**Indoor Air Quality**

**What is IAQ?**
- Indoor air quality (IAQ) refers to quality of air inside buildings served by common air-conditioning / mechanical ventilation system.
- Usually applied to non-industrial environments, e.g. office buildings.
- Good IAQ is desired for healthy indoor environment.
- Poor IAQ can cause variety of health problems such as ‘sick building syndrome’ (SBS), multi chemical sensitivity (MCS) or ‘building related illnesses’ (BRI).

**Defined as air in which are no known contaminant at harmful concentrations and with which a substantial majority (usually more than 80%) of the people exposed do not express dissatisfaction- ASHRAE**

**Sick Building Syndrome (SBS)**
- A phenomenon that occur when more than 20% of the occupants of a building complain about air quality or have definite symptoms (ILO Encyclopaedia)
- There is no obvious cause and where medical tests reveal no particular abnormalities.
- The symptoms appear when individuals are in the building but disappear when they leave the building.

**Symptoms of SBS**
- Eyes: Dryness, itching/stinging, tearing, redness.
- Upper Respiratory Tract (nose and throat): Dryness, itching/stinging, nasal congestion, nasal drip, sneezing, nose bleed, throat pain.
- Lungs: Chest tightness, coughing, wheezing, breathlessness.
- Skin: Redness, dryness, general and localized itchy.
- General: Headache, weakness, dizziness/fatigue, difficulty concentrating, irritability, anxiety, nausea, dizziness.

**Most Common Illnesses: Hypersensitivity**
- Hypersensitivity pneumonitis, humidifier fever, asthma, rhinitis, dermatitis.

**Infections**
- Legionnaire’s disease, Pontiac fever, tuberculosis, common cold, flu.
- Of unknown chemical or physical origin, including cancer.

**Building Related Illnesses**

**Poor Indoor Air Quality**
- Too hot, too cold
- Too dry, too much humidity
- Stiffness or lack of air circulation
- Objectionable odors
- Present organism and bacteria
- Present toxic chemical substance
- Present spore, molds and others

**Multiple Chemical Sensitivity (MCS)**
- A subset of the population may be particularly sensitive to low levels of a broad range of chemicals at levels common in today’s working environments. This condition is known as Multiple Chemical Sensitivity.
- Symptoms may be similar to those of SBS and often attributed to trace amount of chemicals (especially those with perceptible odor).
**IAQ HAZARD**

- IAQ is literally HVAC and HVAC is IAQ.

Poor Indoor air quality closely related to insufficient HVAC operation and maintenance system

Problems:
- Insufficient air circulation
- Outside contaminant pathway
- Temperature and humidity extremes

**TYPICAL HVAC SYSTEM**

**BIOLOGICALS AGENT**

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>SYMPTOMS</th>
<th>AGENT AND SOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legionnaire’s Disease</td>
<td>Pneumonia</td>
<td>Hot Water Service System, Cooling Towers</td>
</tr>
<tr>
<td>Humidifier Fever</td>
<td>Influenza-like</td>
<td>Endotoxin in humidifier fever</td>
</tr>
<tr>
<td>Hypersensitivity Pneumonitis</td>
<td>Acute Fever and Cough, Fibrosis of Lung</td>
<td>Fungi and Bacteria Growing in the HVAC System</td>
</tr>
<tr>
<td>Asthma</td>
<td>Constriction of the Airways</td>
<td>Fungi, Bacteria, House Dust Mites</td>
</tr>
<tr>
<td>Pulmonary Hemosiderosis</td>
<td>Bleeding in Lungs</td>
<td>Stachybotrys and Other Fungi</td>
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</tbody>
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**INDOOR AIR QUALITY**

**COURSE**

- Course Title: Indoor Air Quality Assessor
- Course Code: IAQ
- Course Duration: 5 Day(S) / 34 Hour(S)
- Course Category: Competency
- Course Level: Basic
- HRDF Scheme: SBL
- Course Fee: Rm 3,180.00 (Including GST)
- Examination Fee: Rm 742.00 (Including GST)

**OBJECTIVES**

At the end of the course, the participant will be able to:
- Conduct assessment and monitoring on Indoor air quality
- Register with DOSH as a competent person

**TARGET GROUPS**

This course is designed for those who intend to be competent person for conducting the assessment and monitoring on indoor air quality.

**ENTRY REQUIREMENT(S):**

At least Diploma in pure or applied science and has one (1) year experience in measurement of airborne chemical.

**NOTE:** Please refer to Code of Practice on Indoor Air Quality by the Department of Occupational Safety and Health, Ministry of Human Resources Malaysia 2005 if you would like to be a Register Indoor Air Quality Assessor.

**TOPICS**

- Introduction on IAQ
- Legislative Requirement
- COP and Related Standards
- Indoor Air Contaminants and Health Effects
- Building Sciences
- HVAC
- Control of IAQ problem
- Handling and Control of IAQ Complaints
- Sampling Strategy and Methodology
- Practical Session - Gathering Information
- Instrumentation and Hands On
- Practical Session - Assessment and Monitoring
- Troubleshooting on the system
- Report Writing and presentation

**INTRODUCTION ON IAQ**

- HVAC and IAQ
- IAQ and Energy Efficiency
- IAQ and Indoor Environment

**INTERNAL AIR QUALITY**

- IAQ and Health Effects
- IAQ and Building Sciences
- IAQ and HVAC
- IAQ and Control of IAQ problem

**OUTDOOR AIR QUALITY**

- IAQ and Outdoor Environment
- IAQ and Outdoor Air Quality
- IAQ and Outdoor Pollution

**INSTRUMENTATION AND HANDS ON**

- IAQ and Measurement Instruments
- IAQ and Sampling Strategy
- IAQ and Monitoring Techniques

**TRoubleshooting on the system**

- IAQ and Troubleshooting
- IAQ and System Maintenance
- IAQ and System Diagnosis

**Report Writing and presentation**

- IAQ and Report Writing
- IAQ and Presentation Skills
- IAQ and Communication Skills

**INFORMATION**

- National Institute of Occupational Safety & Health (NIOSH)
- Ministry of Human Resources
- Lot 1, Jalan 15/1, Section 15, 43650 Bandar Baru Bangi, Selangor Darul Ehsan, Malaysia
- Tel: +603 8769 2100 / +603 8911 3800 | Fax: +603 8926 2900
- www.niosh.com.my
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  Communication, Business and Information Dissemination Division (CBID)