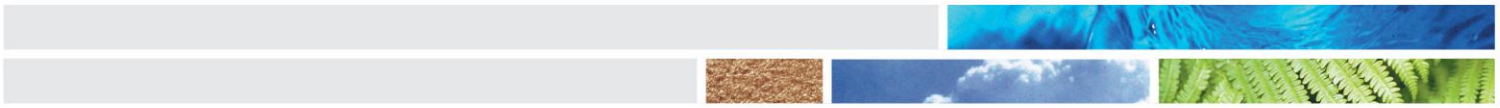
Environmental Protection Authority
Te Mana Rauhī Taiao

Department of Labour
TE TARI MAHI

Above ground fuel storage on farms

JANUARY 2012



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1. Introduction

Farmers have legal obligations under the Hazardous Substances and New Organisms (HSNO) Act 1996 in relation to the handling and storage of fuel on farms. In addition, farmers are required to provide a safe place of work under the Health and Safety in Employment Act 1992. To ensure compliance farmers must meet all the obligations set out in the relevant regulations and controls.

The purpose of this guideline is to assist farmers to evaluate **above ground** farm fuel storage systems, to assist in compliance with HSNO Regulations and controls, and to assist with managing hazards associated with fuel storage. The document represents best practice and provides guidance to any person, group or organisation that is involved in, or intends being involved in the supply into, or storage of fuels in, above ground storage on farms. It provides a guide to the relevant HSNO Regulations and controls for these activities.

This document, whilst providing best practice, is not endorsed as a means of compliance with HSNO Regulations or the Resource Management Act, although it may satisfy some requirements under those pieces of legislation .Whilst some of the requirements in this guideline exceed the minimum HSNO controls, they are included to provide best practice to mitigate risks associated with the storage and handling of fuels.

This guideline relates only to above-ground fuel storage. However, the principles outlined in this guideline can relate to all forms of fuel storage on farms. It is suggested that you contact a test certifier for information on the requirements for below ground tanks.

A farm is defined as an area of land of not less than 4 hectares in size, and does not include golf courses or parks. The land must be used principally for the purpose of agriculture.

Note - fuel includes petrol, aviation gasoline, racing gasoline, kerosene and diesel fuel.

This version of the Guide includes extracts from the Department of Labour's former Guidelines for Safe Above-Ground Fuel Storage on Farms (2001) (Sections 2.1, 3.7, 4, 5 and Appendix C).

2. Risks

2.1. Health Risks

Petrol contains amounts of aromatic hydrocarbons that can be smelled in petrol vapours. Some of these substances are the same chemicals found in glues and solvents. Inhaling petrol vapours should be avoided.

The short-term effects of these toxic vapours are dizziness, nausea, headache and vomiting, similar to intoxication from alcohol. Anyone suffering from the effects of petrol vapours should remove themselves from the area and avoid activities such as driving vehicles and operating machinery.

Do not use petrol to remove grease, paint or glue from your hands, and otherwise avoid absorption of petrol through the skin. Besides being a cause of dermatitis and rashes, hydrocarbons can pass through the skin and enter the blood stream, adding to the toxic effects. If skin contact occurs, wash with soap and water.

Long-term symptoms of exposure to petrol may include neurological damage and increased susceptibility to leukaemia.

Diesel is known to cause skin dryness or cracking through repeated liquid exposure. It is a mild eye irritant, and may cause irritation to the eyes, nose and throat upon inhaling diesel vapours, mists and fumes.

It is a possible cancer hazard, particularly when linked to high levels of exposure.

Advice on how to treat exposure to fuels can be obtained from the Safety Data Sheet, available from the fuel supplier.

2.2. Environmental Risks

Aspects of the Resource Management Act 1991 apply to farm fuel storage. The relevant requirements for fuel storage in your area may be included in the appropriate Council's Regional and/or District Plan. Your local authority can provide this information.

Contamination of the soil or waterways as a result of leakage or spillage on farms is subject to the enforcement provisions of the Resource Management Act. A discharge can result in prosecution, incurring fines and the costs of cleaning up the spillage or leakage. These costs may be far in excess of the value of any lost fuel.

Farmers should be careful to ensure that farm fuel tanks are both used and maintained so that no ground contamination occurs. Care must be taken when locating fuel tanks to avoid the possibility of leakage or spillage of fuels entering waterways.

3. HSNO Requirements for Fuel Storage on Farms

The Hazardous Substances and New Organisms (HSNO) Regulations have certain requirements from both the person in charge and the supplier. These include:

- Supply of information
- Fire extinguishers
- Emergency response plans
- Signage
- Secondary containment.

The amount of fuel stored which 'triggers' the specific HSNO controls is set out in the following two tables. More detailed information about meeting these requirements is contained throughout the relevant sections of this document.

HSNO requirements for petrol

Amount of Petrol stored on a Farm >4ha (litres)	**Fuel Supplier must supply Documentation**	**Farmer needs to have Documentation** (Person in charge)	**Training / Approved Handler requirements**	**Fire Extinguishers** (number)	**Signage**	**Emergency Response Plans**	**Secondary Containment**	**Location Test Certificate**	**Stationary Container System Test Certificate**
5	Yes	Yes							
50	Yes	Yes		1					
100	Yes	Yes		1					
200	Yes	Yes		2					
250	Yes	Yes		2	Yes				
1000	Yes	Yes		2	Yes				
2000	Yes	Yes	Yes	2	Yes	Yes	Yes	Yes	
2500+	Yes	Yes	Yes	2	Yes	Yes	Yes	Yes	Yes

HSNO requirements for diesel

Amount of Diesel stored on a Farm >4ha (litres)	**Fuel Supplier must supply Documentation**	**Farmer needs to have Documentation** (Person in charge)	**Fire Extinguishers** (number)	**Signage**	**Emergency Response Plans**	**Secondary Containment**	**Stationary Container System Test Certificate**
1	Yes	Yes					
100	Yes	Yes					
200	Yes	Yes					
250	Yes	Yes					
500	Yes	Yes	2				
1000	Yes	Yes	2	Yes			
20001	Yes	Yes	2	Yes	Yes	Yes	
5000	Yes	Yes	2	Yes	Yes	Yes	Yes

[1] For above ground diesel tanks installed prior to 1 April 2004, this figure is 2500 litres (refer to section 3.2 of HSNOCOP 13-2 Management of Existing Stationary Container Systems up to 60,000 litres Capacity available from the EPA website at http://www.epa.govt.nz/publications-resources/publications/codes-of-practice/Pages/Completed-codes-of-practice.aspx

3.1. Separation of Flammable Liquids

The storage and handling of fuels has inherent hazards due to their flammable nature. The risks associated with these hazards are managed through the use of separation distances.

Farm fuel storage shall be located so that it meets the parameters outlined below.

- Petrol storage shall be greater than 15 metres from an **ignition source**.
- Diesel storage shall be greater than 6 metres from an **ignition source**.

