

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

- 1 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.

- 2 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.

- 3 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.

Planned review date	31 December 2024
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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	N/A

Consent and Moderation Requirements (CMR) reference	0079
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact the Primary Industry Training Organisation standards@primaryito.ac.nz if you wish to suggest changes to the content of this unit standard.