



WE118: Water Treatment: Safeguarding the Quality of Your Water Supplies

Training Description:

Water is Life! Millions of people have no access to safe drinking water. Water treatment is the only way to fight global water scarcity and safeguard the future, bearing in mind that the world population is expected to be in excess of 9 billion by 2050.

This intensive training 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 highlight:

- 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

Training Objectives:

By the end of the training, 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

Training Designed for:

This course is intended for Project managers, Water treatment engineers/Plant engineers, Maintenance personnel in the process industries, Regulatory authorities (hygiene and health & safety inspectors), Facility management companies personnel and Maintenance personnel in the hotel and catering industry.

Training Requirement:

“Hand’s on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client’s learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

- ❖ Introduction
- ❖ **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
- ❖ Course Conclusion
 - ❖ POST-ASSESSMENT and EVALUATION

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:

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