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## **Health and Safety at Work (Hazardous Substances— Management of Pre-2006 Stationary Container Systems up to 60,000 L) Safe Work Instrument 2017**

This safe work instrument is approved under section 227 of the Health and Safety at Work Act 2015 by the Minister for Workplace Relations and Safety being satisfied that appropriate consultation has been carried out under section 227(3) of that Act.

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## Safe Work Instrument

### 1 Title

This is the Health and Safety at Work (Hazardous Substances—Management of Pre-2006 Stationary Container Systems up to 60,000 L) Safe Work Instrument 2017.

### 2 Commencement

This safe work instrument comes into force on 1 December 2017.

### 3 Overview

- (1) For the purposes of regulation 11 and clause 42(1)(c) of Schedule 1 of the Regulations, this safe work instrument prescribes requirements related to—
  - (a) the design, construction, installation, operation, and secondary containment of existing stationary container systems:
  - (b) the testing and inspection of existing stationary container systems:
  - (c) the pipework and other fittings associated with existing stationary container systems:
  - (d) the marking of existing stationary container systems:
  - (e) the compliance certification of existing stationary container systems.
- (2) In this safe work instrument—
  - (a) clause 6 requires a PCBU with management or control of an existing stationary container system to comply with certain provisions of the Regulations and clarifies that a PCBU may comply with the provisions of Part 17 of the Regulations instead of this safe work instrument:
  - (b) clause 7 modifies the marking requirements in regulation 17.76 of the Regulations that apply to a stationary tank in an existing stationary container system:
  - (c) clauses 9, 12, 15, 18, and 22 modify the design and construction requirements in regulation 17.6 of the Regulations for different types of above ground stationary tanks in existing stationary container systems:
  - (d) clause 19 modifies the requirements in regulation 17.63 of the Regulations relating to the installation in a building of an above ground stationary tank containing a class 3.1D substance that is used in connection with an oil burning installation or a stationary internal combustion engine and is part of an existing stationary container system:
  - (e) clauses 10, 13, 16, 20, and 23 modify the secondary containment requirements in regulation 17.100 of the Regulations for different types of above ground stationary tanks in existing stationary container systems:
  - (f) clause 25 modifies the requirements in regulation 17.30 of the Regulations relating to the design and construction of a below ground stationary tank in an existing stationary container system:

- (g) clause 26 modifies the requirements in regulation 17.31 of the Regulations relating to the installation of a below ground stationary tank in an existing stationary container system:
- (h) clause 27 modifies the requirements in regulation 17.101 of the Regulations relating to the secondary containment of a below ground stationary tank in an existing stationary container system.

#### 4 Interpretation

- (1) In this safe work instrument, unless the context otherwise requires,—

**Act** means the Health and Safety at Work Act 2015

**approved** means approved or authorised by an approving authority under any of the following Acts:

Dangerous Goods Act 1974:

- (a) Toxic Substances Act 1979:
- (b) Hazardous Substances and New Organisms Act 1996, as that Act was in force immediately before 1 July 2006
- (c)

**approving authority**—

means—

- (a)
  - (i) the Chief Inspector of Dangerous Goods:
  - (ii) the Director-General of Health:
  - (iii) for the period starting on 2 July 2001 and ending on 30 June 2006, the Environmental Risk Management Authority; and
- (b) includes a person to whom the relevant power to approve or authorise had been delegated by an approving authority referred to in paragraph (a)

(a) **capacity** means—

the water capacity of a stationary tank, including the ullage space of the tank;  
and

in the case of a stationary tank fitted with an overflow outlet below the level of the water capacity of the tank, the water capacity measured at the invert level of the overflow outlet

(a)

(b) **compliance plan** means a compliance plan—

approved under clause 44(1) of Schedule 1 of the Regulations; or  
continued under clause 44(4) of Schedule 1 of the Regulations

**double skin tank** means a stationary tank with integral secondary containment

**EPA** means the Environmental Protection Authority

**high risk place** means a place at which there is a high risk that any leakage from a stationary tank at the place would cause a significant threat to health and safety of any person (including the contamination of a current or proposed source of reticulated potable water supply)

**integral secondary containment** in relation to a stationary tank, means the stationary tank—

is fabricated with a primary (inner) tank and a secondary (outer) tank; and  
has an interstitial space between the primary tank and the secondary tank that is capable of being monitored

(a) **movable stationary tank** means an above ground stationary tank that—

(b) is mounted on a structure, or to which a lifting device is attached, that enables the tank to be relocated (for example, a sledge tank or a skid tank); and

(a) is either—

(b) (i) a tank that contains or is intended to contain a class 3.1A, 3.1B, 3.1C or 3.1D flammable substance; or

(ii) a tank that—

(A) contains or is intended to contain a class 6 or 8 substance that is not subject to the tracking provisions in Part 19 of the Regulations; but

(B) does not contain and is not intended to contain a class of substance with a flammable classification; and

(c) is designed to be relocated periodically; and

(d) is not—

(i) a portable use facility (known as a **PUF tank**), other than a PUF tank that contains diesel fuel or Jet A1; or

(ii) a tank used for the transportation of hazardous substances (for example, a trailer tank or a transportable container)

**non-combustible** means material that will not readily combust (for example, steel, concrete, or brick)

**Regulations** means the Health and Safety at Work (Hazardous Substances) Regulations 2017

(a) **risk ranking programme** means a programme established by a PCBU who owns stationary tanks at multiple locations that involves—

(b) identifying at each location the conditions and factors that may have an adverse impact on the safe use of the tank or tanks at the location; and

determining—

(c) (i) the risk of the tank or tanks failing due to those conditions and factors; and

(ii) the appropriate corrective actions or procedures necessary to manage the risk; and

implementing the corrective actions or procedures, as required to manage the risk

**service tank** means a stationary tank that—

is part of a stationary container system that supplies fuel to a burner or stationary engine; and

is the immediate source, but not the main source, of fuel for that stationary container system

(a)

**standard** means—

(b)

a standard of an international organisation or a national organisation:

a standard prescribed in any country or jurisdiction, or by any group of countries

(a)

(b) **UPSS** means the Code of Practice for the Design, Installation and Operation of Underground Petroleum Storage Systems (1st Edition), published in 1992 by the Occupational Safety and Health Service of the Department of Labour, New Zealand

(2) Any term or expression that is defined in the Act or the Regulations and used, but not defined, in this safe work instrument has the same meaning as in the Act or the Regulations.