Ignition sources include anything that could ignite vapour from the fuel storage area.

Examples are:

Naked flames	These include fires or incinerators (keep them well clear of the fuel storage area), plus the use of tools such as welders. It also includes smoking – smoking shall not be allowed within 15 metres of petrol storage.
Electrical appliances	These include electrical fittings such as switches, lights, three-pin plugs

	and switch boards, plus any electrically powered tools or machines. Also included are electric fences and electric fence controllers.
Running Engines	These include compressors, freezer motors, etc. Vehicle motors shall be switched off when either delivering fuel, or when filling from the storage tank. An exception is when approved fuel dispensing equipment is used.
Communications Equipment	Some cell phones, Portable Electronic Devices (PEDs) and other types of mobile communication equipment may be capable of providing an ignition source in flammable fuel atmospheres. Ensure that PEDs are intrinsically safe, or zoned for use in hazardous atmospheres; alternatively, leave the equipment in a safe place.
Sparks from tools	Any grinders or tools that could cause sparks (e.g. metal drills).
Static electricity	A sufficiently large build-up of static electricity will cause a spark to discharge, and if this happens in an area containing flammable vapours, a fire or explosion can result. Build-up of static electricity can be lessened through earthing the fuel tank. Metal tank supports provide a good earth contact, but where tanks are not earthed through a metal support structure, they must always be earthed using an earthing rod.

All fuel storage shall be:

- at least 6 metres from any other hazardous materials, e.g. oxidisers, fertilisers, poisons; and
- at least 6 metres away from any combustible materials, e.g. hay, LPG, other fuels; and
- positioned so that any spills cannot contaminate stock feed; and
- positioned so that spilt fuel cannot come into contact with any heated surfaces; and
- positioned so as to avoid accidental collision by vehicles; and
- positioned so that any spills will not contaminate streams, lakes or waterways; and
- positioned so that any spillage will not endanger any building.

Petrol stored in above ground tanks shall also be:

- at least 20 metres from any area of high intensity land use, or area of regular habitation; and
- situated in the open.

Diesel stored in above ground tanks shall also be:

- at least 20 metres from any area of regular habitation, or area of high intensity land use, except that 6 metres can apply in the case of a farm shed; and
- situated in the open.

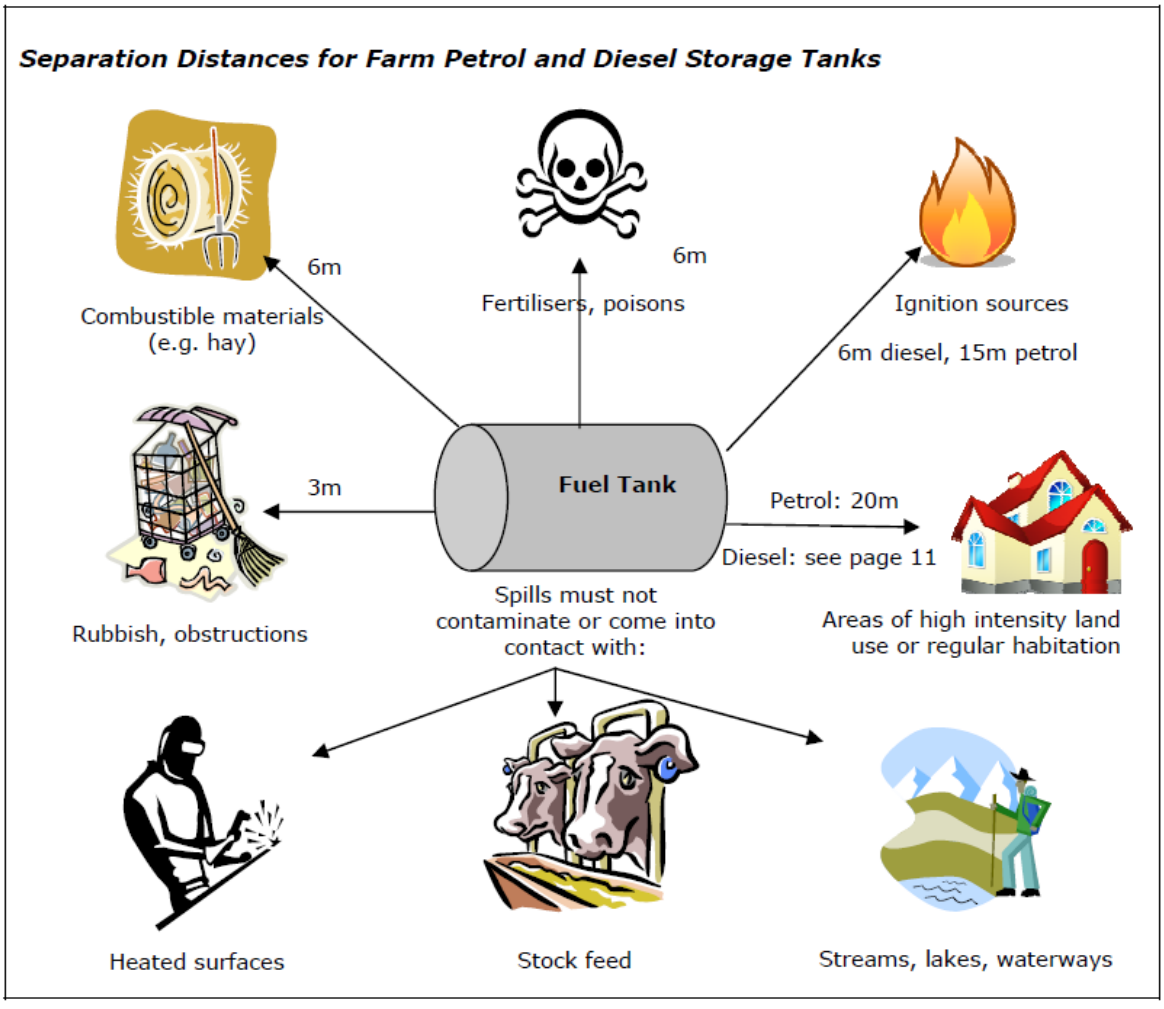
Petrol stored in drums shall also be:

- at least 15 metres from any area of high intensity land use, or area of regular habitation; and
- situated either in the open or in a well ventilated building.

Diesel stored in drums shall also be:

- at least 15 metres from any area of regular habitation or area of high intensity land use, except that 6 metres can apply in the case of a farm shed; and
- situated either in the open or in a well ventilated building.

The separation distances specified for petrol in this Guide for Above-Ground Fuel Storage on Farms are those separation distances that permit the location of petrol storage on farms without obtaining a location test certificate. These separation distances may be reduced if a location test certificate is obtained. Also refer to section 3.10 for the maximum quantities of petrol that may be stored on farms without obtaining a location test certificate.



