



# WE089: Wastewater Treatment in Oil Fields & Petrochemical Plants





## Training Description:

This intensive course will provide an overview of wastewater treatment technology fundamentals and operating principles as applied in the petroleum refining and petrochemical industries. Topics to be covered include wastewater characterization, oil/water/solids separation, fundamentals of aerobic biological treatment, the activated sludge process and its modifications, secondary clarification, and residuals management (bio solids, oily sludge, and VOC emissions). Practical guidance will be presented on design and operating criteria for these unit operations in an industrial setting. Suggested WWTP troubleshooting/optimization checklists will be provided for each major unit operation as part of the course notes.

## Training Objectives:

Participants will be provided with theoretical and practical tools that will allow them to more knowledgeably operate, monitor, troubleshoot, and optimize WWTPs at refineries and petrochemical plants.

## Training Designed for:

This course is intended primarily for Unit Supervisors and early Career Engineers responsible for the operation of wastewater treatment systems in the petroleum refining and petrochemical industries.

## Training Program:

### FIVE DAYS:

- ❖ PRE-TEST
- ❖ **MODULE (01): OVERVIEW OF WASTEWATER TREATMENT**
  - Sources of waste water
  - Chemical composition
  - General plant overview
  - Link to process
  - Legislative drivers: IPPC, Water Framework Directive, EPER
- ❖ **MODULE (02): PRIMARY TREATMENT**
  - Oil separation, emulsion breaking, solids removal
  - API&CPI separators, dissolved air flotation
  - Chemical treatment to aid separation
- ❖ **MODULE (03): EQUIPMENT**
  - Biological treatment process overview
  - Design of treatment layout
  - Aeration options
  - Microbiology of waste water treatment
  - Filamentous bulking and foaming
  - Microscopy as a troubleshooting tool
  - Respirometry





- ❖ **MODULE (04): BIOLOGICAL NITROGEN REMOVAL**
  - Nitrification
  - Denitrification
  - Emerging Technologies
- ❖ **MODULE (05): OPERATIONAL PARAMETERS AND TROUBLESHOOTING**
  - Process control
  - Control of sludge age
  - Loading control Mass balancing
  - High ammonia in the effluent
  - Bulking/floating sludge remediation
- ❖ **MODULE (06): TERTIARY TREATMENT AND POLISHING**
  - Metal removal
  - Odour control
  - Effluent polishing
  - Recycling options
- ❖ **MODULE (07): SLUDGE DEWATERING AND DISPOSAL**
  - Sludge thickening
  - Oily sludge centrifugation
  - Belt and plate & frame presses
- ❖ 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 01<sup>st</sup> 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 - 13:30	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](mailto:aisha@cmc-me.com)

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

Training & Career Development Department

