



WE042: Industrial Water Treatment System





Training Description:

This course is designed for those needing a detailed understanding of Industrial Water Treatment System. The course will cover the basics including incoming or raw water treatment, waste-water treatment, and disposal. It will also deal with handling and disposal of treatment residuals.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Obtain and apply an in-depth knowledge on industrial water treatment
- ✓ Gain a detailed knowledge of industrial treatment techniques
- ✓ Apply techniques on specific problems

Training Designed for:

This course is intended for Engineers, Technicians, Managers, Chemists, Biologists, and anyone else needing a detailed understanding of their company's water and wastewater systems. The attendees are encouraged to bring descriptive materials about their companies so that specific questions can be answered and examples provided. The teaching narrative challenges the students and provides real life problems and student participation.

Training Program:

DAY ONE:

- ❖ PRE-TEST
- ❖ Introduction
- ❖ Water Composition
- ❖ Properties of Pure Water
- ❖ Principal Ions & Measurement methods
- ❖ Water Quality
- ❖ Legal Basis for Control
- ❖ Sample Problems
- ❖ Effects of Pollution
- ❖ Oxygen Depletion & Oxygen Uptake in a Stream
- ❖ Biology of Polluted Water
- ❖ Flow Measurements & Open Channel Hydraulics
- ❖ Sampling and Statistical Considerations
- ❖ Aquatic Chemistry
- ❖ Important Chemicals in Water
- ❖ Carbonate Chemistry
- ❖ Metals in Water

DAY TWO:

- ❖ Nitrogen
- ❖ Sulfur
- ❖ Phosphorous
- ❖ Chromium Treatment





- ❖ Elements of Biological Treatment
- ❖ BOD
- ❖ COD and Solids
- ❖ Suspended Solids
- ❖ Biological Growth Concepts
- ❖ Activated Sludge Systems
- ❖ Biological Treatment of Difficult Wastes
- ❖ Modeling the Biological Process
- ❖ Activated sludge models and Modeling the Waste Treatment Works
- ❖ Precipitation and Sedimentation
- ❖ Sedimentation Theory
- ❖ Clarifiers & their design
- ❖ Lamellas and Specialty systems

DAY THREE:

- ❖ Filtration Theory and Practice
- ❖ Depth Filters, Skin Filters, Hydraulics of Deep Bed Filters & Washing
- ❖ Filter elements and design
- ❖ Disinfection
- ❖ General Principles
- ❖ Rates of Kill, & Parameters
- ❖ Chlorine
- ❖ Ozone, UV Light, Other compounds
- ❖ Nitrogen Removal
- ❖ Nitrogen Chemistry
- ❖ Ammonia Toxicity
- ❖ Nitrate and Nitrite
- ❖ Removal Techniques
- ❖ Nitrogen Removal Systems
- ❖ Mixed Media and Attached Growth

DAY FOUR:

- ❖ Phosphorous Removal
- ❖ General
- ❖ Biological Phosphorous Removal
- ❖ Chemical Phosphorous Removal
- ❖ Anaerobic Digestion
- ❖ Micro/Ultrafiltration
- ❖ Introduction to Membrane Separations and Micro Filtration
- ❖ Reverse Osmosis
- ❖ Membrane Theory
- ❖ Membrane Selection
- ❖ Materials of construction
- ❖ RO Designs
- ❖ Design Parameters
- ❖ Carbon Adsorption





- ❖ Chemical Kinetics
- ❖ Langumir Equation, Freundlich Equation
- ❖ Physical Coefficients
- ❖ Selectivity Coefficients
- ❖ Design Considerations
- ❖ Ion Exchange
- ❖ Resins
- ❖ Selectivity
- ❖ Coefficients of Selectivity
- ❖ Design Considerations

DAY FIVE:

- ❖ Dissolved Air Flotation & Techniques
- ❖ Design Basis for DAF, Operating Parameters
- ❖ Electroflotation and Electrocoagulation
- ❖ Coagulation, Flocculation
- ❖ Introduction
- ❖ Flocculation and Mixing
- ❖ Practice
- ❖ Modeling
- ❖ Waste Topics
- ❖ Oily Wastes, Blood Wastes; Milk Wastes
- ❖ Refinery Wastes, Metal Plating Wastes
- ❖ Starch Wastes
- ❖ Phenols and Chemical Plant Wastes
- ❖ Small Waste Flows
- ❖ Specialty Issues and Problems
- ❖ Emergency Response and Hazardous Wastes
- ❖ Course Conclusion
- ❖ POST-TEST and EVALUATION

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”.

Please note that the above topics can be amended as per client’s learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

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, Software & General Discussions
- Pre and Post Test





Training Certificate(s):

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

Training Fees:

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:

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|---------------|-------------------------------|
| 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 - 13:30 | Recess (Prayer Break & Lunch) |
| 13:30 - 15:00 | Last Session |

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

Aisha Relativo: aisha@cmc-me.com

Tel.: +971 2 665 3945 or +971 2 643 6653 | Mob.: +971 52 2954615

Training & Career Development Department