Definitions

Areas of high intensity land use include areas of regular habitation, structures made of (or containing) combustible materials that would sustain a significant fire, and high density traffic routes. Examples of areas of high intensity land use include: wooden buildings, packing sheds, cool storage facilities, hay sheds, other petrochemical storage and agrichemical stores.

Areas of regular habitation are buildings which are used for accommodation (i.e. include cooking, sleeping and ablution facilities) or any part of a building used for sleeping in conjunction with other buildings

used for cooking and ablution, as well as areas where people regularly meet. Examples of areas of regular habitation include: homes, staff accommodation, child care facilities, ‘smoko’ rooms and ‘sleep outs’.

3.2. What to do in an Emergency

In the case of a spillage or leakage of the fuel, the prime concern is the safety of any persons near the emergency.

The immediate remedial action is to stop the spillage or leakage at the source, if safe to do so.

Then:

- Stop the product escaping to drains or waterways.
- Clean it up (if it is safe to do so).
- Contact your fuel supplier or regional/district council regarding disposal of contaminated material.

Your local council should be advised of any fuel spillage, especially if it endangers a waterway. Most councils have an Emergency Pollution Hotline.

With petrol spillage, special care should be taken to avoid any action that could cause ignition of the petrol vapours. This includes not using communications equipment within 50 metres of a petrol spill zone or 25 metres of a diesel spill zone (ref NZ Fire Service *Dangerous Goods Emergency Response Guide*).

In the case of a fire, raise the alarm — phone the Fire Service.

- Fight the fire only if you consider it safe to do so.
- Ensure all people are in a safe area.
- Do not put yourself at risk.

3.3. Emergency Response Plans

Where more than a total of 2000 litres of petrol and/or diesel are stored, the person in charge of the place must provide an emergency response plan. The plan must be tested at least every 12 months. In addition to this, Section 6 of the Health and Safety in Employment Act 1992 requires employers, in consultation with employees, to develop procedures for dealing with emergencies that could arise in a place of work.

3.3.1. What is an emergency response plan?

An emergency response plan is a document which contains the information required to respond to an emergency involving petrol and/or diesel. The requirements for an emergency response plan are set out in Regulations 27-34 of the HSNO (Emergency Management) Regulations 2001.

In general terms to comply with HSNO regulations, an emergency response plan must:

- describe all of the reasonably likely emergencies involving the fuel storage facility;
- describe the actions to be taken in each of the likely emergencies;

- identify the people with responsibilities for response in each identified emergency, and the skills that they are required to have;
- describe where to find the information and equipment required to respond to each identified emergency;
- state how to contact emergency services.

3.3.2. What do I do with my emergency response plan?

After the emergency response plan has been prepared, a copy must be available to every person handling the petrol/diesel, and be available for use by emergency services. Every person who handles petrol/diesel on a farm should also be trained in how to deal with each emergency described on the emergency response plan.

The plan must also be tested at least every 12 months, or within 3 months of a change in the plan (including change of staff). A written record of each test is required, complete with the results of the test. This information needs to be kept for at least 2 years.

Emergency Response Plan Guidelines for the Farmer (Person in charge)

- Where more than a total of 2000 litres of petrol and/or diesel is stored in a facility on a farm, the farmer shall ensure an emergency response plan has been prepared.
- The farmer shall ensure the plan is available for each person who handles fuel on the farm, and that they are trained to handle emergencies involving fuel.
- The farmer shall ensure that the plan is tested at least every 12 months, and that a record of each test is kept for at least 2 years.

Emergency Response Plan Template for the Farmer (Person in charge)

- ERMA New Zealand developed a template for an emergency response plan for farmers. This can be sourced from the EPA website at:
- http://www.epa.govt.nz/Publications/Emergency-flip-chart-farms.pdf

3.4. Documentation

Regulations 6-20 of the Hazardous Substances (Emergency Management) Regulations 2001 stipulate the specific HSNO requirements for provision of documentation. Information to be provided includes:

- Product information.
- Symptoms of exposure.
- Emergency management actions.

Safety Data Sheets (SDS) for petrol or diesel will provide this information.

Documentation Guidelines for the Fuel Supplier

- Fuel suppliers must provide a written copy of the SDS for each type of fuel delivered to each farm. If asked by a farm customer, the fuel supplier shall provide a written copy of a SDS for the fuel as soon as is practicable.

Documentation Guidelines for the Farmer (Person in Charge)

- The person in charge of a farm where fuel is stored is required to ensure that a copy of the SDS for each fuel type is available to any person who may handle that fuel.
- The farmer shall ensure a copy of the SDS for each fuel type is available within 10 minutes of where that fuel is stored. This means that where there is an easily accessible building in close proximity, the SDS should be stored in a prominent place within that building.
- The farmer shall ensure that any person likely to handle fuel is made aware of the place where the SDS for that fuel is kept.
- The farmer should ask their fuel supplier for a written copy of the SDS for each type of fuel delivered to each farm fuel site that they are in charge of.

3.5. Fire Extinguishers

The person in charge of a place where more than 50 litres of petrol or 500 litres of diesel is present must ensure the appropriate number and types of fire extinguishers are provided.

Regulation 22 of the Hazardous Substances (Emergency Management) Regulations 2001 requires fire extinguishers to be within 30 metres of fuel storage, or in a vehicle that is towing a mobile tank.

Note: Even if lower quantities of fuel do not require a fire extinguisher, it is good practice to ensure that at least one compliant fire extinguisher is available in the event of an emergency.

3.5.1. How do I work out which type of Fire Extinguisher is Appropriate?

Regulation 23 sets out the requirements for the performance and types of the fire extinguishers needed.

To meet these criteria the fire extinguishers must be capable of extinguishing class B fires (i.e. a fire involving a flammable or combustible liquid) and have a capability rating of at least 30B. *The capability of a fire extinguisher will be written on the side of the fire extinguisher.*

A 2kg dry powder or a 9 litre foam fire extinguishers **with a rating of 30B** will meet this HSNO requirement for an extinguisher. (Please check as not all of these extinguishers are rated 30B).

Fire Extinguisher Guidelines for the Farmer (Person in Charge)

- The farmer shall ensure that the fire extinguishers are available within 30 metres of where the fuel is stored, but not attached to or under a fuel tank.
- The fire extinguisher requirement for petrol is:
  - Less than 50 litres: no extinguishers
  - Between 50 litres and less than 200 litres of petrol: at least one fire extinguisher
  - 200 litres and greater: at least two extinguishers.
- The fire extinguisher requirement for diesel is:
  - Less than 500 litres: no extinguishers
  - 500 litres and greater – at least two fire extinguishers.
- The number of fire extinguishers is not cumulative, but the prescribed number must be available within 30 metres of where the fuel is stored.

3.6. Secondary Containment

Secondary containment is a system which will contain fuel spills if a fuel tank leaks or is damaged, and from which the fuel can be cleaned up after a spill. A secondary containment system must also have a capacity capable of containing a spill equalling 110% of the capacity of the largest fuel tank it contains.

