

41248 Operate and control non-chlorine disinfection processes for drinking water

Kaupae Level	4
Whiwhinga Credit	15
Whāinga Purpose	This skill standard is for people who work as drinking water treatment operators. People with this skill standard have the skills to operate and control non-chlorine disinfection processes to achieve required disinfection performance for drinking water to ensure water quality and compliance with regulatory requirements. This skill standard aligns with the New Zealand Certificate in Drinking Water Treatment Operations (Level 4) with optional strands in Pre-Treatment, Clarification, Coagulation and Flocculation, Non-Chlorine Disinfection, Fluoridation, and Filtration [Ref: 5672], and may also contribute to other water services industry credentials.

Hua o te ako me Paearu aromatawai | Learning outcomes and assessment criteria

Hua o te ako Learning outcomes	Paearu aromatawai Assessment criteria
1. Operate non-chlorine disinfection processes for drinking water treatment.	a. Outline non-chlorine disinfection processes, in terms of purpose, operating principles, and relevant regulations.
	b. Compare the suitability of non-chlorine disinfection processes and equipment configurations for treating drinking water.
	c. Operate non-chlorine disinfection processes to meet downstream treatment, and operational and compliance requirements.
2. Control non-chlorine disinfection processes for drinking water treatment.	a. Perform process tests and measures, and undertake operational system observations, to optimise non-chlorine disinfection processes to meet operational and compliance requirements.
	b. Interpret monitoring results to identify trends, variations and emerging process issues.
	c. Record monitoring results and operational adjustments, in accordance with operational requirements.

Hua o te ako Learning outcomes	Paearu aromatawai Assessment criteria
3. Maintain plant and equipment for non-chlorine disinfection processes.	a. Maintain plant and equipment to ensure optimal process functionality.
	b. Identify and respond to faults or failures in accordance with operational requirements.
	c. Record maintenance in accordance with operational requirements.

Pārongo aromatawai me te taumata paearu | Assessment information and grade criteria

Assessment specifications:

Ākonga must demonstrate that they can safely, consistently, and competently operate and control non-chlorine disinfection processes in accordance with operational requirements, and applicable legislative and regulatory requirements.

Assessment for this skill standard must be based on practical performance and supported by evidence that must take place in an operational drinking water treatment environment where non-chlorine disinfection processes are in use.

Assessment must cover the full range of non-chlorine disinfection processes relevant to this skill standard that are in use at the candidate's workplace.

Evidence must demonstrate consistent performance over time, not one-off tasks

Definitions

Candidate's workplace (for assessment purposes) means the operational treatment site(s) nominated by the employer as the workplace for assessment, that includes the full range of processes relevant to this assessment standard and to the candidate's expected duties. Where the employer operates multiple treatment sites, the nominated workplace must not be limited to a site with minimal relevant processes where this would prevent evidence being gathered for the full range of processes relevant to this assessment standard.

Operational requirements refer to the documented and embedded ways of working that govern how activities are planned, performed, monitored, and controlled in the workplace to ensure safe, consistent, and compliant operations.

Water services refer to industries responsible for working on or around water supplies, networks, plants, and systems.

Ngā momo whiwhinga | Grades available

Achieved.

Ihirangi waitohu | Indicative content**Non-chlorine disinfection principles and process treatment intent**

- Non-chlorine disinfection including ozone, ultraviolet (UV), or any other chemical or physical process used to treat drinking water.
- Purpose of non-chemical disinfection within a multi-barrier treatment approach.
- Mechanisms of inactivation (physical/chemical) and factors affecting pathogen susceptibility.
- Disinfection performance concepts e.g. log reduction and inactivation targets, validation versus verification.
- Relevant legislation, drinking water standards, and quality requirements applicable to non-chlorine disinfection.

Process configuration and critical control points

- Typical process components and where they sit in the treatment train including upstream and downstream dependencies.
- Critical control points and failure modes e.g. bypass, short-circuiting, inadequate dose, contact, and exposure, and equipment degradation.
- Dose and exposure concepts relevant to the process used e.g. Ct, UV dose and fluence, intensity, exposure time.
- Hydraulic and water quality influences e.g. flow rate, contact time, temperature, UV transmittance, turbidity and particles, organic matter.
- pH effects, where relevant to the process used.
- Ozone half life.
- Residuals and demand, where relevant to the process used.

Monitoring and verification

- Routine testing and sampling checks and performance confirmation.
- Interpreting monitoring results to identify trends, variation, and emerging process issues.

Corrective actions, reporting and escalation

- Operational adjustments in response to monitoring results.
- Consequences of failure and response actions, including escalation and reporting requirements.
- Completion of process records and reports to meet operational and compliance requirements.

Maintenance and supporting activities

- Common process faults and causes.
- Adjustment and verification of plant, instruments, and equipment.
- Routine and corrective maintenance.
- Completion of process records and reports to meet operational and compliance requirements.

Rauemi | Resources

Legislation, regulations and/or industry standards relevant to this skill standard include, but are not limited to:

- Drinking Water Safety Planning (DWSP) - <https://www.taumataarowai.govt.nz/drinking-water-suppliers-and-operators/for-drinking-water-suppliers/how-to-guidance/preparing-a-drinking-water-safety-plan>.
- Drinking Water Quality Assurance Rules - [Drinking Water Quality Assurance Rules](#).
- Drinking Water Standards for New Zealand - [Water Services \(Drinking Water Standards for New Zealand\) Regulations 2022 \(SL 2022/168\) – New Zealand Legislation](#).
- Water Services Act 2021 - [Water Services Act 2021, Public Act Contents – New Zealand Legislation](#).
- Hazardous Substances and New Organisms Act 1996 - [Hazardous Substances and New Organisms Act 1996 No 30 \(as at 05 April 2025\), Public Act Contents – New Zealand Legislation](#).

Pārongo Whakaū Kouna | Quality assurance information

Ngā rōpū whakatau-paerewa Standard Setting Body	Energy and Infrastructure Industry Skills Board
Whakaritenga Rārangi Paetae Aromatawai DASS classification	Engineering and Technology > Water Industry > Water Treatment
Ko te tohutoro ki ngā Whakaritenga i te Whakamanatanga me te Whakaōritenga CMR	0120

Hātepe Process	Putanga Version	Rā whakaputa Review Date	Rā whakamutunga mō te aromatawai Last date for assessment
Rēhitatanga Registration	1	28 May 2026	N/A
Kōrero whakakapinga Replacement information	N/A		
Rā arotake Planned review date	31 December 2032		

Please contact Energy and Infrastructure Industry Skills Board at qualifications@energyinfra-skills.nz if you wish to suggest changes to the content of this skill standard.