## 5 Application

(1) This safe work instrument applies to every existing stationary container system that—

(a) either—

(i) was being used to contain a hazardous liquid that is a class 3.1, 6, or 8 substance immediately before 1 July 2006 and has been or is being used to contain one of those substances for which it was designed on and after that date; or

(ii) immediately before 1 July 2006, was being constructed to contain a hazardous liquid that is a class 3.1, 6, or 8 substance in accordance with its design and, after that date, has been or is being used for the purpose for which it was designed; and

(b) either—

(i) has a stationary tank with a capacity of more than 250 L but not more than 60,000 L; or

(ii) has a service tank and has a stationary tank with a capacity of not more than 60,000 L that contains—

(A) a class 3.1A, 3.1B, 3.1C, or 3.1D substance or a substance approved by the EPA as a fuel that supplies an internal combustion engine; or

(B) a class 3.1 substance or a substance approved by the EPA as a fuel that supplies a burner; or

(iii) has one or more stationary tanks (but does not have a service tank), each with a capacity not more than 60,000 L but not less than—

(A) for a class 3.1D substance or a substance approved by the EPA as a fuel that supplies an internal combustion engine, 500 L; or

(B) for a class 3.1A, 3.1B, or 3.1C substance that supplies an internal combustion engine, 50 L; or

- (C) for a class 3.1 substance or a substance approved by the EPA as a fuel that supplies a burner, 60 L.
- (2) For the purposes of this safe work instrument, low flashpoint diesel (low flash domestic heating oil and alpine diesel) must be treated as a class 3.1D substance.
- (3) If a compliance plan has been approved in relation to an existing stationary container system, this safe work instrument does not apply to the matters covered by the plan.

## **Part 1**

### **General requirements**

#### **6 Requirement to comply with specified provisions of the Regulations**

- (1) In addition to the requirements of this safe work instrument, a PCBU with management or control of an existing stationary container system must comply with regulations 17.3, 17.4, 17.5, 17.7, 17.8, 17.9, 17.10, 17.11, 17.12, 17.18, 17.19, 17.20, 17.22, 17.23, 17.24, 17.25(4), 17.25(5), 17.26, 17.28, 17.29, 17.32, 17.33, 17.34, 17.35, 17.39, 17.47, 17.51, 17.52, 17.56, 17.57(2), 17.58, 17.59, 17.60, 17.61, 17.62, 17.63 (to the extent it applies to class 3.1C substances), 17.64, 17.65, 17.67, 17.70, 17.72, 17.73, 17.74, 17.75, 17.77, 17.78 (to the extent it applies to a stationary tank containing a class 6.1A or 6.1B substance), 17.79 (to the extent it applies to a stationary tank containing a class 6.1A or 6.1B substance), 17.80, 17.81, 17.82(2), 17.84, 17.85, 17.87, 17.90, and 17.102(2) of the Regulations.
- (2) A PCBU with management or control of an existing stationary container system to which this safe work instrument applies may—
  - (a) comply with Part 17 of the Regulations instead of this safe work instrument; or
  - (b) comply with a provision of Part 17 of the Regulations instead of the provision of this safe work instrument that modifies that provision of Part 17.

#### **7 Modification of marking requirements for stationary tanks**

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.76 of the Regulations applies to a stationary tank in an existing stationary container system to which this safe work instrument applies as if regulation 17.76(1) were replaced by the following:

- "(1) A PCBU with management or control of an existing stationary container system must ensure that every stationary tank in the system is marked—
  - (a) in accordance with the Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations 1999, if those regulations apply; or
  - (b) subject to subclause (1A), permanently and legibly with the following information—
    - (i) subject to subparagraph (ii), the specification to which the tank was designed (if any):

- (ii) if the tank is a below ground stationary tank and the specification to which the tank was designed cannot be determined, a statement to that effect:
  - (iii) the date on which the tank was manufactured or the estimated date of manufacture (for example, “earlier than 1970 (estimated)”):
  - (iv) the specific materials used in the construction of the tank or, if this is not known, the generic materials used in the construction of the tank (for example, steel or glass-reinforced plastic (GRP)):
  - (v) the name or mark of the manufacturer of the tank or, if this cannot be determined, a statement to that effect:
  - (vi) the address of the manufacturer of the tank or, if this cannot be determined, a statement to that effect:
  - (vii) if the tank is free-venting, a statement to that effect:
  - (viii) if the tank is not free-venting, the maximum and minimum design pressure of the tank:
  - (ix) the maximum and minimum design temperature of the tank or, if this cannot be determined, a statement to that effect:
  - (x) the maximum permitted density of any liquid that may be contained in the tank or, if this cannot be determined, the density of the liquid in the tank:
  - (xi) the maximum safe fill level of the tank:
  - (xii) an identifier that links the tank to the records and compliance certificate for the tank.
- (1A) In the case of a stationary tank that is a below ground stationary tank, the PCBU must—
- (a) comply with subclause (1); or
  - (b) ensure that the information required by subclause (1) is—
    - (i) included with the on-site documentation for the tank; or
    - (ii) included on a placard located in the tank manway; or
    - (iii) permanently attached to the nearest structure to the tank."

## **Part 2**

### **Single skinned above ground stationary tanks**

#### **8 Application of this Part**

This Part applies to an existing stationary container system that has a single skinned above ground stationary tank.



## **9 Design and construction**

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.6 of the Regulations applies as if regulation 17.6(1) to (3) were replaced by the following:

"(1) A PCBU with management or control of an existing stationary container system that has a single skinned above ground stationary tank must ensure that the tank and any associated equipment, pipework, and fittings meet—

- (a) the specifications in Schedule 1 of this safe work instrument; or
- (b) the standards to which they were designed and constructed.