3.6.1. General Provisions:

Where a total of 2000 litres or more of petrol and/or diesel is stored the person in charge of the farm must ensure that fuel is stored in a secondary containment system. A common form of secondary containment system is a compound (bund). Where the total is below 2000 litres, the fuel may alternatively be located so that any spillage will not endanger any building, or flow into any natural water body. All tanks must be maintained so that valves, hoses and dispensers do not leak.

There *may be* additional Local Authority regulations (Regional or District Plan rules) which provide more specific requirements for fuel on farms. Please contact the Local Authority for further information.

3.6.2. Diesel Tanks installed prior to April 2004:

There is a specific variation for diesel stored in tanks up to 2500 litres capacity that were in use prior to April 2004. Where diesel is stored in tanks separated by more than 6 metres from other fuels, and the tanks were in use before April 2004, compounding is not needed providing the total capacity of the tank/s does not exceed 2500 litres.

Refer to HSNOCOP 13-2 Management of Existing Stationary Container Systems up to 60,000 litres Capacity available from the EPA website at http://www.epa.govt.nz/publications-resources/publications/codes-of-practice/Pages/Completed-codes-of-practice.aspx

3.6.3. What is a Compound (Bund)?

A compound is a form of secondary containment consisting of a hollow pit or a structure which is capable of containing any fuel spill from the fuel storage. To comply with HSNO regulations it must:

- be of a size capable of holding 110% of the contents of the largest fuel tank; and
- be constructed of non-flammable materials (concrete, brick, HDPE, clay, earth or similar); and
- effectively retain the fuel if there is a spillage.

A compound (bund) constructed of steel may only be used with diesel.

In areas with light, free draining soils (e.g. pumice or sandy soils), a compound must be lined with an additional impermeable layer (e.g. concrete, clay or brick) to stop spills entering groundwater.

3.6.4. Double Skin Tanks

A double skin tank is a tank with integral secondary containment – that is, the outer skin of the tank is the secondary containment system. These tanks must be specifically designed for the purpose they are intended for. Further information on these tanks is available in the Code of Practice for Above Ground Stationary Tanks with Integral Secondary Containment on the EPA web site at:

http://www.epa.govt.nz/publications-resources/publications/codes-of-practice/Pages/Completed-codes-of-practice.aspx

3.6.5. Spill Kits

Basic spill kits assist with containment and cleanup of spills from a fuel tank. The spill kit may consist of a load of sand, or some other absorbing material beside the storage area to soak up any spills before they endanger the environment. Commercial spill kits are available that include absorbent pads or booms.

Fuel Containment Guidelines for the Farmer (Person in Charge)

- The farmer shall ensure that any fuel stored is located so that any spillage will not endanger any building or flow into, seep into or otherwise reach any water body including streams, lakes, or natural water.
- Where 2000 litres or more of fuel is stored, the farmer shall ensure that a compound is used which will contain fuel spills if a fuel tank leaks or is damaged.
- Where diesel is stored in tanks separated by more than 6 metres from other fuels, and the tanks were in use before April 2004, compounding is not needed providing the total capacity of the tank/s does not exceed 2500 litres.
- Where diesel is stored in tanks located together with other fuels the maximum quantity allowed before compounding is required is 2000 litres.
- The farmer should ensure that a basic spill kit is available to assist containment and cleanup of spills.
- Any compound must include a method for draining water when needed (e.g. a closed valve at the lowest point), and be regularly cleared of leaves and other rubbish so that the capacity of the compound is not reduced.

3.7. Training and Approved Handlers

It is a requirement under the Health and Safety in Employment Act 1992 to ensure that employees are either adequately trained to do their job safely, or are supervised by an experienced person. Employees are also required to receive information on the hazards they could be exposed to when working, where any safety equipment is located, and what to do in an emergency.

People who are involved with the handling and storage of fuels need to have received training regarding:

- The hazards associated with petrol.
- Its safe use and handling.
- The steps to be taken in the event of spillage or other emergency.

Alternatively they can be under the direct supervision of someone who has appropriate training and experience.

Where more than 2000 litres of petrol is stored on a farm, the HSNO Regulations require the person in charge to ensure an Approved Handler is available to provide assistance, if necessary, while the petrol is being handled.

An Approved Handler is not required for diesel.

Training Guidelines for the Farmer (Person in Charge)

- The farmer shall ensure that anyone who is required to use the fuel storage system on their farm has been properly trained in:
  - how to use the fuel storage facility safely; and
  - what the potential hazards are when using the fuel storage system, and the precautions to be taken including the use of protective clothing and equipment; and
  - what to do in the case of an emergency, (e.g. a fire, medical emergency, or a fuel spill).
- See also Emergency Response Plan Requirements.
- The farmer shall ensure that where petrol is stored in quantities above 2000 litres, an Approved Handler will be available to provide assistance, if necessary, while petrol is being handled.

3.7.1. Who is an Approved Handler for farm petrol storage?

An approved handler is a person who has been certified (by a Test certifier) as having met the requirements Regulation 5 of the of the HSNO (Personnel Qualifications) Regulations 2001 for experience and training in handling petrol. *In general terms* these requirements are:

- Knowledge of the requirements of the HSNO Act and regulations.
- Knowledge of petrol and its hazards.
- A working knowledge of the operating equipment used to handle petrol.

The Approved Handler may be the person handling the petrol, someone available on the farm, or someone contactable by telephone. It is not necessary for an Approved Handler (for petrol) to be on-site (or even employed by the farmer). However, the Approved Handler must be available (e.g. by telephone) to provide advice and/or assistance when it is required by the person handling the petrol.

3.8. Signage

Signage is required where more than 250 litres of petrol; or more than 1000 litres of diesel is stored on a farm. The requirements for signage are set out in Regulations 51 and 52 of the Hazardous Substances (Identification) Regulations 2001 and Regulation 42 of the Hazardous Substances (Emergency Management) Regulations 2001.

In general terms to comply with HSNO regulations for farm fuel signage signs must be located where they will be noticed by persons entering the site where fuel is stored and must:

- Advise that the location contains hazardous substances;
- Describe the hazardous property and nature of the hazard(s) of the substance;
- Describe the precautions needed to safely manage the substance;
- Describe the precautions needed to avoid ignition of the substance;
- Identify appropriate emergency response agency(ies) or personnel and the means of contacting them;
- Provide sufficient information to advice any of the trained persons and the emergency service provider(s) of the immediate emergency response actions for the hazardous substances present;
- Be easily understood; and
- Be able to be easily read at a distance under varying conditions.

3.9. Tank Labelling

The content of a fuel tank must be identified on the tank, either with a tank label or through colour-coded marking. This should be clearly placed on the tank so as to be easily read from ground level.

