

Title	Demonstrate knowledge of and operate primary treatment systems for effluent water in an energy and chemical plant		
Level	4	Credits	8

Purpose	<p>This unit standard is intended for people working as boiler operators and energy and chemical process operators in an energy and chemical plant.</p> <p>People credited with this unit standard are able to demonstrate knowledge of: primary treatment equipment and processes for effluent water in the energy and chemical industry; and primary treatment of effluent water in an energy and chemical plant; operate primary treatment equipment and processes for effluent water; and interpret and act on effluent water quality data, in an energy and chemical plant.</p>
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Classification	Energy and Chemical Plant > Operation of Energy and Chemical Plant
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Available grade	Achieved
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Guidance Information

- Legislation relevant to this unit standard includes but is not limited to:
 - Health and Safety at Work Act 2015;
 - Hazardous Substances and New Organisms Act 1996;
 - Resource Management Act 1991;
 - and any subsequent amendments.
- Definitions

Energy and chemical plant may be in – petrochemical, agri-nutrient, power generation, dairy processing, meat processing, and wood fibre manufacturing, or other plants that operate with a combination of high temperatures, pressures, steam and/or chemicals in gas, liquid or solid form.

Organisational requirements – documented policies and procedures. These may include; equipment manufacturers' procedures; plant procedures; suppliers' instructions; site signage; codes of practice; company health and safety plans; on site briefings; and supervisor's instructions. This includes all regulatory and legislative obligations that apply to the plant.

Plant – the operational unit, equipment and/or workplace at which the person is working.
- For the purposes of assessment:
 - evidence for the practical components of this unit standard must be supplied from the workplace.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of primary treatment equipment and processes for effluent water in the energy and chemical industry.

Performance criteria

- 1.1 Describe screens used for primary treatment of effluent water in terms of design and operating concepts.
- Range screens include but are not limited to – fine screens, mechanically cleaned screens.
- 1.2 Describe aerated grit chambers used for primary treatment of effluent water design and operating concepts.
- Range aerated grit chambers include but are not limited to – mechanically cleaned, manually cleaned.
- 1.3 Describe gravity sedimentation used for primary treatment of effluent water in terms of design and operating concepts.
- Range gravity sedimentation includes but is not limited to – retention time, surface overflow rate, minimum depth, distribution, effluent weirs, solids removal, surface skimmers.
- 1.4 Describe chemical precipitation used for primary treatment of effluent water in terms of operating concepts.
- Range chemical precipitation includes but is not limited to – coagulation, gravity sedimentation, sludge removal, flocculation, mixing.
- 1.5 Identify and describe potential hazards of effluent water treatment chemicals in terms of use and handling requirements.
- Range chemicals may include but are not limited to – acids, alkalis, other plant specific chemicals; evidence of four chemicals is required.

Outcome 2

Demonstrate knowledge of primary treatment of effluent water in an energy and chemical plant.

Performance criteria

- 2.1 Describe the impact of effluent water leaving the plant outside plant specifications in terms of environmental and operation effects.

- 2.2 Describe the consequences of effluent water leaving the plant outside plant specifications in terms of the consent process.
- 2.3 Identify and describe deviations from normal operating parameters that can occur in the primary treatment plant in terms of the operational steps and techniques used to respond to each deviation.
- Range operating parameters may include but are not limited to – volumes, temperatures, flow rates, contaminants, time; evidence of two deviations from normal operating parameters is required.
- 2.4 Identify and describe effluent water quality parameters in terms of the effect on plant specific factors.
- Range evidence of two quality parameters is required.
- 2.5 Describe the purpose and operating concepts of equipment protection systems in terms of the process.
- Range equipment protection systems include but are not limited to – trip interlocks, over pressure, under pressure.

Outcome 3

Operate primary treatment equipment and processes for effluent water in an energy and chemical plant.

Performance criteria

- 3.1 Identify the location of primary treatment equipment in accordance with the site-specific identification coding system and organisational requirements.
- 3.2 Operate primary treatment equipment using safe work practices in accordance with organisational requirements.
- 3.3 Carry out checks and routine procedures on primary treatment equipment in accordance with organisational requirements.
- 3.4 Identify plant disruptions and describe corrective actions to be taken in accordance with organisational requirements.
- Range plant disruptions may include but are not limited to – process deviations, equipment malfunctions; evidence of three different types of plant disruption is required.
- 3.5 Complete all plant documentation related to the process and equipment operation in accordance with organisational requirements.

Outcome 4

Interpret and act on effluent water quality data in an energy and chemical plant.

Performance criteria

- 4.1 Take and analyse water samples in accordance with organisational requirements.
- 4.2 Document effluent water quality data in accordance with organisational requirements.
- 4.3 Interpret effluent water quality data to identify deviations from operating standards in accordance with organisational requirements.
- 4.4 Implement and record required actions in accordance with organisational requirements.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 November 2000	31 December 2014
Revision	2	24 July 2002	31 December 2014
Review	3	27 June 2005	31 December 2014
Rollover and Revision	4	25 July 2006	31 December 2014
Review	5	22 May 2009	31 December 2016
Review	6	24 October 2014	31 December 2022
Review	7	27 February 2020	31 December 2026
Review	8	24 April 2025	31 December 2026

Consent and Moderation Requirements (CMR) reference

0079

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.