environmental farm plan
sustainably farmed

INFOSHEET #5

STORAGE OF PETROLEUM PRODUCTS

How to address concerns identified in Environmental Farm Plan Worksheet #5

Based on Environmental Farm Plan Workbook, 5th ed. 2025

This infosheet outlines options to address concerns identified in your Environmental Farm Plan (EFP) as they relate to storage tanks that hold less than 5,000 litres (with the exception of Question 5–16) of gasoline, diesel, heating oil or kerosene, and are used for farming purposes. It does not apply to liquid propane.

For petroleum storages in a Source Water Protection Zone, you may need to take measures to reduce risk. The **Farm Source Water Protection Plan framework** and workbook can help you work through the Source Water Protection Framework and its application on your farm.

For help with technical terms, please see the full glossary in your EFP Workbook.

All options in this infosheet are classed as **Actions, Compensating Factors,** or **Monitoring**.

- **Actions** address the identified concern, and will change the EFP rating to (3) or (4) Best.
- **Compensating Factors** are alternatives that will adequately address the concern, but will not change the rating in the EFP worksheet.
- **Monitoring** is an alternative in special circumstances only. When and how monitoring can be used is explained in the infosheet.

In most cases, you'll need more information before choosing and implementing options. Sources for more information are noted at the end of this infosheet.

Sustainable Canadian Agricultural Partnership
OSCIA
Ontario
Canada

ALL FUEL STORAGES

5-1. Distance from petroleum storage to nearest surface water

BACKGROUND

Surface water is at risk if a spill or leak develops in your fuel storage.

If a spill reaches surface water or causes environmental damage, the tank owner may be liable.

The Liquid Fuels Handling Code specifies that the minimum separation distance from surface water to petroleum storage be no less than 30 m (100 ft.).

The Water Management BMP book shows how water moves above and below a typical farmstead. This BMP publication identifies key risk factors in the water cycle, and offers options to reduce farm impacts and preserve water quality.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Move fuel storage further than 60 m (200 ft.) away from surface water.

The new storage location should change the EFP distance rating to a (3) or Best (4).

The Liquid Fuels Handling Code specifies that the minimum separation distance from surface water be no less than 30 m (100 ft.).

To determine how soon you should move the storage, consider who or what will be impacted, and how quickly, if a spill occurs. Is a village downstream? Are game fish present? Is the surface water continuous flow (river) or intermittent flow (ditch is dry most of the year)? Assess your situation when deciding how soon improvements should be made.

OPTION 2 – COMPENSATING FACTOR

Where site conditions make it difficult or impossible to meet the minimum setback distances specified in the Liquid Fuels Handling Code, the tank owner must obtain a variance from the Technical Standards & Safety Authority (TSSA) to allow the tank to be sited at a lesser distance.

Install a dike to contain any spill that might occur or replace storage with a double-walled tank.

Installing a dike does not allow the existing fuel storage to be moved closer to surface water than its current location. A ULC-approved dike gives a high degree of protection.

The diked area must be constructed so that:

- it is liquid-tight
- it is able to contain 110% of the capacity of the fuel storage tank
- the dike bottom can be visually inspected for any leaks or spills
- all liquids are removed through the top of the dike (e.g., siphon or hand pump)
- the sides are higher than the centre line of the fuel storage tank

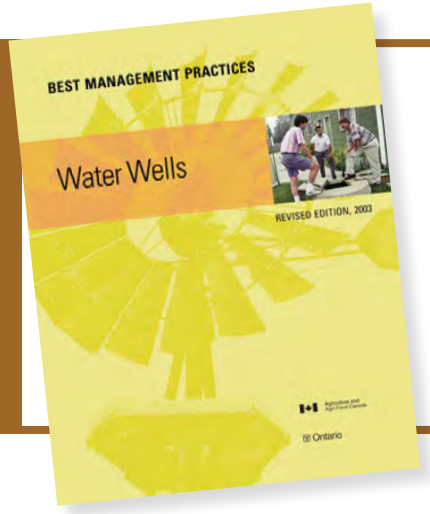
5–2. Distance from petroleum storage to nearest well

BACKGROUND

Separation distance and soil type are indicators of whether extra attention should be given to maintenance, management or water testing. Increasing the separation distance between petroleum storage and your well reduces the risk of groundwater contamination.

If a spill reaches groundwater or causes environmental damage, the tank owner may be liable.

Minimum separation distances between fuel storage and the well are stated in the Liquid Fuels Handling Code and the Ontario Water Resources Act.