A tank label, A3 in size, fulfils the signage requirements of the HSNO regulations and no other signage is necessary for fuel storage on farms. Example tank labels are shown in Appendix A for diesel fuel and Appendix B for petrol. Where the tank contains low flashpoint diesel, the characters 3Z must be replaced by 3YE.

Labelling: Hazard and Precautionary Information for Petrol and Diesel

HSNO Classification	Pictogram	Hazard Statements	Prevention Statements	Response Statements
3.1A (Petrol)		Extremely flammable liquid and vapour	Keep away from heat, sparks or open flame. - No smoking. Wear protective gloves and eye/face protection	IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water. DO NOT fight fire when fire reaches fuel storage. Explosion risk in case of fire. In case of fire, evacuate area.
3.1D (Diesel)		Combustible liquid	Keep away from heat, sparks or open flame. - No smoking. Wear protective gloves and eye/face protection	DO NOT fight fire when fire reaches fuel storage. Explosion risk in case of fire. In case of fire, evacuate area.
9.1B		Toxic to aquatic life with long lasting effects	Do not release to the environment.	Collect spillage.

3.10. Location Test Certificates

3.10.1. What is a Location Test Certificate?

A Location Test Certificate verifies that hazardous substances are stored away from other structures, combustible materials, dwellings, and ignition sources. It also stipulates emergency preparedness including secondary containment. Location Test Certificates are issued by test certifiers.

See Section 3.12 for details on how to find a Test Certifier.

3.10.2. Location Test Certificate Requirements for Diesel on Farms

Storage of diesel does not require a Location Test Certificate, regardless of quantity.

3.10.3. Location Test Certificate Requirements for Petrol on Farms

Storage of petrol above ground in quantities **up to 2000 litres** will not require a Location Test Certificate providing that:

Storage must be on a farm of not less than four hectares area.

- Tanks must be compliant with the requirements for design, construction and installation.
- Tanks must be located at least 20 metres from dwellings or other buildings made of combustible materials and at least 6 metres from any combustible materials.
- Tanks must be in a compound (bund) or located so that any spillage will not endanger any building, or flow into any natural water body.

A Location Test Certificate will be required for petrol if:

- The quantity stored exceeds 2000 litres; or
- Storage is not in compliance with the above conditions (and over 50 litres); or
- Storage is below ground.

3.11. Stationary Container System Test Certificates

3.11.1. What is a Stationary Container System Test Certificate (Tank Test Certificate)?

A Stationary Container System Test Certificate verifies that a stationary container system (tank) meets the legal requirements specified in Schedule 8 of the Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004 (as amended). The certification of stationary container systems is done by a Test Certifier approved to issue test certificates for stationary container systems.

See Section 3.12 for details on how to find a Test Certifier.

3.11.2. Stationary Container System Test Certificate Requirements for Diesel

Above ground storage of diesel in tanks greater than 5000 litres will require a Stationary Container System Test Certificate. The storage of diesel in tanks greater than 60 litres that are connected to a burner (including a heater or boiler) or in tanks greater than 500 litres that are connected to a stationary engine requires a location test certificate.

3.11.3. Stationary Container System Test Certificate Requirements for Petrol

Above ground storage of petrol in tanks greater than 2500 litres will require a Stationary Container System Test Certificate. The storage of petrol in tanks greater than 50 litres that are connected to a stationary engine requires a location test certificate.

3.12. Search for a Test Certifier

Test certifiers are private business people and a searchable register is available on the EPA website at:

http://www.epa.govt.nz/search-databases/Pages/testcertifiers-search.aspx

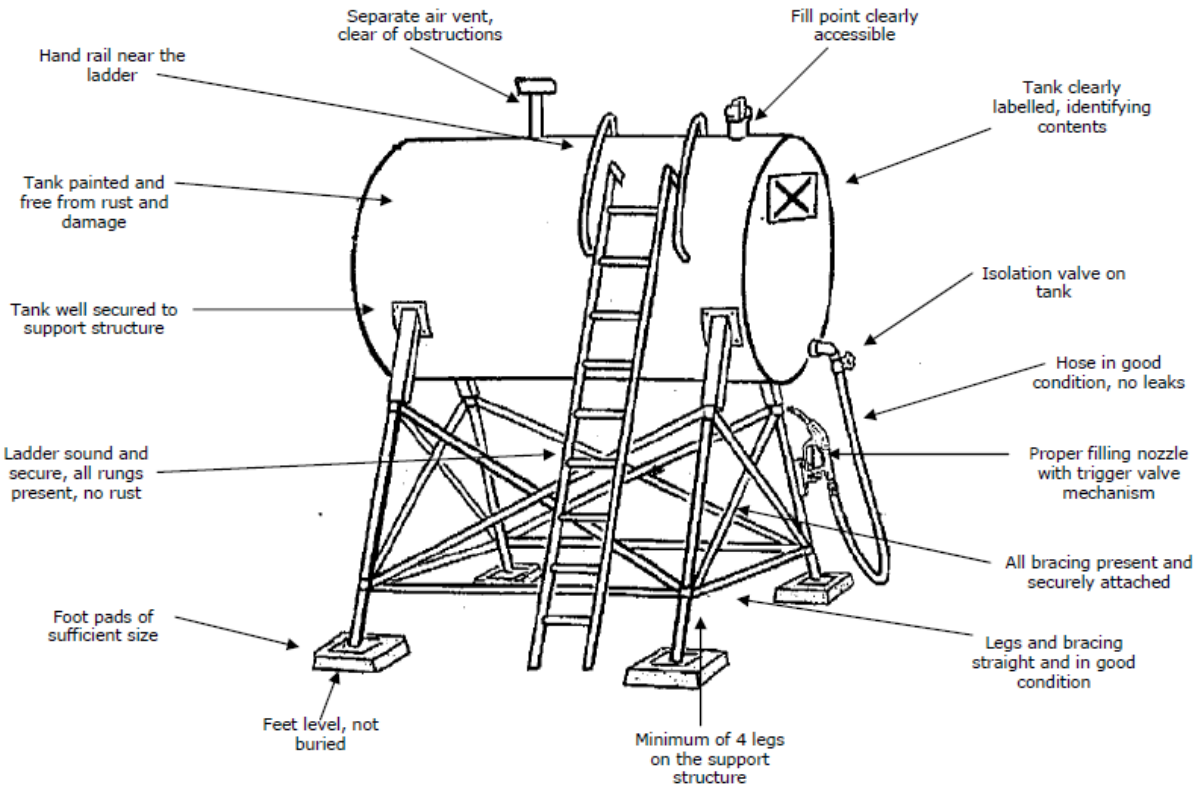
4. Hazards Associated with Above-Ground Farm Fuel Storage Tanks

When farm tanks are mounted on stands in order to make use of gravity to feed the fuel into the farm machines, hazards are sometimes created that require managing (e.g. when climbing the structures to fill the tanks, or through collapse of the fuel tank support structures). The hazards associated with above ground tanks fall into the following categories:

- The supporting structure of the tank
- The foundations for the tank support
- The ladder
- The hose and fittings
- Access to the tank; and
- Location of the tank.

