic implementation of industrial hygiene programs and HSMS can result in improved safety culture
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