The Water Wells BMP book explains the basics of rural well construction and maintenance, and how to manage site factors (e.g., soil, slope) and farm activities to protect well water quality.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Relocate fuel storage an adequate distance away from water well. The new storage location should change the EFP distance rating to a (3) or (4) Best.

The Liquid Fuels Handling Code specifies minimum distances between fuel tanks and water wells: 30 m (100 ft.) for a dug or bored well, and 15 m (50 ft.) for a drilled well.

OPTION 2 – ACTION

Eliminate permanent fuel storage on the farm.

If limited quantities of fuel storage are only required seasonally:

- use approved portable containers to supply fuel for short periods
- minimum separation distances between fuel storage and the water well are stated in the Liquid Fuels Handling Code and the Ontario Water Resources Act

OPTION 3 – COMPENSATING FACTOR

Where site conditions make it difficult or impossible to meet the minimum setback distances specified in the Liquid Fuels Handling Code, the tank owner must obtain a variance from the Technical Standards & Safety Authority (TSSA) to allow the tank to be sited at a lesser distance.

Install a dike to contain any spill that might occur or replace storage with a double-walled tank.

ABOVEGROUND TANKS FOR MOTORIZED VEHICLE FUELS – LIQUID FUELS HANDLING CODE

5-3. Dispenser unit (includes hose, nozzle, pump)

BACKGROUND

Proper equipment that has been designed and tested for dispensing fuel is required to meet legislation and to avoid accidental spills from overfilling or siphoning. Small amounts of fuel in surface or groundwater can cause serious harm to humans and animals, and often are not detectable by taste.

All fuel must be pumped from aboveground fuel tanks. Gravity flow is not permitted.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Replace fuel dispenser (includes hose, nozzle, and pump) with a dispenser approved by ULC, CSA or cUL with automatic shutoff or replace with an approved hand pump.

The Liquid Fuels Handling Code requires approved equipment – with ULC, CSA or cUL clearly identified – to be used in all new installations or replacement of existing equipment.

Only dispensers approved by ULC, CSA or cUL are acceptable under the Liquid Fuels Handling Code.

5-4. Type of tank, external protection against corrosion, and tank support system

BACKGROUND

The Liquid Fuels Handling Code identifies the type of tanks that are acceptable for fuel storage.

All fuel storage tanks must bear a rating plate certifying they meet an approved standard (ULC, CSA, cUL).

To avoid a spill or leak incident, it is extremely important to have an approved tank that will resist corrosion. The Code requires that corrosion protection be maintained for the life of the tank.

Only a licensed petroleum mechanic can install/repair fuel pumps, fuel equipment, or fuel tanks.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Evaluate the condition of existing fuel storage tank and maintain corrosion protection. This applies to all tanks regardless of when they were installed.

For minor surface rust or corrosion, remove loose paint and/or rust with steel brush. Apply rust-inhibitor paint to clean metal surface of tank to prevent further degradation.

OPTION 2 – ACTION

Replace corroded tank with a new approved fuel storage tank with appropriate corrosion protection. It should have rust-inhibitor paint approved for application on steel. Corrosion protection must be maintained.

5–5. Security

BACKGROUND

Secure fuel storage to prevent accidental spills or use by unapproved users.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Secure fuel storage:

- install a lock on the fuel filler cap
- install a lock on the dispenser nozzle

If the pump is electric-powered, shut off power to pump after each use.

OPTION 2 – ACTION

Eliminate fuel storage on the farm:

- consider if you need on-farm storage if offsite fuel supplies are available, e.g., at a nearby gas station
- consider if your operation needs both a gasoline and a diesel storage tank. If limited quantities of fuel storage are only required seasonally, use approved portable containers to supply fuel for short periods. Minimum separation distances between fuel storage and the water well are stated in the Liquid Fuels Handling Code and the Ontario Water Resources Act.

A locked fuel storage helps to prevent unauthorized access.

Bollards in place along travel lane to protect fuel storage tanks from vehicle impact.

