

<b>Title</b>	<b>Describe and operate pre-treatment systems for effluent water in an energy and chemical plant</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>8</b>

<b>Purpose</b>	<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 describe: pre-treatment equipment and processes for effluent water in the energy and chemical industry; and effluent pre-treatment discharge requirements, water treatment chemicals, and protection systems in an energy and chemical plant. They are also able to: operate the effluent pre-treatment equipment and processes for biological effluent water treatment; and collect and interpret data for effluent water quality, in an energy and chemical plant.</p>
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<b>Classification</b>	Energy and Chemical Plant > Operation of Energy and Chemical Plant
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<b>Available grade</b>	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.

- 3 For the purposes of assessment:
- evidence for the practical components of this unit standard must be supplied from the workplace.

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## Outcomes and performance criteria

### Outcome 1

Describe pre-treatment equipment and processes for effluent water in the energy and chemical industry.

#### Performance criteria

- 1.1 Describe processes for the removal of toxic substances from effluent water in terms of the operating concepts.
- Range substances include but are not limited to – toxic organics, heavy metals.
- 1.2 Describe pre-treatment in terms of equalisation methods.
- Range equalisation methods include but are not limited to – mechanical mixing, aeration mixing, equalisation basins.
- 1.3 Describe pre-treatment in terms of neutralisation materials and methods.
- Range materials include but are not limited to – acids, bases;  
methods include but are not limited to – physical, chemical.
- 1.4 Describe the removal of grease and oil from effluent water in terms of the methods and equipment.
- Range methods include but are not limited to – gravity separation, chemical treatment;  
equipment includes but is not limited to – grease traps, American Petroleum Institute separator, skimmers.
- 1.5 Describe the reuse of treated effluent water in terms of the benefits and any potential problems.
- Range evidence of two benefits and one problem is required.

### Outcome 2

Describe effluent pre-treatment discharge requirements, water treatment chemicals, and protection systems in an energy and chemical plant.

**Performance criteria**

- 2.1 Describe plant effluent discharge requirements in terms of regulatory and legislative requirements.

Range requirements include but are not limited to – local, regional, national.

- 2.2 Describe water treatment chemicals in terms of the handling requirements, use and potential hazards of effluent.

Range chemicals include but are not limited to – acids, alkalis, other plant specific chemicals.

- 2.3 Describe protection systems used in an effluent water pre-treatment plant in terms of the operating concept and protection provided.

Range protection systems include but are not limited to – trip interlocks, over pressure control, under pressure control.

**Outcome 3**

Operate the effluent pre-treatment equipment and processes for biological effluent water treatment in an energy and chemical plant.

**Performance criteria**

- 3.1 Identify the location of the effluent pre-treatment equipment in accordance with the site-specific identification coding system and organisational requirements.

- 3.2 Operate the effluent pre-treatment equipment and processes using safe work practices in accordance with organisational requirements.

- 3.3 Carry out checks and routine procedures on the effluent pre-treatment equipment and processes in accordance with organisational requirements.

- 3.4 Identify plant disruptions and take corrective actions in accordance with organisational requirements.

Range 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**

Collect and interpret data for effluent water quality in an energy and chemical plant.

Range data includes but is not limited to – pH, site-specific contaminants.

**Performance criteria**

- 4.1 Take and analyse samples in accordance with organisational requirements.
- 4.2 Log results in accordance with organisational requirements.
- 4.3 Interpret results 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>.