



Wastewater Microbial Analysis and Quality Control Training Course

21 – 25 March 2027
Langkawi

Wastewater Microbial Analysis and Quality Control Training Course

Ref: 1368_201054 **Date:** 21 – 25 March 2027 **Location:** Langkawi **Fees:** 6000 Euro

Overview

Wastewater Microbial Analysis and Quality Control Training Course is a one-week intermediate programme for environmental laboratory teams who need reliable results from complex wastewater matrices. Participants plan representative sampling, protect sample integrity, choose suitable dilutions and culture methods, enumerate indicator organisms, manage analytical controls, validate results, interpret treatment trends, and issue defensible reports. Each participant leaves with a Wastewater Microbial Analysis Quality Plan. Agile Leaders Training Center presents wastewater microbial analysis as a controlled workflow from sampling point to reported decision.

Who Should Attend

- Environmental laboratory analysts responsible for wastewater microbiology
- Wastewater treatment laboratory personnel and microbiology technicians
- Quality staff responsible for analytical controls and records
- Supervisors reviewing microbial results and treatment trends
- Technical personnel coordinating sampling, transport, and laboratory receipt

The course assumes basic laboratory familiarity. It does not teach plant process design, clinical diagnosis, advanced molecular sequencing, or regulatory certification.

Departments and Industries

The course supports organisations that generate, treat, monitor, or independently test wastewater.

- Municipal wastewater treatment laboratories
- Industrial effluent and environmental monitoring functions
- Public health and environmental reference laboratories
- Contract testing and inspection laboratories
- Utilities, regulators, and research facilities overseeing microbial data

Learning Objectives

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



- Design a representative wastewater microbial sampling plan
- Protect wastewater sample integrity and traceability
- Select dilution, membrane filtration, and enumeration approaches
- Apply wastewater microbiology quality control checks
- Validate microbial counts and investigate invalid runs
- Build a Wastewater Microbial Analysis Quality Plan

Course Agenda

Day 1: Sampling Strategy and Sample Integrity

- Wastewater Microbial Monitoring Objective Map
- Sampling Point Selection Decision Tool
- Grab and Composite Sampling Comparison
- Sample Container, Preservation, and Holding-Time Checklist
- Chain-of-Custody and Laboratory Acceptance Record

Day 2: Method Selection and Sample Preparation

- Indicator Organism and Method Selection Matrix
- Wastewater Matrix Interference Assessment
- Serial Dilution Planning Worksheet
- Membrane Filtration Suitability Check
- Culture Media and Incubation Control Log

Day 3: Enumeration and Analytical Quality Control

- Colony Recognition and Countable-Range Guide
- Microbial Enumeration Calculation Sheet
- Method Blank and Sterility Control Register
- Positive and Negative Control Review
- Duplicate Analysis and Precision Check

Day 4: Result Validation and Interpretation

- Analytical Run Acceptance Decision Tree
- Atypical Colony Verification Record
- Detection Limit and Reporting Rule Sheet
- Invalid Result Investigation Form
- Wastewater Microbial Trend Chart



Day 5: Reporting and Quality Improvement

- Exercise: Build a Representative Sampling Plan
- Exercise: Select Dilutions and Filtration Conditions
- Exercise: Review Controls and Validate a Test Run
- Exercise: Interpret Treatment-Stage Microbial Trends
- Capstone Exercise: Wastewater Microbial Analysis Quality Plan

Practical Exercises

The course uses realistic municipal and industrial wastewater scenarios.

- Suggested activity: define monitoring objectives, sampling points, containers, preservation, transport, and acceptance criteria.
- Suggested activity: select dilutions and membrane filtration conditions for samples with different solids and organism loads.
- Suggested activity: calculate counts, review blanks and controls, and decide whether a microbial run is valid.
- Suggested activity: convert analytical findings into a concise report with limitations, trends, actions, and review points.

FAQs

What does wastewater microbial analysis measure?

Wastewater microbial analysis detects or enumerates selected microorganisms and indicator organisms to support treatment monitoring, environmental assessment, and surveillance objectives.

Why is representative wastewater sampling important?

Microbial concentrations can vary by location, time, flow, solids, and treatment stage, so the sampling design must match the monitoring decision.

When is membrane filtration suitable for wastewater?

Membrane filtration can support direct enumeration when the target method, sample load, interference, dilution, filter, medium, and incubation conditions are suitable.

What is included in wastewater microbiology quality control?

Wastewater microbiology quality control includes sample checks, media sterility, blanks, positive and negative controls, duplicates, equipment records, acceptance rules, and corrective action.



How should invalid microbial results be handled?

Laboratories should quarantine the result, identify the failed criterion, investigate possible causes, document corrective action, and repeat analysis only when method and sample conditions permit.

Conclusion

The course connects representative sampling, sample preparation, indicator-organism enumeration, wastewater microbiology quality control, result validation, trend interpretation, and defensible reporting. Participants return with a Wastewater Microbial Analysis Quality Plan that defines controls, records, responsibilities, acceptance rules, and improvement actions for their own laboratory workflow.