Title	**Demonstrate knowledge of tanker loading and safety equipment, and load product in an energy and chemical plant**		
Level	**3**	**Credits**	**3**

Purpose	People credited with this unit standard are able to: describe the function of energy and chemical tanker loading and safety equipment; prepare for loading product to a tanker; load product to a tanker and identify and rectify any deviations from normal operating conditions; and shutdown, document, and communicate the product loading process.

Classification	Energy and Chemical Plant > Operation of Energy and Chemical Plant

Available grade	Achieved

Guidance Information

1 Legislation relevant to this unit standard includes but is not limited to:

- Health and Safety at Work Act 2015;
- Health and Safety at Work (Hazardous Substances) Regulations 2017 (HSWA);
- Resource Management Act 1991;
- Land Transport Rule: Dangerous Goods 2005 (Rule 45001/1), available at http://www.nzta.govt.nz;
  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.

Hazchem signage – the *Hazchem* emergency action code of numbers, letters and diamonds that give information to emergency services. Its use is required by the NZS 5433 PARTS 1 & 2:2012 *Transport of dangerous goods on land:* https://www.nzta.govt.nz/driver-licences/getting-a-licence/licences-by-vehicle-type/transporting-dangerous-or-hazardous-goods/dangerous-goods-carried-by-transport-operators.

3 For the purposes of assessment:
- evidence for the practical components of this unit standard must be supplied from the workplace.
- evidence for all outcomes must be presented in accordance with organisational requirements.

Outcomes and performance criteria

Outcome 1

Describe the function of energy and chemical tanker loading and safety equipment.

Performance criteria

1.1 Describe tanker loading equipment and associated requirements in terms of their functions.

Range loadout interface system, communication systems, control and shutdown systems, deadman alarm, additives, odorant, loading pumps, meters, printers, storage tanks, pipelines, hoses, loading arms, weigh bridges, manifolds, sampling points, drainage and bunding facilities, earthing and bonding facilities.

1.2 Describe safety equipment in terms of their function.

Range signage, barriers, fire extinguishers, hoses, fire monitors, fire hydrants, foam systems, high flow systems, fire alarms, fire detectors, gas detectors, deluge systems, personal protective equipment, tanker master power switch, safety showers, eyewashes, spill kits, traffic control systems.

Outcome 2

Prepare for loading product to a tanker in an energy and chemical plant.

Performance criteria

2.1 Identify potential hazards in terms of their controls.

2.2 Check availability of product to load, documentation and/or scheduling.

Range product available in storage, customer requirements.

2.3 Carry out preloading checks of tanker.

Range checks include but are not limited to – tanker contents, tank capacity, tanker condition, product compatibility, odorization requirement, tanker positioning and connection, product quality, product quantity, earthing checks, Hazchem signage, NZ Transport Agency certification for prime mover; Ministry of Transport certification for tanker vessel, driver's licence endorsement for dangerous goods, current site safety induction.

2.4 Carry out preloading checks of load-out facility.

Range checks include but are not limited to – equipment availability, valve alignment, leaks, simultaneous loading operations, inter-tank transfers, product quality, product quantity, tank contents and condition.

2.5 Confirm safety equipment relating to product requirements as available and utilised.

Range personal protective equipment, continuity tester, fixed fire protection, barriers, signage, emergency shutdown systems, gas detection systems, safety shower, eyewash facilities, spill kit, bunding, traffic control systems.

Outcome 3

Load product to a tanker and identify and rectify any deviations from normal operating conditions.

Performance criteria

3.1 Connect and start loading equipment.

Range valving, tank and/or compartment capacity, level protection, pumps, compressors, flow control.

3.2 Carry out injection.

Range additive, odorant.

3.3 Carry out product sampling.

Range representative sample, double valve process isolation.

3.4 Control and monitor loading rates to ensure the product is loaded safely and within the tanker's defined storage capacities.

3.5 Maintain communication with relevant parties to determine the progress of the loading operation, tank levels, and volumes.

Range operator, driver, control room.

3.6 Identify any deviations from normal operating conditions and take actions to rectify them.

Range vapour lock, pressure differential, operator error, spills, leaks, earth faults, slow loading flow, low odorization rate, excess flow, contamination, instrument malfunction, overfill, excessive venting.

Outcome 4

Shutdown, document, and communicate the product loading process.

Performance criteria

4.1 Verify the loading operation as complete and shut down equipment.

Range isolation, vent down and slow loading arms, disconnection, leak check, disconnect tanker earthing.

4.2 Complete documentation and communicate the results of the loading to appropriate personnel.

Range safety data sheets, dangerous goods declaration, bills of lading, load receipts, weighbridge documents, product certificate of quality, logbooks, computer records, control room log, operator log.

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	6 February 1997	31 December 2018
Revision	2	3 August 2000	31 December 2018
Review	3	24 January 2002	31 December 2018
Review	4	20 February 2009	31 December 2018
Rollover and Revision	5	20 April 2017	31 December 2022
Review	6	27 February 2020	31 December 2026
Review	7	27 March 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.