(2) The PCBU must ensure that, if the single skinned above ground stationary tank is re-located, the tank is erected on a supporting frame that meets the seismic and wind loading requirements specified in—

- (a) NZS/API 650:1998; or
- (b) BS EN 14015:2004; or
- (c) AS/NZS 1170.2:2011 (R2016); or
- (d) NZS 1170.5:2004."

## **10 Secondary containment**

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.100 of the Regulations applies as if regulation 17.100(1) to (6) of the Regulations were replaced by the following:

"(1) A PCBU with management or control of an existing stationary container system that has a single skinned above ground stationary tank must ensure that—

- (a) the secondary containment system of the tank—
  - (i) is a compound that meets the requirements of Schedule 2 of this safe work instrument; and
  - (ii) subject to subclause (2), has a containment capacity of at least 100% of the capacity of the largest tank in the secondary containment system; and
- (b) regular visual inspections of the compound are carried out.

(2) Despite subclause (1)(a), the secondary containment system of the tank may—

- (a) in the case of a tank that contains or is intended to contain a class 3.1D substance, be an approved compound, in which case the compound must have a containment capacity of at least 50% of the capacity of the largest tank in the compound;
- (b) in the case of a tank in a remote location (for example, an airfield, an industrial yard, or a truck stop in a rural or low density location) that

contains or is intended to contain a class 3.1D substance, be a separate steel compound.

(3) The PCBU must ensure that, if major works are carried out on the compound, the containment capacity of the compound after the major works is at least 110% of the capacity of the largest stationary tank in the compound.

(4) Subclauses (1)(a)(ii), (2)(a), and (3) apply to a tank (**tank A**) that is so connected to 1 or more other tanks that leakage from it will cause another tank to empty, as if the capacity of tank A were the sum of the capacities of all the connected tanks.

(5) In this regulation,—

**major works**—

(a) includes extensive repairs or alterations to the structure of a compound (for example, the replacement of bund walls); and

(b) does not include a minor improvement to the compound

**minor improvement to the compound** includes the sealing of concrete joints or the filling of gaps in a compound

**visual inspection**, in relation to a stationary container system, means inspecting the elements of the stationary container system visually to—

(a) check the integrity of the system; and

(b) detect—

(i) any loss of containment by the system; and

(ii) any condition that could lead to a loss of containment by the system."

### **Part 3**

#### **Movable stationary tanks**

#### **11 Application of this Part**

This Part applies to an existing stationary container system that has a movable stationary tank (for example, a skid tank or a sledge tank).

#### **12 Design and construction**

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.6 of the Regulations applies as if regulation 17.6(1) to (3) were replaced by the following:

"(1) A PCBU with management or control of an existing stationary container system that has a movable stationary tank must ensure that the tank and any associated equipment, pipework, and fittings meet—

(a) the specifications in Schedule 1 of this safe work instrument; or

(b) the standards to which they were designed and constructed; and

(2) A PCBU with management or control of an existing stationary container system that has a movable stationary tank must ensure that the tank has a supporting frame that—

- (a) is constructed of non-combustible material; and
- (b) has sufficient strength to support the tank and its contents for any reasonably foreseeable circumstance in which it will be used."

### 13 Secondary containment

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.100 of the Regulations applies as if regulation 17.100(1) to (6) were replaced by the following:

"(1) A PCBU with management or control of an existing stationary container system that has a movable stationary tank must ensure that the secondary containment system of the tank—

- (a) subject to subclauses (3) and (4), has a containment capacity of at least 100% of the capacity of the largest tank in the secondary containment system; and
- (b) in the case of a tank that does not have integral secondary containment, is a compound that meets the requirements of Schedule 2 of this safe work instrument.

(2) If the secondary containment system is a compound and the movable stationary tank is relocated to a new compound, the PCBU must ensure that the secondary containment system has a containment capacity of at least 110% of the capacity of the largest tank in the secondary containment system.

(3) The PCBU must ensure that if major works are carried out on the secondary containment system, the containment capacity of the system after the major works is at least 110% of the capacity of the largest stationary tank in the secondary containment system, unless the tank has integral secondary containment.

(4) Subclauses (1)(a), (2), and (3) apply to a tank (**tank A**) that is so connected to 1 or more other tanks that leakage from it will cause another tank to empty, as if the capacity of tank A were the sum of the capacities of all the connected tanks.

(5) In this regulation,—

**major works—**

- (a) includes extensive repairs or alterations to the structure of a secondary containment system (for example, the replacement of bund walls); and
- (b) does not include a minor improvement to the system

**minor improvement to the system** includes the sealing of concrete joints or the filling of gaps in a secondary containment system."

## **Part 4**

### **Above ground stationary tanks with integral secondary containment**

#### **14 Application of this Part**

This Part applies to an existing stationary container system that has an above ground stationary tank with integral secondary containment (for example, a double skin tank or a containerised refuelling unit).

#### **15 Design and construction**

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.6 of the Regulations applies, as if regulation 17.6(1) to (3) were replaced by the following:

"(1) A PCBU with management or control of an existing stationary container system that has an above ground stationary tank with integral secondary containment must ensure that the tank and any associated equipment, pipework, and fittings meet—

(a) in the case of a tank that contains a class 3.1A or 3.1B substance, UL 2085, SwRI 95-03 or SwRI 930-01:

(b) in any other case,—

- (i) the specifications in Schedule 1 of this safe work instrument; or
- (ii) the standards to which the tank and any associated equipment, pipework, and fittings were designed and constructed."

#### **16 Secondary containment**

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.100 of the Regulations applies as if regulation 17.100(1) to (6) were replaced by the following:

"(1) A PCBU with management or control of an existing stationary container system that has an above ground stationary tank with integral secondary containment must ensure that the secondary tank has a containment capacity of at least 100% of the capacity of the primary tank.

(2) If the tank is at risk of an external impact that would, if it occurred, cause the tank to leak, and the tank is not constructed in accordance with a recognised specification that includes impact tests, the PCBU must ensure that—

(a) impact protection of sufficient strength and sufficient distance from the tank is provided to prevent damage from that external impact; or

(b) the tank occupies a compound that meets the requirements of Schedule 2 of this safe work instrument."