4.1. Structural Safety

Characteristics of a Safe Above-Ground Overhead Farm Fuel Tank



Note: The secondary containment (external compound) system has been omitted from the above diagram.

4.2. Tank Supporting Structure

There are a number of reasons why a tank and its support structure may be unstable:

- Basic design problems of the support structure;
- Parts of the support structure missing (e.g. lack of spreaders);
- Poor attachment between the tank and its legs, sometimes due to joints breaking;
- Lack of maintenance, often associated with serious rusting;
- Legs not being secured to the ground.

4.2.1. Effect of Rust on the Soundness of the Supporting Structure

Rust (corrosion) can have a major effect on the strength of both the supporting structure and the tank.

The key to preventing damage through rust is maintaining an effective maintenance regime. Remove rust as soon as it appears by use of a wire brush, and repaint using a rust-inhibiting undercoat and top coat.

Major locations on the supporting structure where rust may be a concern are:

- At the connections, bolts, welded points and main contact support to the tank itself;
- At all welded joints, especially between the ladder rungs and the legs;
- On welded sleeves used on some models to fit legs or spreaders;
- On the joint between the feet and legs, especially if the feet have become buried.

4.2.2. Attachment of Fuel Tank Support to the Structure

The tank should be soundly attached to the support structure so that there is no danger of the tank falling off the stand. Where the legs of the support structure are slotted into a sleeve on the tank, the legs should be pinned or bolted to into the sleeve so that there is no danger of the legs pulling out from the stand support.

4.2.3. Tripod Supporting Structures

The Department of Labour (DoL) cancelled approval for the manufacture of tripod (three-legged) stands on fuel tanks in 1996. This occurred as a result of numerous accidents due to the failure of the tanks' supporting structures and stability.

While tripod stand tanks were permitted to be used until they reached the end of their working life, in recent years there have been a number of serious incidents involving fuel tanks on tripods that have collapsed, resulting from poor maintenance and inherent design characteristics.

It is expected that most, if not all, tripod tanks have now been decommissioned.

Tanks with tripod supporting structures do not comply with approved HSNO design requirements.

Farmers shall ensure that the design and construction of their above ground fuel tanks is compliant with HSNO legislation and design standards.

4.2.4. Soundness of the Bracing of the Supporting Structure

The structural integrity of the support structure is maintained through bracing. Examples of possible bracing are:

- Diagonal leg bracing to prevent racking or twisting;
- Horizontal leg bracing designed to prevent the spreading of legs (spreaders). This bracing is usually working under tension;
- Support bracing between the tank and the support structure.

It is important that all legs are adequately braced to prevent distortion or collapse of the support structure.

4.2.5. Straightness of the Supporting Structure

The legs and bracing of farm fuel tank stands often end up becoming bent, usually as a result of being hit by machinery. Any bending of the support structure will decrease its strength and the ability to support the tank, especially when the tank is full. Distortion of the supporting structure can be a special hazard during the refilling operation because of the different stresses that are being exerted on the stand. A bend in either a leg or in the bracing may indicate unequal loading on the legs.

Guidelines for Straightness of the Supporting Structure

- The legs on the support stand should be straight – no bending or buckling of the legs should be allowed. If legs are damaged, they should be repaired or replaced.
- Slight bending of the bracing is acceptable, for example, where the bracing is acting under compression. Bracing that has been excessively bent should be replaced..

4.2.6. Modifications to Fuel Tank Supporting Structures

Modifications to the tank support structure, such as mounting the legs on blocks, or putting tanks on platforms so as to raise the head of the tank, can result in decreased stability of the support structure and increase the hazard of the tank tipping over.

Guidelines for Modifications to Fuel Tank Support Structures

- Any modification to the fuel tank support structure should not decrease the stability of the fuel tank.
- Where tank support structures are modified, they shall meet all the attachment and structural requirements as set out in this guideline.
- Any modifications to the height of the tank should comply with Regulation 21 of the Health and Safety in Employment Regulations 1995 regarding work above 3 metres.

Guidelines for Straightness of the Supporting Structure

- The tank should not sway when a person applies a moderate force to one leg of the supporting framework at shoulder height.
- If the tank moves slightly (50-100 mm) this indicates that the tank may be unstable or the support structure is not adequately braced.

4.3. Foundation for the Tank Support

All tanks must be installed in compliance with the HSNO Act. This includes the requirement that they must be on foundations that will prevent subsidence. This is best achieved by mounting the tank legs on a concrete pad, or on concrete footings (the recommended minimum size for footings is 600mm x 600mm x 300mm). Alternatively, the tank stand should be on a solid foundation (such as compacted ground) that is well drained and will not become boggy when wet.

The legs shall have sufficient size pads or feet to distribute the weight of a full tank of product without undue settlement of the ground.

It is important that the feet of the support structure are attached to the foundation or the ground so that the structure will not tip when being climbed. This can be achieved through the use of anchor bolts on the concrete footing, or where concrete is not being used, by pinning the feet to the ground, or by tying them to a post or Warratah stake. Care should be taken if using a stake to ensure that additional hazards are not created; e.g. the risk of someone falling on the stake.

The leg feet should be level, and on top of the ground or concrete. **The feet should not be buried – this can lead to rapid corrosion, and the condition of the feet cannot be checked.**

4.4. Ladders

Access to overhead tanks is usually through the use of a ladder, either attached to the structure or part of the tank support stand (a fixed ladder), or a free-standing (portable) ladder. In light of a number of accidents where fuel drivers have fallen from free-standing ladders when filling tanks, it is preferred that all overhead tanks should have fixed ladders attached to the structure.

It is expected that newly-commissioned overhead fuel tanks will have fixed ladders attached to the structure.

4.4.1. Fixed Ladders

Fixed ladders should be safe, robust and secure. Special care should be taken to ensure that all rungs of the ladder are present, and that the ladder rungs are free of damage or corrosion. Rust on the welded joints between the ladder rungs and the support structure is not allowed and should be removed. Where the

ladder is attached to a leg of the support structure, the ladder should be located directly below the handholds on the tank.

Hand rails should also form part of the fixed ladder and tank structure (see diagram at section 4.1).

4.4.2. Freestanding (Portable) Ladders

If using a freestanding ladder, its positioning must be free from any obstructions, and it must be set on a stable footing. Do not sit the footing on loose wooden chocks – they can easily slip and cause the ladder to fall. When using a freestanding ladder against a three-legged tank, it is important, to avoid tipping of the tank, that the ladder is positioned so that it is directly opposite a supporting leg.

4.5. The Storage Tank

Tanks must be of sound construction. This means:

- There is no serious corrosion that could material affect the tank's integrity.
- There are no major deformations of shape (dents, cracks). These will move the tank's centre of gravity and also will establish stress points where corrosion will occur more rapidly, or stress the supporting framework.
- The attachment between the legs and the tank must be solid – not corroded.

