

# 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).

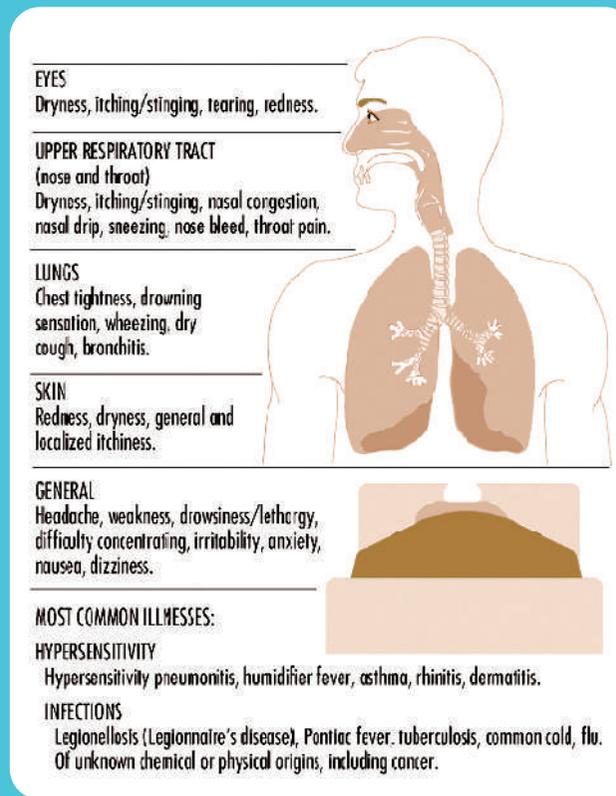
Defined as air in which are no known contaminant at harmful concentrations and with which a substantial majority (usually more than 80%) of the people exposed do not express dissatisfaction- ASHRAE

American Society For Heating, Refrigerating and Air - Conditioning Engineers

## 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



## BUILDING RELATED ILLNESSES

Less often, but often more serious, and are accompanied by very definite clinical signs & clear laboratory findings

- Examples of BRI
- hypersensitivity pneumonitis,
- humidifier fever,
- Legionnaire's disease, and
- Pontiac fever

## BRI

Most Common Illnesses

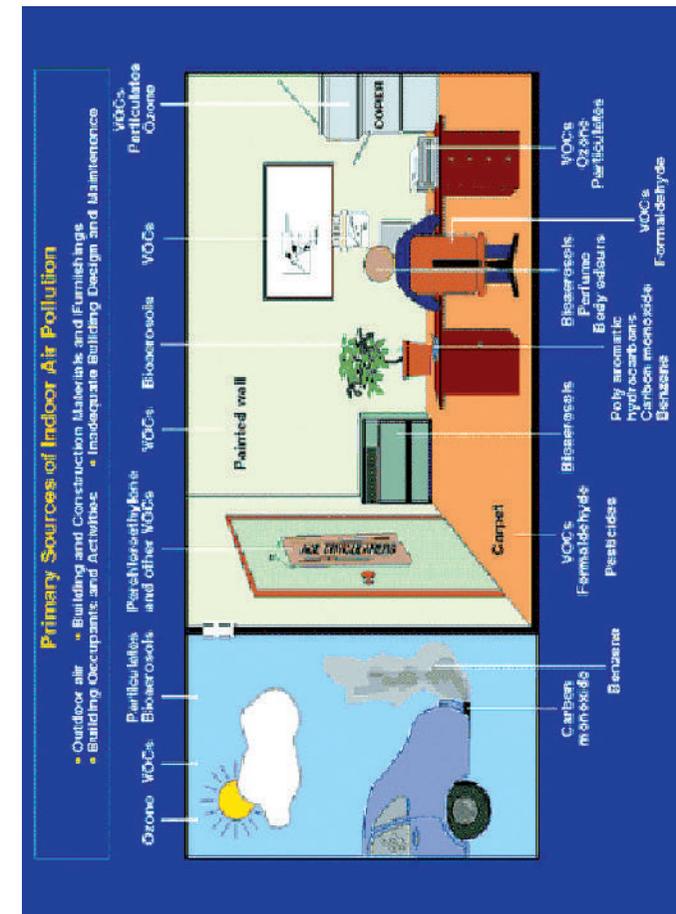
- Hypersensitivity
- Hypersensitivity pneumonitis,
- Humidifier fever,
- Asthma, Rhinitis,
- Dermatitis
- Infections
- Legionnaire's disease,
- Tuberculosis (TB),
- Common cold

## 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)

## POOR INDOOR AIR QUALITY

- Too hot, too cold
- Too dry, too much humidity
- Stuffiness or lack of air circulation
- Objectionable odors
- Present organism and bacteria
- Present toxic chemical substance
- Present spore, molds and others



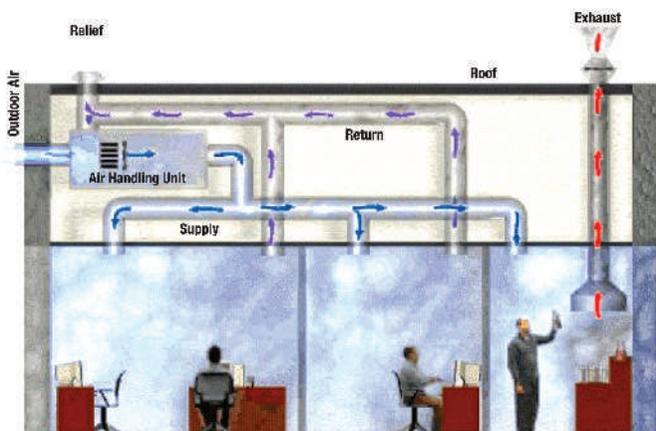
## IAQ HAZARD

- 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

DISEASE	SYMPTOMS	AGENT AND SOURCES
LEGIONNAIRE'S DISEASE	PNEUMONIA	HOT WATER SERVICE SYSTEM, COOLING TOWERS
HUMIDIER FEVER	INFLUENZA-LIKE	ENDOTOXIN IN HUMIDIER FEVER
HYPERSENSITIVITY PNEUMONITIS	ACUTE FEVER AND COUGH, FIBROSIS OF LUNG	FUNGI AND BACTERIA GROWING IN THE HVAC SYSTEM
ASTHMA	CONSTRICTION OF THE AIRWAYS	FUNGI, BACTERIA, HOUSE DUST MITES
PULMONARY HEMOSIDEROSIS	BLEEDING IN LUNGS	STACHYBOTRYS AND OTHER FUNGI

## 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:

- ✓ 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



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