## Part 5

### Above ground stationary tanks for use in connection with oil burning installations or stationary internal combustion engines

#### 17 Application of this Part

This Part applies to an existing stationary container system that has an above ground stationary tank that—

- (a) contains or is intended to contain diesel fuel, low flashpoint diesel fuel, or fuel oil manufactured from waste lubricating oil; and
- (b) is used in connection with an oil burning installation or a stationary internal combustion engine.

#### 18 Design and construction

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.6 of the Regulations applies, as if regulation 17.6(1) to (3) were replaced by the following:

"(1) A PCBU with management or control of an existing stationary container system that has a specified above ground stationary tank must ensure that the tank and any associated equipment, pipework, and fittings meet—

- (a) the specifications in Schedule 1 of this safe work instrument; or
- (b) the standards to which they were designed and constructed.

(2) The PCBU must ensure that, if the specified above ground stationary tank is re-located, the tank is erected on a supporting frame that meets the seismic and wind loading requirements specified in—

- (a) NZS/API 650:1998; or
- (b) BS EN 14015:2004; or
- (c) AS/NZS 1170.2:2011 (R2016); or
- (d) NZS 1170.5:2004.

(3) In this regulation, **specified above ground stationary tank** means an above ground stationary tank that—

- (a) contains or is intended to contain diesel fuel, low flashpoint diesel fuel, or fuel oil manufactured from waste lubricating oil; and
- (b) is used in connection with an oil burning installation or a stationary internal combustion engine."

#### 19 Installation

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.63 of the Regulations applies, as if regulation 17.63(4) were replaced by the following:

"(4) A specified above ground stationary tank may be installed within or immediately adjoining a building, if—

- (a) the tank contains or is intended to contain a class 3.1D substance that is a hazardous liquid; and
- (b) the tank has a secondary containment system with a capacity greater than or equal to the capacity of the tank; and
- (c) for a tank that is installed within a building, the tank is installed on the lowest level of the building; and
- (d) the requirements of Schedule 3 of this safe work instrument are met.

(4A) In this regulation, **specified above ground stationary tank** means an above ground stationary tank that—

- (a) contains or is intended to contain diesel fuel, low flashpoint diesel fuel, or fuel oil manufactured from waste lubricating oil; and
- (b) is used in connection with an oil burning installation or a stationary internal combustion engine."

## 20 Secondary containment

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.100 of the Regulations applies as if regulation 17.100(1) to (6) were replaced by the following:

"(1) Subject to subclauses (3) and (4), a PCBU with management or control of an existing stationary container system that has a specified above ground stationary tank must ensure that the tank has a secondary containment system that—

- (a) is a compound that meets the requirements of Schedule 2 of this safe work instrument; and
- (b) has a containment capacity of at least 100% of the capacity of the largest tank in the secondary containment system.

(2) Despite subclause (1)(a), the secondary containment system may be a separate steel bund but only if the tank—

- (a) contains or is intended to contain a hazardous liquid that is a class 3.1D substance; and
- (b) is situated in remote location (for example, an airfield, an industrial yard, or a truck stop in a rural or low density location).

(3) Despite subclause (1), the secondary containment system may be an approved compound that has a containment capacity of at least 50% of the capacity of the largest tank in the compound, if the specified above ground stationary tank contains or is intended to contain a hazardous liquid that is a class 3.1D substance.

(4) The PCBU must ensure that, if major works are carried out on the compound, the containment capacity of the compound after the major works is at least 110% of the capacity of the largest stationary tank in the compound.

(5) Subclauses (1)(b), (3) and (4) apply to a tank (**tank A**) that is so connected to 1 or more other tanks that leakage from it will cause another tank

to empty, as if the capacity of tank A were the sum of the capacities of all the connected tanks.

(6) In this regulation,—

**major works—**

(a) includes extensive repairs or alterations to the structure of a secondary containment system (for example, the replacement of bund walls); and

(b) does not include a minor improvement to the system

**minor improvement to the system** includes the sealing of concrete joints or the filling of gaps in a secondary containment system

**specified above ground stationary tank** means an above ground stationary tank that—

(a) contains or is intended to contain diesel fuel, low flashpoint diesel fuel, or fuel oil manufactured from waste lubricating oil; and

(b) is used in connection with an oil burning installation or a stationary internal combustion engine."

## Part 6

### Above ground stationary tanks for class 6 and 8 substances

#### 21 Application of this Part

This Part applies to an existing stationary container system that has an above ground stationary tank that contains or is intended to contain a hazardous liquid that is a class 6 or 8 substance.

#### 22 Design and construction

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.6 of the Regulations applies, as if regulation 17.6(1) to (3) were replaced by the following:

"(1) Subject to subclause (2), a PCBU with management or control of an existing stationary container system that has a specified above ground stationary tank must ensure that—

(a) if the tank contains or is intended to contain a class 6 or 8 substance and does not contain and is not intended to contain a class of substance with a flammable classification, the tank and any associated equipment, pipework, and fittings meet the standards to which they were designed and constructed:

(b) if the class 6 or 8 substance in the tank has a specific gravity not greater than 1.0, the tank and any associated equipment, pipework, and fittings meet—

- (i) the specifications in Schedule 1 of this safe work instrument; or
- (ii) the standards to which they were designed and constructed.

(2) The PCBU must ensure that, if the above ground stationary tank is re-located, the tank is erected on a supporting frame that meets the seismic and wind loading requirements specified in—

- (a) NZS/API 650:1998; or
- (b) BS EN 14015:2004; or
- (c) AS/NZS 1170.2:2011 (R2016); or
- (d) NZS 1170.5:2004.

(3) Subclause (1) does not apply to a PCBU who obtained an exemption for the tank from the Director General of Health under regulation 17A(5) of the Toxic Substances Regulations 1983, if the tank complies with the terms of that exemption.

(3A) In this regulation, **specified above ground stationary tank** means an above ground stationary tank that contains or is intended to contain a hazardous liquid that is a class 6 or 8 substance."