5-6. Vehicle Protection

BACKGROUND

Protect above ground fuel storage that is exposed to vehicle traffic to prevent accidental vehicle collisions that could cause spills.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Install approved vehicle protection around above ground storage tanks on all sides facing travel lanes, such as:

- Posts (bollards) are buried at least 90 cm (36 in) below grade, extend at least 75 cm (30 in) above grade and are located around the perimeter of the tank not more than 135 centimetres (54 in) apart where there is exposure to vehicle traffic. Posts shall be 10 cm (4 in) capped steel pipe, 10 cm (4 in) tubing filled with concrete, 20 cm (8 in) pressure treated wood or 15 cm (6 in) reinforced concrete
- Steel guardrails supported by 15 cm (6 in) pressure treated wood posts located not more than 187.5 cm (75 in) apart with the top of the beam not less than 60 cm (24 in) above grade
- Concrete barrier not less than 75 cm (30 in) in height and width of base not less than height

Locate all vehicle protection no less than 1 m (3.3 ft.) from all sides of storage tank.

5–7. Separation distances

BACKGROUND

Your fuel storage location should not create a fire safety hazard or fume problem in any building.

All fuel storage is to be located outside of buildings, and meet minimum separation distance requirements.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Move fuel storage to a site where all separation distances are met or exceeded:

- 3 m (10 ft.) from any building for Class I fuel (gasoline)
- 1.5 m (5 ft.) from any building for Class II fuel (diesel) storage
- 4.5 m (15 ft.) from any opening such as a door or window in any building
- 3 m (10 ft.) from fuel tank vent or fuel-dispensing location to fixed source of ignition
- 6 m (20 ft.) from propane storage
- 1 m (3 ft.) from any adjacent fuel storage

Locate fuel storage so it does not create a fire hazard for buildings.

5–8. Protection against spills (secondary containment)

BACKGROUND

Spills or leaks can occur in large quantities from tank ruptures or small quantities from pinhole leaks. Consequences for both surface and groundwater quality can be very serious if spills or leaks are not properly and promptly contained.

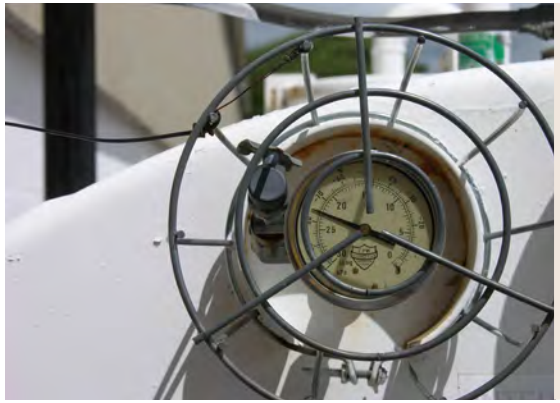
A dike can capture any spills or leaks from aboveground tanks.

Storage tanks less than or equal to 5,000 litres in size are not legally required to have secondary containment (dike structure or double-walled tank) provided that in the event of a loss or escape, the product does not:

- **create a hazard to public safety**
- **contaminate any fresh water source or waterway**
- **interfere with the rights of any person**
- **allow entry of product into a sewer system, underground stream or drainage system**

As the fuel tank owner or fuel user, you must determine if the above conditions are met. It is advisable to have diking for the protection of the environment, for human safety and to avoid costly cleanups.

The Liquid Fuels Handling Code requires all aboveground storage tanks with a capacity of greater than 5,000 litres to be equipped with a dike.



A vacuum reading indicates that both walls of a double-walled tank are sealed.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Install a dike to contain spills or leaks where it is legally required.

A dike is required for new fuel storage tank installation where the tank is less than 5,000 litres and does not meet the bolded conditions listed.

However, tanks constructed and approved as self-contained tanks, i.e., manufactured with dike or double-walled tank, do not require additional diking.

The diked area must be constructed so that it is liquid-tight and able to contain 110% of the capacity of the fuel storage tank. The entire structure must be built of non-combustible construction, e.g., steel.

All liquids will be removed through the top of the diked area (e.g., siphon or hand pump). The sides must be higher than the centre line of the fuel storage tank, and designed so that no enclosed space is created that may trap fuel vapours. The dike bottom can be visually inspected for any leaks or spills. Spills can be collected by special materials that absorb petroleum products.

A roof (weather shield) to keep rain out of the diked area is encouraged. If diked areas are open to the environment, accumulated water or product must be removed. Fuel-contaminated water must be taken to an acceptable treatment/disposal facility.

OPTION 2 – ACTION

Even if a dike is not legally required, install a dike or double-walled tank or a concrete pad or spill containment area under the fuel storage tank(s) for leak detection and containment of small spills. This will provide easier leak detection and some level of spill containment as determined by the height of the sidewall or lip.

5–9. Monitoring of fuel storage

BACKGROUND

The Liquid Fuels Handling Code requires all tank owners to check their fuel storage weekly to prevent and identify any leaks.