Storage tanks must be designed and constructed in accordance with a standard that is nominated in the HSNO legislation[1].

4.6. Corrosion of Fuel Tanks

As with support structures, rust can have a major impact on the soundness of a fuel tank. The degree of damage caused by rust is dependent on the thickness of the steel used in the tank's manufacture, and the thickness that the rust has penetrated.

Areas at particular risk of rust damage are:

- On the top of tanks, especially if they are cylindrical tanks mounted on end;
- On the underside of tanks;
- Around the fill point, and the drain plug;
- On the welded seams;
- At the joints between the tank and the support structure.

[1] Schedule 8 of the Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004. A commonly used standard for the design of above ground tanks on farms is AS 1692 - *Steel Tanks for Flammable and Combustible Liquids*.

Guidelines Regarding Rust on Tanks

- Rust present on the tank should be dry surface rust only, which has not impacted on the tank's structural integrity.
- Only surface corrosion or shallow pitting is acceptable. The depth of rust can be determined by carefully prodding the empty tank with a screwdriver. Pitting should be no more than one-third the wall thickness.
- If there is evidence of deeper pitting on the tank, the tank should be inspected by a person qualified in this type of work.
- Any "wet" rust (where the fuel is leaking through the rusted area) is unacceptable.

4.7. Tank Ventilation

Adequate ventilation of the tank is required to prevent splash back during the filling process and to prevent an unsafe pressure or vacuum developing in the tank. The air vent should be separate from the filling point unless the filling point is of adequate size to allow the safe displacement of the air during the refilling. If a ventilation pipe is required it should not be less than half the size of the filling pipe with a minimum size of 25 mm diameter. The ventilation pipe must be kept free of obstructions.

Where air vents are fitted, the air vent shall have gauze fitted of the appropriate size for the fuel being stored. For petrol tanks, the gauze in the vent shall be of a brass wire, of 500 microns gauge. This acts as a flame arrestor should there be a flashback of vapours to the tank. For diesel tanks, the gauze can be coarser as the main purpose is to prevent material going into the vent.

4.8. Tank Fill Pipe

Tanks used for the storage of petrol should have a fill pipe extending from the fill point to at least 25 mm below the lowest level of the liquid in the tank.

4.9. Fittings, Pumps and Hoses

The most likely environmental and safety risks associated with farm fuel tanks are from leaks, or from careless overflows during fuel transfers (either at filling) or when using fuel from the tank).

Under the Resource Management Act 1991, it is illegal to discharge unauthorised contaminants to land and water. This includes allowing leakage from fuel storage vessels.

In addition to the damage to the environment and safety issues, leaks can cost farmers a great deal of money.

Guidelines for Hoses, Pumps and Fittings on Fuel Tanks

- The tank hose should be of a suitable material for the fuel being stored, and be free of any perishing.
- There should be an isolation valve on the tank outlet before the dispensing hose to ensure there is a means to isolate the tank contents should the dispensing hose or nozzle develop a leak. The isolation valve should be made of steel and be suitable for the intended service.
- The hose should be fitted with a proper fitting nozzle with a trigger valve mechanism.
- All fittings, pumps, valves and hoses should be free from any leaks, or be repaired or replaced.

5. Access to the Fuel Storage Facility

There are four aspects to safe access for farm fuel delivery:

5.1. Access to the Farm from a Public Road

The delivery tanker should be able to safely enter the property off a public road.

5.2. Access to the Fuel Tank Site via the Farm Road

Safe access to the farm tank is partly supplier-dependent, i.e. the access should be safe for the delivery system being used by the supplier.

The access track should be constructed so it can be used in all weathers.

The access track for the delivery tanker should be in a state of good repair with all overhanging trees trimmed back to avoid damage to the delivery tanker. Care should be taken with any overhead power lines.

Any culverts or bridges on the farm should be able to take the weight of a fully laden fuel delivery tanker. Note that farmers have a duty to provide safe access to their properties, which includes ensuring bridges, culverts etc can be safely negotiated by the fuel tankers. If there is any doubt, the farmer may be asked to supply appropriate evidence that the structures can hold the traffic required to use the access.

Consideration should be given to turnarounds so that the delivery tanker does not have to reverse to the fuel site, thus minimising the necessity for difficult or dangerous reversing and manoeuvring.

5.3. Access between the Delivery Tanker and the Fuel Tank

The area between the delivery tanker and the filling point of the fuel tank should have adequate clearway – it should be free of all rubbish, obstacles, machinery, junk etc within 3 metres of the legs, so that the driver can safely move between the truck and the ladder to the fill point.

5.4. Access to the Fuel Tank Fill Point

The tank delivery fill point should be clear of anything that prevents the nozzle of the delivery hose being totally inserted.

The dip and fill points should be able to be accessed and opened from the ladder without requiring excessive reaching. Accessing the dip and fill points should not require the driver to climb off the ladder on to the tank or other structure, unless using a correctly constructed access platform. The driver should be able to clearly see into the fill point from the ladder while refuelling the tank.

6. Farm Fuel Storage in Drums (containers less than 250 litres)

HSNO regulations allow for the storage of fuel in drums (e.g. 44 gallon/ 209 litre drums). The requirements for farm fuel storage in drums are similar to those for storage in bulk containers.

6.1. What are the specific requirements for petrol storage in Drums?

Storage of petrol above ground in drums in quantities up to 2000 litres, will not require a Location Test Certificate providing that:

1. the petrol is stored in one or more secure containers, each individual container with a capacity of less than 250 litres; and
2. the drums for petrol comply with the packaging tests for strength and being leak proof etc., as required by regulation 11 and Schedule of the Hazardous Substances (Packaging) Regulations 20012; and
3. the petrol is situated at a distance not less than 15 metres from any area of high intensity land use, or area of regular habitation; and
4. the petrol must be situated either in the open, or in a well ventilated building; and
5. the petrol must be stored in a compound or located so that any spillage of the fuel will not endanger any building, or flow into any stream, lake or natural water.

If you cannot meet these requirements, then a location test certificate is required for fuel storage of petrol in drums.

The requirements for emergency response plans, signage, fire extinguishers, training, Approved Handlers and documentation also apply to farm fuel storage in drums.

Compounding of drum storage is mandatory when the total quantity of fuel stored at one location in drums and/or bulk tanks is 2000 litres or more. Such compounding includes drum stock and bulk tanks.

6.2. Safe Filling of Drums used for Fuel Storage

Incorrect filling of drums may lead to inhalation of hazardous vapours, or a build-up of static electricity that may result in a fire or explosion.

It should be noted that:

- drums should not be filled *inside* buildings;

[2] Drums which meet the requirements for class 3.1B (for petrol) should meet these requirements; however check with the manufacturer or supplier before purchasing drums for this purpose.