## 23 Secondary containment

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.100 of the Regulations applies as if regulation 17.100(1) to (6) were replaced by the following:

"(1) A PCBU with management or control of an existing stationary container system that has a specified above ground stationary tank must ensure that—

(a) if tank is a single skin tank, there is a secondary containment system that—

- (i) takes into account the characteristics and adverse effects of the substance contained in the tank; and
- (ii) is a compound that meets the requirements of Schedule 2 of this safe work instrument; and
- (iii) has a containment capacity of at least 100% of the capacity of the largest tank in the secondary containment system:

(b) if the tank is a double skin tank,—

- (i) the secondary (outer) tank has a containment capacity that is at least 100% of the capacity of the primary tank; and
- (ii) one of the following requirements is met, if the tank is a vulnerable tank:
  - (A) impact protection of sufficient strength and sufficient distance from the tank is provided to prevent damage from that external impact:
  - (B) the tank occupies a compound that meets the requirements of Schedule 2 of this safe work instrument.

(2) If the tank occupies a compound, the PCBU must ensure that, if major works are carried out on the compound the containment capacity of the



compound after the major works is at least 110% of the capacity of the largest stationary tank in the compound unless the tank is a double skin tank that meets the requirements of subclause (1)(b).

(3) Subclauses (1)(a)(iii) and (2) apply to a tank (**tank A**) that is so connected to 1 or more other tanks that leakage from it will cause another tank to empty, as if the capacity of tank A were the sum of the capacities of all the connected tanks.

(4) In this regulation,—

**major works—**

(a) includes extensive repairs or alterations to the structure of a compound (for example, the replacement of bund walls); and

(b) does not include a minor improvement to the compound

**minor improvement to the compound** includes the sealing of concrete joints or the filling of gaps in a compound.

**specified above ground stationary tank** means an above ground stationary tank that contains or is intended to contain a hazardous liquid that is a class 6 or 8 substance.

**vulnerable tank** means a specified above ground stationary tank that—

(a) is a double skin tank; and

(b) is at risk of an external impact that would, if it occurred, cause the tank to leak; and

(c) is not constructed in accordance with a recognised specification that includes impact tests."

## **Part 7**

### **Below ground stationary tanks**

#### **24 Application of this Part**

This Part applies to an existing stationary container system that has a below ground stationary tank.

#### **25 Design and construction**

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.30 of the Regulations applies, as if regulation 17.30(1) were replaced by the following:

"(1) A PCBU with management or control of an existing stationary container system that has a below ground stationary tank must ensure that the below ground stationary tank and any associated equipment, pipework, and fittings meet—

(a) the relevant specifications in Schedule 4 of this safe work instrument;  
or

(b) the standards to which they were designed and constructed."

## **26 Installation**

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations, regulation 17.31 of the Regulations applies, as if regulation 17.31(1) were replaced by the following:

"(1) A PCBU with management or control of an existing stationary container system that has a below ground stationary tank must ensure the tank and any associated equipment, pipework, and fittings are installed in accordance with—

(a) sections 12.8, 12.9, 15, and 16 of UPSS; and

(b) the relevant specifications in Schedule 4 of this safe work instrument."

## **27 Secondary containment of below ground tanks at high risk places and other places**

For the purposes of regulation 11 and clause 42(2) of Schedule 1 of the Regulations,—

(a) regulation 17.101 of the Regulations applies as if regulation 17.101(1) were replaced by the following:

"(1) A PCBU with management or control of an existing stationary container system that has a below ground stationary tank installed at a high risk place must ensure that—

(a) the tank has a form of secondary containment system; and

(b) the space between the tank and the form of secondary containment is periodically monitored; and

(c) regular and systematic stock reconciliation is carried out in accordance with Schedule 5 of this safe work instrument.

(1A) Subject to subclause (1B), a PCBU with management or control of an existing stationary container system that has a below ground stationary tank that is not installed at a high risk place must ensure that—

(a) regular and systematic stock reconciliation is carried out in accordance with Schedule 5 of this safe work instrument; and

(b) either—

(i) the tank has a form of secondary containment and the space between the tank and the form of secondary containment is periodically monitored; or

(ii) the condition of the tank is monitored in one or more of the following ways:

(A) periodic checking of any observation wells and monitoring wells:

(B) a form of integrity testing (for example, a pressure or vacuum test):

(C) placing the tank on a risk ranking programme.

(1B) If a tank to which subclause (1A) applies is at a place where any leakage from the tank at that place would be unlikely to cause a significant threat to health and safety of any person, the PCBU may comply with either subclause (1A)(a) or subclause (1A)(b) or both."

(1C) If the PCBU has cause to query the integrity of buried pipe work, the PCBU must consider carrying out periodic integrity testing of the pipe work."

## **Schedule 1**

### **Specifications for above ground stationary tanks**

#### **1 General performance requirements**

- (1) An above ground stationary tank must—
- (a) be of sufficient strength to hold its contents safely; and
  - (b) except in the case of a movable stationary tank, be erected on—
    - (i) foundations that will prevent any dangerous subsidence; and
    - (ii) a supporting frame that—
      - (A) is of adequate strength to support the stationary tank; and
      - (B) if the stationary tank is re-located, meets seismic and wind loading requirements; and.
  - (c) in the case of a movable stationary tank, be erected on a supporting frame that is of adequate strength to support the stationary tank (including its contents) and to allow relocation to occur.
- (2) In this clause, **seismic and wind loading requirements** means the seismic and wind loading requirements specified in—
- (a) NZS/API 650:1998; or
  - (b) BS EN 14015:2004; or
  - (c) AS/NZS 1170.2:2011 (R2016); or
  - (d) NZS 1170.5:2004.

#### **2 Means of construction**

An above ground stationary tank must—

- (a) except as otherwise approved by an approving authority,—
  - (i) be constructed of metal; and
  - (ii) if mounted on supports, have supports that are constructed of non-combustible material; and
- (b) be constructed by means of welding or riveting from mild-steel plate that is of a minimum thickness set out in column 2 of table 1, according to the maximum capacity of the tank, as set out in column 1 of table 1.

