

## Water Treatment Compulsory or Voluntary

Date		(\$)Fees	
10 March -14 March 2024	Kuala Lumpur	3500	<a href="#">Register Now</a>

### Why Choose this Training Course?

Water treatment in our everyday lives and in industry costs billions every year. This course will focus on the optimization of water treatment in different applications. Choosing the right water treatment technique or simply choosing no water treatment at all, requires good knowledge of the process and the ability to find the right balance between health & safety and financial considerations. Only under these circumstances can sustainability of any water treatment project be achieved. From a different perspective, water treatment is compulsory when regulatory compliance is required, whereas voluntary water treatment can result in process optimization with ultimate reduction in costs and improvement in our quality of life.

#### This training course will feature:

- Review of the basic definitions of water quality in the domestic and industrial sectors
- Detailed explanation of key parameters in water chemistry and their interpretation
- Introduction to water microbiology
- Description of water treatment techniques for different processes
- Reference to combination of water treatment techniques

### What are the Goals?

#### By the end of this course, participants will be able to:

- Assess their needs and water resources available
- Select appropriate water treatment techniques based on above data
- Develop relevant monitoring regimes to ensure effectiveness of treatment
- Apply selected water treatment techniques and optimize their application
- Be aware of technical restrictions in the application of water treatment techniques

### Who is this Training Course for?

#### This course is suitable to a wide range of water treatment professionals but will greatly benefit:

- Project managers
- Water treatment engineers/Plant engineers
- Maintenance personnel in the process industries

- Regulatory authorities (hygiene and health & safety inspectors)
- Facility management companies personnel
- Maintenance personnel in the hotel and catering industry

## **How will this Training Course be Presented?**

This course will utilise a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This includes trainer-guided discussions between participants involving their personal experience. In addition, case studies and group exercises will further assist towards comprehending the core principles of water treatment.

## **The Course Content**

### **Day One: Water Quality – Water Chemistry & Microbiology and Physical Properties**

- Definition of chemical & microbiological indicators
- Water chemistry - Basic parameters (pH, Electrical conductivity, Total hardness)
- Main chemistry constituents of water & differentiation between cations and anions, heavy metals, organics etc.
- Implications of water composition on proposed uses
- Water microbiology – Indicator organisms and concept of water-borne bacteria – Classification into pathogens & non-pathogenic bacteria
- Factors affecting bacterial growth in water systems – Biofilm formation and its significance
- Physical properties of water

### **Day Two: Introduction to Water Treatment**

- Why treat water/Do nothing approach/What does water treatment attain
- Effect of treatment techniques on chemical composition (Water softening, Ion exchange, Nanofiltration, Reverse Osmosis)
- Effect of treatment techniques on microbiological quality (Membrane filtration, chlorination/ bromination, Copper/Silver ions, Thermal treatment/disinfection, Chlorine dioxide, UV sterilization)
- Biochemical water treatment - Biological oxidation/Aeration, biofilters
- Physical treatment techniques (sedimentation, filtration etc.)
- Hot & Cold water systems – Basic considerations for corrosion and scale inhibition

### **Day Three: Wastewater Treatment**

- Domestic wastewater/sewage/industrial wastewater treatment
- Primary treatment - Settlement, flocculation/coagulation, filtration
- Secondary treatment - Biological oxidation
- Tertiary treatment - Disinfection
- Applications of treated wastewater & sewage sludge - Restrictions & Regulations
- Special types of wastewater (e.g. landfill leachates) requiring more complex treatment

### **Day Four: Boiler Water Treatment and Steam Generation**

- Basic feedwater requirements – Chemistry
- Need for pre-treatment or not
- Boiler efficiency – Implications of water quality

- Continuous monitoring of water quality & Process optimisation
- Typical treatment techniques applied in boiler feedwater
- Case studies/Examples of boiler failures

## **Day Five: Cooling Water Treatment and Evaporative Cooling Systems**

- Different forms of evaporative cooling systems
- Feedwater treatment regimes – Softening and/or blending
- Performance/Operation criteria for evaporative cooling systems
- Concentration factor – Calcium balance – Temperature difference operation regime
- Health & Safety considerations for evaporative cooling systems
- Legionellosis – Prevention & Control – Case studies



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