- some fuel delivery companies do not have the equipment to *safely* fill drums with fuel and may refuse to do so;
- other fuel providers may have additional requirements for filling drums with fuel.

6.2.1. Avoiding Static Electricity

A sufficiently large build-up of static electricity will cause a spark to discharge. If this happens in an area containing flammable vapours a fire or explosion can result. This can be avoided by:

- Never using any equipment made of plastic or synthetics.
- Ensuring that all plant, equipment and people are earthed and electrically continuous before commencing the filling of each drum. Do this by attaching earth clamps:
    - Remember that paint is an insulator so bonding clips must be made to bite through the paint.
    - Earth clamps must have at least one bare metal handle (to earth the person filling the drums).

Appendix A -Tank Label for Diesel (Not Applicable to Low Flashpoint Diesel)

HAZCHEM 3Z

COMBUSTIBLE LIQUID

KEEP AWAY FROM IGNITION SOURCES – NO OPEN FLAME – NO SMOKING

IN THE CASE OF FIRE CALL 111

ECOTOXIC TO AQUATIC LIFE – CONTAIN SPILLS, PROTECT WATERWAYS

IN CASE OF SPILL CALL REGIONAL COUNCIL POLLUTION HOTLINE [0800]

Appendix B – Tank Label for Petrol

HAZCHEM 3YE

EXTREMELY FLAMMABLE LIQUID AND VAPOUR

KEEP AWAY FROM IGNITION SOURCES – NO OPEN FLAME – NO SMOKING

IN THE CASE OF FIRE CALL 111

ECOTOXIC TO AQUATIC LIFE – CONTAIN SPILLS, PROTECT WATERWAYS

IN CASE OF SPILL CALL REGIONAL COUNCIL POLLUTION HOTLINE [0800]

Appendix C: Checklist for Safe Farm Fuel Storage

Site: **Date:**

Issue	Yes	No	N/A[3]	Actions
Location of Flammable Liquids				
Are ignition sources a safe distance away from fuel storage? (over 15 metres for petrol; over 6 metres for diesel)				
Is the petrol tank located at least 20 metres away from areas of high intensity land use or areas of regular habitation?				
Is the diesel tank located at least 20 metres away from areas of regular habitation or areas of high intensity land, and 6 metres from the farm shed?				
Emergency Response Plans				
If over 1000 litres of petrol and/or diesel is stored, is an emergency response plan available?				
Has the emergency response plan been tested in the last 12 months?				
Documentation				
Is a Safety Data Sheet for petrol and/or diesel available on site? (Safety Data Sheet should be available within 10 minutes of where the fuel is stored)				
Do all of the employees involved in handling fuel know where the Safety Data Sheets are kept?				
Fire Extinguishers				
Are fire extinguishers in place for the following amounts of fuel? Petrol: • Less than 50 litres = no extinguisher required • Between 50 litres and less than 200 litres = at least one extinguisher • Over 200 litres = two extinguishers Diesel: • Less than 50 litres = no extinguisher required • Over 500 litres = two extinguishers required				
Are the fire extinguishers located within 30 metres of where the fuel is stored?				

[3] N/A – Not Applicable

Issue	Yes	No	N/A[3]	Actions
Secondary Containment				
Is the fuel located in an area where any spillage will not endanger any building, or flow into any stream, lake or natural water?				
If more than 2000 litres of petrol or diesel is stored, is the storage facility compounded so that it can contain spills?				
Does the compound include a method for draining water?				
Does the compound get regularly cleared of leaves and other debris?				
Training and Approved Handlers				
Have employees involved in the handling and storage of fuels received training in the safe handling of the fuels? (Training should include hazards associated with the fuels, safe use and handling, and emergency procedures)				
If over 100 litres of petrol is stored, is an Approved Handler available?				
Signage and Labelling				
If over 250 litres of petrol or over 1000 litres of diesel is stored, is signage for the farm available?				
Is the fuel storage tank labelled clearly with its contents?				
Location Test Certificates				
If over 2000 litres of petrol is stored in an above-ground tank, is a current Location Test Certificate available? (Location Test Certificates must be reviewed annually)				
Stationary Container System (Tank) Test Certificates				
If the petrol tank is larger than 2500 litres, is a Stationary Container System Test Certificate available?				
If the diesel tank is larger than 5000 litres, is a Stationary Container System Test Certificate available?				
Tank Ventilation				
Is the vent pipe at least half the size of the filling pipe (and no smaller than 25mm diameter)?				
Is gauze of the appropriate size fitted over the vent for petrol tanks?				
Tank Fill Pipe				
(Where verifiable) Does the petrol storage tank fill pipe extend from the fill point to at least 25mm below the lowest level of the liquid in the tank?				

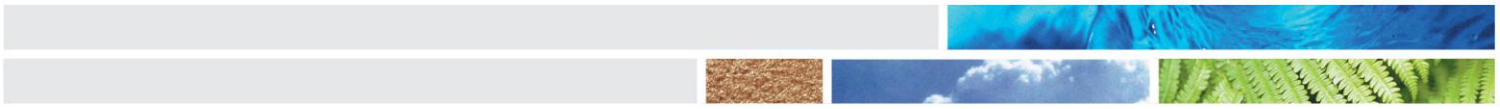
Issue	Yes	No	N/A[3]	Actions
Tank Structural Safety				
Is the tank supporting structure sound and stable? (Consider corrosion, buckling or bent legs/bracing. Tripod stands should not be used)				
Is the tank support on a solid, level foundation? (Consider stability when a ladder to access the fuel tank is used)				
Are ladders in sound condition and secure? (consider corroded, bent or damaged rungs)				
Is the storage tank of sound construction? (consider corrosion, leaks and seals)				
Are fittings, pumps and hoses free of leaks and undamaged?				
Access to Fuel Storage Facility for Drivers				
Can the delivery tanker safely access the property off a public road?				
Can the delivery tanker safely access the fuel site from a farm road?				
Is the fuel site clear of obstacles, allowing the driver unimpeded access to the tank and access ladder?				
Is the tank fill point clear of debris or obstructions?				
Farm Fuel Storage (up to 2000 litres) in Drums less than 250 litres in Size				
Is the fuel stored in drums with capacities of less than 250 litres?				
Is the fuel stored at least 15 metres from areas of high intensity land use or areas of regular habitation, and 6 metres from the farm shed in the case of diesel drums?				
Is the fuel stored out in the open, or in a well ventilated building?				
Is the fuel stored in a compound preventing spills from endangering buildings or waterways?				
Are drums refilled outside buildings?				
Is static electricity avoided when refilling drums? (do not use plastic or synthetic equipment, ensure drums are earthed)				

Date actions completed: **Signature:**

Environmental Protection Authority
Te Mana Rauhī Taiao

Department of Labour
TE TARI MAHI

BP House, (Level 1), 20 Customhouse Quay, Wellington 6011, New Zealand



New Zealand Government