

# Wastewater Treatment Technician

## Unit WWTTC08 Sludge Storage, Treatment and Transportation

This training specification has been developed from the water process technician standard. The specification details the **minimum** training specification, as agreed by industry employers, to deliver the skills and knowledge required to carry out sludge storage, treatment and transportation operations in the water sector.

The specification details the critical requirement of the activity to carry out the work outlined and does not preclude employers from adding to the skills and knowledge detailed by the specification in their own training programmes.

All work must be carried out to approved procedures and practices and in accordance with statutory health, safety and environmental requirements.

### What does this specification look like?

Wastewater treatment technicians need to be able to:

- SST1 Control sludge storage, treatment (physical / chemical) and transportation operations on wastewater treatment works
- SST2 Optimise sludge storage, treatment (physical / chemical) and transportation operations on the basis of process performance, test results and analysis of trends
- SST3 Restore sludge storage, treatment (physical / chemical) and transportation operations to normal operation through identification of the root cause of faults arising with the processes

### What do I need to take this module?

Candidates to be **assessed** as competent in this area should have successfully completed the modules shown below or have evidence demonstrating an equivalent level of competence.

1. SHEA water or equivalent

## Performance Criteria

To achieve this unit, you will need to be able to:

### General Requirements

- P1. Identify the work area to be accessed using company documentation, systems and work instructions
- P2. Select, inspect and wear required PPE in line with company procedures
- P3. Carry out a site specific risk assessment of the work area, identifying the hazards and the control measures required
- P4. Maintain accurate and up to date records
- P5. Report information and data to the designated person

### Task Specific - Sludge Storage, Treatment and Transportation

- P6. Safely carry out operational and first line maintenance tasks relating to the process, pumps and tanks including removing blockages, fault finding and safe handling of pipework for tanker operations
- P7. Identify and locate the sludge storage, treatment and transportation processes and associated equipment on the works and on the information system e.g. SCADA / HMI
- P8. Identify all mechanical, electrical and instrumentation assets which monitor and control the sludge storage, treatment and transportation processes on the works and on SCADA / HMI
- P9. Confirm the correct configuration, operation and performance of the sludge storage, treatment and transportation processes and that it corresponds to the information system e.g. SCADA / HMI
- P10. Identify and maintain control parameters associated with the sludge storage, treatment and transportation processes and associated equipment
- P11. Optimise the sludge storage, treatment and transportation processes to efficiently achieve the required parameters
- P12. Respond to alarms correctly
- P13. Instigate corrective actions to restore the sludge storage, treatment and transportation processes to compliant conditions, and taking account of process lag time
- P14. Evaluate trend data from the information system e.g. SCADA / HMI, tests and /or process performance to identify:
  - a) Normal trends or cycles for the works, and
  - b) Atypical trends or changes and the underlying or root causes for the change
- P15. Complete sludge monitoring to specification, appropriate to their works
- P16. Identify on the works and on the information system all chemicals, storage, mixing and pumping plant equipment used on the sludge storage, treatment and transportation operations including safe working procedures

- P17. Monitor, check, record and report chemical dosing on their works
- P19. Deal with sludge spillages safely and correctly

## Knowledge and Understanding

To achieve this unit, you will need to know and understand:

### General Requirements

- K1. The principles of Health, Safety and Environmental legislation in relation to working with wastewater and sludge
- K2. The organisation's safety rules, policies and procedures relating to working with wastewater and sludge
- K3. The hazards associated with working with wastewater and sludge, and the correct way to respond to them
- K4. How to select, inspect and use PPE when working with wastewater and sludge
- K5. How to carry out a site specific risk assessment and identify workplace hazards
- K6. How to respond in the event of an emergency situation in the workplace environment
- K7. How to leave the work area in a safe and secure condition
- K8. The company recording and reporting process

### Task Specific - Sludge Storage, Treatment and Transportation

- K9. How to safely carry out operational and first line maintenance tasks taking into account any systems of work and operating procedures
- K10. The origin and composition of different types of sludge and liquors generated by different parts of the wastewater treatment process
- K11. Specific legislation relating to sludge treatment and disposal
- K12. The key principles and objectives for sludge storage, treatment and transportation operations on wastewater treatment works and describe the flow sheet, including any works returns
- K13. Key process parameters and variables associated with sludge storage, treatment system and transportation design
- K14. The main generic different types of sludge storage tanks, thickening processes (gravity and mechanical), pumps and associated ancillary equipment used and the design considerations associated with these
- K15. The correct design and operation of sludge storage, treatment and transportation processes, the common problems associated with them and the consequences of sub-optimal performance including odour issues
- K16. How to interrogate the information system e.g. SCADA / HMI to:
  - a) Identify and control Items of mechanical, electrical and instrumentation equipment

- b) Evaluate trend data differentiating normal operational cycles from fault conditions
- K17. How to confirm the configuration, operation and performance of the sludge storage and treatment processes and how it corresponds to the information system e.g. SCADA / HMI
- K18. Any chemicals used in the sludge storage, treatment and transportation processes, the reason and sequence of their use
- K19. The range of plant used to store, mix and pump chemicals and the methods of operation available (automatic or manual and calibration)
- K20. The range of instrumentation used to monitor and control the process and their calibration requirements
- K21. Alarms, action levels, authorisation levels and consequences associated with the process
- K22. Factors which can affect sludge quality and conditioning including operational, mechanical, chemical and weather related factors
- K23. How to identify the root cause of sludge storage and treatment problems
- K24. Understand the sequence of actions required to restore the processes to compliant conditions, taking account of all process variables and process lag times
- K25. The consequences of sub-optimal sludge storage, treatment and transportation operations on the subsequent process streams including the consequences of
  - a) Maintenance
  - b) Deliberate adjustments
  - c) Desludging operations
  - d) Taking a process unit out of service
- K26. How to complete sludge monitoring to specification and any limitations
- K27. How to identify the root cause of chemical dosing process problems and the sequence of actions required to restore the process to compliant conditions, taking account of all process variables and process lag times
- K28. The tools used in first line maintenance tasks, their uses and limitations
- K29. Data collection, recording, reporting and maintenance requirements

### How will it be assessed?

To achieve this unit, you will need to be able to provide evidence of the performance criteria and the knowledge and understanding requirements listed above.

Assessment types:

1. External assessment – an external accrediting body will assess against a national minimum standard
2. Internal assessment process – a company led on-going assessment against requirements
3. End-point assessment – see assessment plan for further details here (will be Energy & Utility Skills defined)

### What type of evidence will be expected?

To achieve this unit, you will need to be able to provide evidence of the performance criteria and the knowledge and understanding requirements listed above.

Evidence types:

1. On-going local assessments
  - a) Assessment plan, review, feedback, standard assessment sheets
2. Knowledge based learning
  - a) Classroom, exams, assignments, Q&A sessions, e-learning modules
3. Evidence portfolios
  - a) Learning logs, photos, observation sheets

### Assessment types and process

