

# Wastewater Treatment Technician

## Unit WWTTO06 UV Treatment

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 UV treatment 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:

- UV1 Control UV treatment operations on wastewater treatment works
- UV2 Optimise UV treatment operations on the basis of process performance, test results and analysis of trends
- UV3 Restore UV treatment processes 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
2. WWTTC01 – Wastewater compliance and performance monitoring

## 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 implementing the control measures required
- P4. Maintain accurate and up to date records
- P5. Report information and data to the designated person

### Task Specific – UV Treatment

- P6. Safely carry out operational and first line maintenance tasks relating to the process, fault finding and resolution.
- P7. Identify and locate the UV treatment 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 UV treatment processes on the works and on the information system e.g. SCADA / HMI
- P9. Confirm the correct configuration, operation and performance of the UV treatment processes and that it corresponds to the information system e.g. SCADA / HMI
- P10. Identify and maintain control parameters associated with the UV treatment processes and associated equipment
- P11. Optimise the UV treatment processes to efficiently achieve the required parameters
- P12. Respond to alarms correctly
- P13. Instigate corrective actions to restore the UV treatment processes to compliant conditions, 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, record and report associated on-site monitoring to specification, appropriate to the works and to ensure the works process parameters are maintained

## 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
- K2. The organisation's safety rules, policies and procedures relating to working with wastewater
- K3. The hazards associated with working with wastewater and the correct way to respond to them
- K4. How to select, inspect and use PPE when working with wastewater
- 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 – UV Treatment

- K9. How to safely carry out operational and first line maintenance tasks taking into account any systems of work and operating procedures
- K10. The current legislation and directives relating to UV treatment
- K11. The key principles and objectives of UV treatment operations on wastewater treatment works and describe the flow sheet, including any works returns
- K12. Key process parameters and variables associated with UV treatment
- K13. The types of UV treatment processes used including pumps and associated ancillary equipment and the design considerations associated with these including:
  - a) Lamps
  - b) Transmissivity probes and monitors
  - c) Intensity probes and monitors
  - d) Baffles
  - e) Ballast cards
  - f) Flow monitors
- K14. The correct design and optimal operation of UV treatment processes, the common problems associated with them and the consequences of sub-optimal performance
- K15. How to control UV treatment processes to ensure quality and quantity parameters are achieved
- 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 UV treatment process and how it corresponds to the information system e.g. SCADA / HMI
- K18. The range of instrumentation used to monitor and control the process and their calibration requirements
- K19. Alarms, action levels, authorisation levels and consequences associated with the process
- K20. How to calculate measured applied dose (MAD) and received dose and permit conditions relating to these parameters
- K21. Factors which can affect UV treatment processes including operational, mechanical, chemical and weather related factors
- K22. How to identify the root cause of UV treatment process problems
- K23. The sequence of actions required to restore the processes to compliant conditions, taking account of all process variables and process lag times
- K24. The consequences of sub-optimal UV treatment operations on the treatment works including the consequences of:
  - a) Maintenance
  - b) Deliberate adjustments
  - c) Taking a process unit out of service
- K25. How to complete UV treatment monitoring to specification and any limitations
- K26. The tools used in first line maintenance tasks, their uses and limitations
- K27. 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