Table 1

<b>Maximum capacity of tank (litres)</b>	<b>Minimum thickness of plate (mm)</b>
500	1.6
1,000	2
2,500	2.5
5,000	4
7,500	5
60,000	6

### **3 Other design and construction requirements**

- (1) An above ground stationary tank must—
  - (a) be designed and constructed so that it is not subject to any unsafe pressure or vacuum as a result of—
    - (i) filling the tank; or
    - (ii) withdrawing the contents of the tank; or
    - (iii) a temperature change to the contents of the tank; and
  - (b) have an effective means of determining the contents of the tank (for example, a dipstick or a gauge); and
  - (c) have a contents indicator that has the maximum safe fill level clearly marked on it; and
  - (d) be protected from exterior corrosion by painting or another approved means; and
  - (e) in the case of—
    - (i) a horizontal cylindrical tank, have—
      - (A) dished curved ends; or
      - (B) flat ends that are adequately stiffened, if necessary to ensure the integrity of the tank;
    - (ii) a rectangular tank, be stiffened by angle bars and suitable stays.
- (2) If a sight glass is installed to meet the requirement in subclause (1)(b), it must be capable of being isolated from the tank.
- (3) An above ground stationary tank that is used to contain a hazardous liquid that is a class 3.1A, 3.1B or 3.1C flammable substance must—
  - (a) have its separate parts (including any pipe immediately connected to the stationary tank) electrically bonded together throughout the whole stationary container system, which must be effectively earthed; and
  - (b) be equipped with a means of preventing the build-up of excessive internal pressures that would be caused by—
    - (i) filling of the tank; or
    - (ii) withdrawing the contents of the tank; or
    - (iii) a temperature change to the contents of the tank; or
    - (iv) the exposure of the tank to the effects of an external fire or an explosion within it; and
  - (c) have every vent or other opening in the tank screened with brass-wire gauze of 500 µm nominal aperture size, except—
    - (i) in the case of a vent or opening that closes immediately when the tank stops breathing; or
    - (ii) as otherwise permitted by an approving authority.

- (4) An above ground stationary tank that is used to contain a hazardous liquid that is a class 3.1D substance must have every vent screened in such a manner as will prevent entry of foreign matter into the tank.
- (5) In subclause (3)(b) **means** includes—
  - (a) a weak seam—
    - (i) in the top of the tank; or
    - (ii) in the case of a vertical cylindrical tank, at the joint between the top and the shell of the tank; or
  - (b) in the case of a horizontal cylindrical tank or a small vertical cylindrical tank, a suitably fitted manhole cover or other emergency relief device; or
  - (c) a pressure relief valve.

#### **4 Stop valves**

- (1) A pipe used to convey a hazardous liquid that is a class 3.1 flammable substance to or from an above ground stationary tank must, if the pipe terminates at or in a tank below the level of any hazardous substance contained in the tank, have a valve meeting the requirements in regulation 17.75(3) of the Regulations or an approved all-steel valve that—
  - (a) is installed as close to the tank as possible; and
  - (b) can be used to cut off the flow of the hazardous liquid.
- (2) An above ground stationary tank must have a stop valve fitted as close as practicable to every transfer point.
- (3) Every transfer point must be secured against unauthorised access.
- (4) If the pipe is not in use, the end of the pipe must be closed with an oil tight cap.
- (5) In subclauses (2) and (3), **transfer point** means the point at which a pipe terminates and is connected to a tank to facilitate the transfer of a hazardous liquid conveyed by the pipe to tank.

## **Schedule 2 Compounds**

### **1 Requirements relating to compounds used for secondary containment**

- (1) The compound of a stationary tank—
  - (a) must be chemically resistant to the substance contained in the tank so that if leakage occurs the contents of the tank can be recovered, subject to unavoidable wastage; and
  - (b) if the tank contains a class 3.1A, 3.1B or 3.1C substance, may not be constructed of steel.
- (2) The interior of any compound may be occupied only by—
  - (a) one or more stationary tanks; and
  - (b) associated settling and measuring containers, piping, valves and other equipment necessary in relation to the use of the tanks.
- (3) If earth is used to form a compound, the earth must—
  - (a) be selected and compacted so as to form a layer that is impermeable to the substance being contained; and
  - (b) not be loose or sandy loam.
- (4) If earth is used to form a compound wall, the wall must have—
  - (a) either—
    - (i) a top width of at least 300 mm; or
    - (ii) if the wall height is more than 750 mm, a top width of at least 600 mm; and
  - (b) a slope of not greater than 45°.

### **2 Capacity of compound used for secondary containment**

The equipment referred to in clause 1(2)(b) must be taken into account in determining the capacity of the secondary containment system.

### **3 Draining water from a compound**

- (1) A compound must be constructed in such a manner that enables the compound to be periodically drained to minimise, so far as is reasonably practicable, the accumulation of water (for example, by using an oil stop valve, pumping, or a pipe carried through the wall of the compound at the lowest practicable point in the wall).
- (2) If a pipe is used to minimise the accumulation of water the pipe must be fitted with—
  - (a) a screw-in bung; or
  - (b) a lockable valve that is kept in the closed position at all times, except when draining off accumulated water.

- (3) Every drainage line fitted to a compound must, so far as is reasonably practicable, have a flammable liquid trap installed within the compound.
- (4) Subclause (3) does not apply to earthen compounds formed around movable stationary tanks.



### **Schedule 3**

## **Oil storage tanks within or adjoining a building**

### **1 Installation requirements**

- (1) Subject to subclause (2), a tank that contains or is intended to contain a hazardous liquid that is a class 3.1D substance (an oil storage tank) and that is within or immediately adjoining a building must—
  - (a) be installed within a chamber of fire resistant construction complying with the requirements of this Schedule; and
  - (b) have its walls bonded to the floor of the chamber; and
  - (c) for a tank that is installed within a building, so far as is reasonably practicable be installed on the lowest level of the building.
- (2) If a tank is installed within or immediately adjoining a building that is situated in a remote location (for example, a remote communication site), the tank does not have to be installed in accordance with subclause (1)(a) if—
  - (a) the tank—
    - (i) has a capacity of less than 5000 L; and
    - (ii) is used to supply a stand-by generator; and
  - (b) the building—
    - (i) is attended at irregular intervals by maintenance or service personnel only; and
    - (ii) is constructed of non-combustible materials.

