# Produced Water Treatment and Disposal Training Course for Oil Production Leaders

11 – 15 April 2027
Doha

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## Programme Summary

Produced water treatment and disposal is the subject of this one-week training course for facilities, production and environment leaders in oil operations, ending in a produced water management plan for one facility. Oil often arrives with water that must be separated, cleaned and sent to reinjection, reuse or discharge. The programme shows how to read the water balance, judge treatment trains, set oil-in-water targets and choose a disposal route, using a facility the participant selects. Mars Training Centre UK delivers this programme on produced water treatment and disposal to mixed-organisation cohorts.

## The Business Case

Water volumes rise as fields mature, and each step in the water system adds chemical, power and maintenance cost. Weak separation carries oil into disposal wells and breaches discharge limits. Leaders who read the water balance and set clear targets keep the system compliant.

- Water Handling Cost: Falls as chemical dosing, filter replacement and pumping are matched to measured duty.
- Compliance Exposure: Falls as oil-in-water results are tracked against agreed limits and escalated early.
- Disposal and Reuse Value: Rises as reinjection, reuse and discharge routes are compared on risk and cost.

## Principles and Evidence Base

- API RP 421: The recommended practice on the design and operation of oil-water separators frames the separation reviews in Sessions 1 and 2.
- API RP 45: The recommended practice on analysis of oil-field waters guides the sampling and water quality checks in Session 3.
- Stokes Law: The settling relationship between droplet size and rise rate explains why some treatment stages succeed or fail in Session 2.
- ISO 14001: The environmental management system standard shapes the monitoring and review routines built in Sessions 4 and 5.

## Intended Participants

- Facilities managers who run separation, treatment and water handling units.
- Production leaders who keep wells and plant running as water volumes grow.
- Environment and compliance leads who report water quality and discharge results.
- Engineering leads who review treatment upgrades and disposal options.

Typical sectors include onshore oil fields, offshore platforms and gas processing plants.

## Learning Outcomes

1. Participants will be able to construct a facility water balance from production and injection data.
2. Participants will be able to evaluate oil-water separation and polishing stages against their duty.
3. Participants will be able to diagnose causes of high oil-in-water readings and poor injection water quality.
4. Participants will be able to compare reinjection, reuse and discharge routes on risk, cost and compliance.
5. Participants will be able to justify monitoring, chemical and maintenance plans for a treatment train.
6. Participants will be able to prioritise improvement actions in a produced water management plan.

## Programme Structure

## Day 1: Produced Water Sources and the Water Balance

Where does produced water come from, and how much must the facility handle?

- Field Water Cut Profile
- Facility Water Balance Sheet
- Water Composition Review
- Treatment Train Block Diagram
- API RP 421 Separator Duty Check

## Day 2: Separation and Treatment Technologies

Which treatment stage removes which oil droplets and solids, and why do some fail?

- Gravity Separator and Skim Tank Review
- Hydrocyclone Performance Curve
- Flotation Unit Operating Window
- Stokes Law Droplet Rise Estimate
- Media Filtration and Membrane Polishing Options

## Day 3: Water Quality, Sampling and Troubleshooting

How is water quality measured, and how are poor results traced to their cause?

- API RP 45 Sampling Plan
- Oil-in-Water Measurement Comparison
- Scale and Corrosion Risk Screen
- Chemical Dosing Audit Sheet
- Treatment Upset Cause Tree

## Day 4: Disposal, Reuse and Compliance Decisions

Which route suits this water: reinjection, reuse or discharge?

- Reinjection Water Quality Specification
- Disposal Well Risk Register
- Discharge Limit Compliance Matrix
- Reuse Option Screening Grid
- ISO 14001 Monitoring and Review Routine

## Day 5: Applying the Tools to One Facility

Do the balance, treatment, quality and disposal tools hold together for one facility?

- Applying the Session 1 Facility Water Balance Sheet
- Testing the Session 2 Operating Window
- Checking the Session 3 Treatment Upset Cause Tree
- Ranking Routes with the Session 4 Compliance Matrix
- Completing the Produced Water Management Plan

## Methodology

The programme uses a structured exercise method built on anonymised production tables, water analysis results, equipment duty sheets and incident logs. Participants work in mixed facilities and environment teams on one shared facility, and receive written facilitator feedback on each exercise.

- Suggested activity: Building a water balance from a field production table and finding the mismatch.
- Suggested activity: Tracing a rise in oil-in-water readings back through three treatment stages.
- Suggested activity: Scoring reinjection, reuse and discharge for a mature field case.

## Capstone Output

Each participant completes a produced water management plan for one facility. It holds a water balance, a treatment stage review, a sampling schedule, a route comparison and a ranked action list with owners. The plan is used at work to brief senior managers and scope upgrades.

## Frequently Asked Questions

### Is produced water treatment training suitable for leaders without a process engineering background?

Yes. Produced water treatment is taught through diagrams, cases and checklists, so the programme assumes operating, environmental or management experience but no design calculations.

## Which standards does produced water treatment training draw on?

Produced water treatment training draws on API RP 421 for separators, API RP 45 for water analysis and ISO 14001 for monitoring and review, alongside Stokes Law for droplet settling.

## How is the plan from produced water treatment training used at work?

You use the produced water management plan to brief senior managers, set priorities for treatment upgrades and compare disposal routes with operators.

## How does produced water treatment differ from crude oil treatment training?

Produced water treatment centres on cleaning and disposing of the water stream, while crude oil treatment training centres on removing water and salt from the oil stream.