Records of the weekly inspection must be kept for the life of the tank.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Perform weekly visual inspections of the tank, dike/tank and partial spill containment area for leaks and corrosion.

If you detect a leak from the tank:

- take immediate action to prevent further loss of product
- clear the dike of any water and fuel that may be present
- contact the fuel supplier – the storage tank must be repaired or replaced

Keep weekly records of your inspections. It is much easier to prevent a spill than to clean one up.

OPTION 2 – ACTION

Consider installing a complete concrete base under fuel storage tank(s) that are currently sitting on the ground or a partial concrete pad to facilitate monitoring.

Start weekly monitoring of site and keep records.

Perform and record weekly visual inspections for leaks or corrosion.

A solid base helps to keep the fuel storage area free of vegetation.

5–10. Combustible materials

BACKGROUND

The area near the fuel storage and dispensers must be kept clear of combustible materials as required by the Liquid Fuels Handling Code.

Long grass, weeds, crops, oily rags, empty oil containers, tarps, and loose lumber are examples of combustible materials.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Keep a 3 m (10 ft.) area around the fuel storage free of any flammable products.

Placing the tank on a concrete pad (for areas not requiring a dike) will keep weeds under control. As an added benefit, if the tank is sitting on a good base, then leaks and/or spills are more easily identified.

5–11. Fuel storage signage

BACKGROUND

Proper signage helps ensure the tanks are filled with the right fuel, the user knows what fuel tank to use and what safety procedures to follow.

It is a violation of legislation if the required signs are not in place.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Contact fuel supplier to obtain the correct signage for the fuel storage area:

- each tank should have product identification signs
- “No Smoking” sign posted in storage area
- “No Ignition” sign posted in storage area

Fuel suppliers can provide proper signage for fuel storage tanks.

Proper wiring is a must for fuel pumps.

5–12. Electric fuel pump installation

BACKGROUND

The electrical service (type of wiring, switches, etc.) supplying electricity to the fuel pump installation must meet the Electrical Safety Code.

This includes permanent wiring with spark-proof junction boxes, and an emergency shutoff switch in the supply line to the pump to cut off power to equipment.

This power switch may be installed inside a lockable building for security reasons.

As a safeguard, an inline light connected on the outside of the building can, when lit, indicates power to the pump.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Contact the Electrical Safety Authority to inspect the existing installation.

OPTION 2 – ACTION

Contact a licensed electrician to rewire the fuel pump installation.

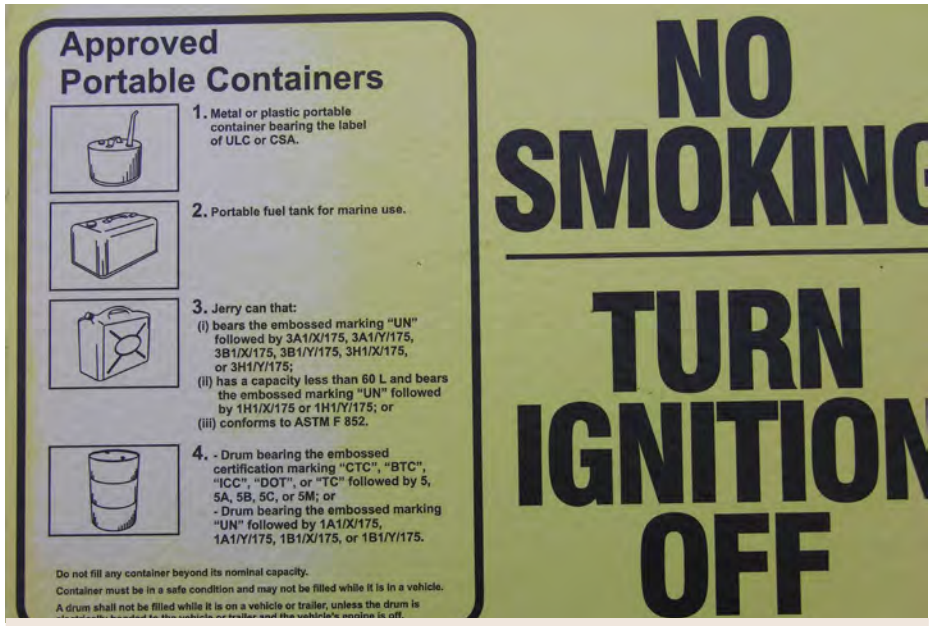
LOCATION AND METHOD OF REFUELING MOTORIZED VEHICLES

5-13. Method of refuelling vehicles and implements

BACKGROUND

Every farmer should assess their method of refuelling, location of refuelling, and the source of the fuel from a legislative and safety point of view.