### **2 Chamber openings**

- (1) If the tank is located within a chamber that is provided with an access opening, the opening must be—
  - (a) as small as reasonably practicable; and
  - (b) kept closed at all times, except when it is necessary to enter the chamber.
- (2) Any opening in a chamber must—
  - (a) be located with its lowest point above the floor of the chamber, so that the lower portion of the chamber will form a compound that is able to retain the total volume of oil that may be contained in all tanks in the chamber; and
  - (b) have a fire resistance of not less than half the fire resistance of the material specified in clause 5 for the walls, roof and floor of the chamber.

### **3 Size of chamber**

- (1) Subject to subclauses (2) and (3), the size of a chamber must provide not less than 400 mm space between the tank and—

- (a) the roof; and
  - (b) the sides of the chamber.
- (2) If arrangements are made for maintenance servicing of the tank that do not involve entering the chamber, the space specified in subclause (1) may be reduced to not less than 10 mm.
- (3) Despite subclauses (1) and (2), if the chamber is filled with sand, the space specified in subclause (1) must be increased to not less than 600 mm.

#### **4 Ventilation of chamber**

- (1) A chamber must be vented—
- (a) to the open air by means of one or more vents that—
    - (i) has a cross sectional area of not less than 400 cm<sup>2</sup>; and
    - (ii) is constructed of non-combustible materials; or
  - (b) in accordance with an alternative arrangement that—
    - (i) is made to ventilate the chamber prior to any person entering it; and
    - (ii) is approved by an approving authority.
- (2) Subclause (1) does not apply to a chamber that is filled with sand.

#### **5 Construction of chamber**

The walls, roof, and floor of the chamber must be—

- (a) constructed of reinforced concrete or alternative material providing an equivalent level of fire resistance; and
- (b) have a minimum thickness set out in column 2 of table 2, according to the maximum capacity of the tank, as set out in column 1 of table 2.

Table 2

<b>Total capacity of tank or tanks (litres)</b>	<b>Thickness of reinforced concrete (mm)</b>
Not exceeding 1200	100
Not exceeding 4000	125
Exceeding 4000	150

## **Schedule 4**

### **Specifications for below ground stationary tanks**

#### **1 Construction and installation**

- (1) A below ground stationary tank must—
  - (a) be constructed of materials that are compatible with the substance being contained (for example a tank with a welded construction of mild steel plate or fibreglass); and
  - (b) be effectively protected from corrosion, taking into account the nature and ground condition of the location where the tank is to be installed, by one or more of the following:
    - (i) a protective coating or wrapping:
    - (ii) cathodic protection:
    - (iii) corrosion resistant materials of construction:
    - (iv) a method that achieves a level of protection that is at least equivalent to a method described in subparagraphs (i), (ii), or (iii).
- (2) All piping and other equipment connected to the below ground stationary tank must be supported so as to prevent damage to the piping and the connections.
- (3) A below ground stationary tank and any permanently fixed equipment, structures and tanks must be effectively bonded to the main body of earth so that the resistance to earth does not exceed 10  $\Omega$ .
- (4) If there is a risk of the below ground stationary tank moving due to the presence of high ground water, the stationary tank must be secured against the movement by—
  - (a) reinforced concrete bearers or anchors—
    - (i) fitted laterally across the top of the tank; and
    - (ii) situated beneath the top cover or concrete slab cover or both; or
  - (b) concrete deadman anchors that are—
    - (i) fitted longitudinally parallel to the tank; and
    - (ii) situated on the pit floor; and
    - (iii) securely fastened by anchoring strops fitted laterally at intervals across the top surface of the tank.
- (5) If the below ground stationary tank is installed near the foundation of a building or other structure, there must be a means of preventing the load from the building or structure from being transmitted to the tank.

#### **2 Location and cover**

- (1) A below ground stationary tank that is beneath an open yard in a position where the tank is not subject to frequent or heavy traffic loadings and is not less than 3 m from any building must be covered by not less than—
  - (a) in the case of a tank that is situated below the ground, 400 mm of earth:
  - (b) in the case of a tank over which ground has been raised to provide cover for the tank, or that is covered by material other than ground, 300 mm of earth and concrete, of which not less than 100 mm must be concrete laid in accordance with subclause (4).
- (2) A below ground stationary tank that is beneath a building or an open yard within 3 m of a building and is not subject to any traffic loading must be covered by not less than—
  - (a) in the case of a tank that is situated below the ground, 600 mm of earth:
  - (b) in the case of a tank over which ground has been raised to provide cover for the tank or is covered by material other than ground, 300 mm of earth and concrete, of which not less than 100 mm must be concrete laid in accordance with subclause (4).
- (3) A below ground stationary tank that is subject to frequent or heavy traffic loading must be covered by not less than—
  - (a) in the case of a tank that is situated below the ground, 900 mm of earth:
  - (b) in the case of a tank over which ground has been raised to provide cover for the tank or is covered by material other than ground—
    - (i) 500 mm of earth and 150 mm of reinforced concrete laid in accordance with subclause (4); or
    - (ii) 350 mm of earth and 150 mm of reinforced concrete laid in accordance with subclause (4) and that is supported by the walls of a concrete chamber.
- (4) If concrete is used to provide cover for a below ground stationary tank, the concrete must extend to—
  - (a) at least the horizontal outline of the tank; or
  - (b) if the tank has been placed in a concrete chamber, to the top of the walls of the chamber.
- (5) Subject to subclause (6), a below ground stationary tank used to contain a hazardous liquid that is a class 3.1A, 3.1B, or 3.1C substance must not be situated beneath a building.
- (6) If it is not reasonably practicable to comply with subclause (5),—
  - (a) the tank must comply with every special condition specified at the time of its installation by the approving authority; and
  - (b) unless subclause (4) applies, the tank must be installed below the lowest floor of the building.
- (7) If the top of a below ground stationary tank used to contain a hazardous liquid that is a class 3.1A, 3.1B or 3.1C flammable substance is above the level of the floor or

basement of any building and within 2 m horizontally of any portion of the building above that floor or basement, the tank must be installed—

- (a) in a concrete pit; or
- (b) behind a barrier of concrete or other equivalent material that is impervious to the hazardous substance.

### **3 Means of determining capacity of below ground stationary tank**

A means of determining the capacity of the below ground stationary tank and the quantity of hazardous substance in the tank must be—

- (a) either—
  - (i) fitted to the tank; or
  - (ii) kept readily available; and
- (b) calibrated to the individual tank to which it applies.

### **4 Piping attached to below ground stationary tank**

- (1) A below ground stationary tank used to contain a hazardous liquid that is a class 3.1A, 3.1B, or 3.1C flammable substance must be situated below the level of any piping attached to the tank, except if—
  - (a) the tank is reserved for storage for bulk distribution; or
  - (b) an anti-siphon device is installed in the pipe as near as possible to the stationary tank.
- (2) All piping attached to a tank must enter through the top of the tank.

### **5 Ventilating pipes**

- (1) A below ground stationary tank must be fitted with a ventilating pipe of—
  - (a) not less than half the diameter of the filling pipe or 25 mm, whichever is the greater; and
  - (b) a size that is adequate to prevent unsafe pressures from developing in the tank.
- (2) The ventilating pipe for a below ground stationary tank used to contain a hazardous liquid that is a class 3.1A, 3.1B, or 3.1C substance must—
  - (a) terminate in the open air in such a position that flammable vapours will not accumulate or travel to an unsafe position; and
  - (b) subject to subclause (3), not terminate less than—
    - (i) 4 m above the ground; and
    - (ii) 1 m from any opening into a building; and
  - (c) have an outlet that—
    - (i) prevents the entry of water; and
    - (ii) is fitted with brass wire gauze of 500 µm nominal aperture.

- (3) The ventilating pipe may terminate at a point that does not comply with subclause (2)(b), if—
  - (a) a vapour scrubber is used; and
  - (b) a risk assessment concludes that the ventilating pipe may terminate at that point without any significant increased risk to health and safety.
- (4) The ventilating pipe for a below ground stationary tank used to contain a hazardous liquid that is a class 3.1D substance must terminate at such a height and in such a location as to prevent the entry of foreign matter into the pipe.

## **6 Fill pipes and dip pipes**

- (1) The fill pipe and the dip pipe of the below ground stationary tank must—
  - (a) be sealed with vapour tight caps; and
  - (b) extend into the tank to a depth below the depth of the draw off pipe.
- (2) Any openings in the wall of the fill pipe and the dip pipe must be covered with brass wire gauze of 500 µm nominal aperture size.
- (3) If the below ground stationary tank may be damaged by traffic or other means, the sump where the fill pipe and the dip pipe terminate at ground level must be covered with metal covers or other suitable alternative covers.
- (4) The fill pipe must be tagged with a durable symbol identifying by name the hazardous substance contained in the tank.
- (5) If there is more than one below ground stationary tank, each fill pipe must be identified to readily ascertain the tank to which the fill pipe is connected.

## **Schedule 5**

### **Stock reconciliation system**

#### **1 Requirement to undertake stock reconciliation**

- (1) Subject to clause 2, in order to ensure that a substance contained in a stationary tank is used for its intended purpose and is not leaking from the tank, regular and systematic stock reconciliation must be carried out of the amount of a substance in the tank—
  - (a) using stationary tank dip-stick readings or a suitable alternative method; and
  - (b) at the following intervals—
    - (i) if the tank is in constant daily use, daily or at the commencement of every tank operator's shift; or
    - (ii) if the tank is not in constant daily use, weekly; or
    - (iii) if the tank is only in use seasonally, monthly during the seasons of inactivity; or
    - (iv) if the tank is used in connection with internal combustion engines, monthly or before and after each running of the engine, whichever is the more frequent.
- (2) Despite subclause (1)(b),—
  - (a) if the tank has a capacity that is less than 5000 L, the stock reconciliation intervals referred to in that subclause may be extended by a factor of two;
  - (b) if the stock reconciliation intervals referred to in that subclause cannot be strictly applied due to practical limitations associated with the site or usage of the tank, a process that ensures that the substance contained in the tank is used for its intended purpose and is not leaking from the tank may be used.
- (3) The stock reconciliation must be undertaken in accordance with Appendix A of Supplement No. 1 of UPSS.
- (4) A record of every stock reconciliation (including every reading obtained in accordance with subclause (1)(a)) must be kept for a period of at least 3 years.

#### **2 Stationary tanks in continuous use**

- (1) This clause applies to a stationary tank that—
  - (a) is used in connection with the following—
    - (i) an oil burning installation; or
    - (ii) a stationary internal combustion engine (for example, a generator or compressor); and
  - (b) does not have any form of metering.
- (2) Subject to subclause (3), the tank must be installed with a flow monitoring device (for example, a meter) between the tank and the appliance to enable regular stock monitoring.

- (3) If it is not reasonably practicable to comply with subclause (2), periodic stock reconciliation may be carried out by—
- (i) using dip-stick readings or a suitable alternative method (for example, contents gauges); and
  - (ii) calculating consumption and recording the results over 24-hour or weekly periods; and
- (b) if the tank is at a location that is not a farm greater than 4 hectares in size, adopting one or more of the following measures:
- (i) undertaking an integrity test (for example, a pressure or vacuum test) at least once every 10 years:
  - (ii) installing sufficient observation or monitoring wells so that a leak will be detected by observing these wells:
  - (iii) for a tank owned by a PCBU that has a large number of such tanks and is operating a risk ranking programme, placing the tank on that risk ranking program:
  - (iv) for a tank that is used for part of the year only and is full throughout a period of non-activity, undertaking monthly stock reconciliations during that period.

### **3 Calibration of meters**

If a stock reconciliation is undertaken in reliance on a meter, the accuracy of the meter must be verified by periodic calibration undertaken—

- (a) for meters in constant daily usage, at least annually;
- (b) for meters that are not in constant daily use, at least 3 yearly.



Made at Wellington on 13 November 2017.

Hon Iain Lees-Galloway  
Minister for Workplace Relations and Safety

Date of notification in *Gazette*: 15 November 2017

This safe work instrument is administered by WorkSafe New Zealand.