Refuelling from portable containers is an important issue from both an environmental and safety perspective. Use only approved portable containers. Injury and death have occurred as a result of the use of non-approved portable containers.



Only use approved portable containers to transport fuel.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Always fuel vehicles and/or tractors at a service station or the farm tank source:

- if the field you are working in is too far away from the farm tank source, investigate the location of the nearest service station

OPTION 2 – ACTION

Use only approved portable containers, as required in the Liquid Fuels Handling Code to transport fuel from the source tank to the field:

- a list of approved portable containers can be found in the EFP Workbook's glossary under "Approved portable containers (petroleum)"
- jerry-type and plastic-type fuel containers can be checked for the easily identifiable codes that must be clearly marked on them
- larger portable containers such as small tanks mounted on pickups, wagons or trailers must be approved for the purpose of transporting fuel. These are special tanks with built-in baffles and high-impact resistance. They are to be attached to the vehicle in a specified manner.

Caution: When purchasing or checking on the suitability of a portable tank, be sure that:

- it is certified (i.e., to the CGSB 43.146 standard)
- it is built for the purpose of transporting combustible and flammable products
- the salesperson shows you the identification on the tank

Mounting an approved skid tank (meant for sitting on the ground) onto a trailer, wagon, or truck is not acceptable for transporting fuel. Only approved containers should be used at all times.

FUEL OIL STORAGE FOR APPLIANCES (FURNACES, BOILERS, STANDBY GENERATOR, INCINERATOR, MAPLE SYRUP EVAPORATION) – FUEL OIL CODE

5-14. Type of tank, external protection against corrosion, vent pipe, and monitoring

BACKGROUND

Fuel oil storage tanks must bear a ULC logo on their rating plates.

Steel tanks are painted with rust-inhibiting paint to prevent corrosion.

Tanks located inside buildings are required to have properly sized vent pipes that extend outside of the building.

Tanks should be inspected annually by the fuel oil supplier.

Confirm fuel oil storage is ULC-approved.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Inspect fuel tank for ULC logo on rating plate:

- replace any tank without a ULC stamp with a ULC-approved tank

OPTION 2 – ACTION

Inspect fuel tank for signs of corrosion:

- repair any minor rust or signs of abrasion with rust-resistant paint
- where corrosion is significant, replace the tank with a new ULC-approved tank

OPTION 3 – ACTION

Inspect vent pipe:

- for fuel storage tanks located inside buildings, have the fuel oil supplier inspect vent pipe and ensure it is properly sized and vented outside of building or relocate the fuel oil storage outside of building

OPTION 4 – MONITORING OF FUEL OIL TANKS

Request annual inspection of fuel storage by fuel oil supplier.

5-15. Overfill protection

BACKGROUND

A properly installed and operating overfill device is required to prevent spills from a storage tank that is overfilled by fuel supplier.

When operating properly, it prevents the storage tank being filled to more than 95% capacity.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Have fuel oil supplier inspect overfill protection device in fuel oil tank to ensure it is working properly.

Replace any defective device.

OPTION 2 – ACTION

Have fuel oil supplier install new overfill device on fuel storage tank if overfill protection is not already in place.

The overfill device is designed to prevent filling to more than 95% capacity.

5-16. Secondary containment for aboveground tank(s) having greater than 5,000 L capacity

BACKGROUND

These storages are legally required to have:

1) an approved dike designed to contain 110% of the capacity of the largest tank in place

or

2) double-walled tanks with protection to prevent vehicle contact

WHAT CAN YOU DO?

OPTION 1 – ACTION

Install an approved dike around tank(s) to contain 110% of the volume of the largest tank.

OPTION 2 – ACTION

Replace existing fuel storage with new double-walled tank.

OPTION 3 – ACTION

Install vehicle protection where needed.

For more information about the TSSA's Fuel Safety Program, see this factsheet.

5-17. Fuel delivery system between the fuel storage and an appliance (furnace, boiler, standby generator, maple syrup evaporator, etc.)

BACKGROUND

Fuel delivery system between fuel storage and an appliance (e.g., furnace, water heater, standby generator, maple syrup evaporator) is another location with a high likelihood for leaks or spills due to equipment failure.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Have the delivery system evaluated by a registered fuel oil mechanic:

- conduct visual inspection of equipment once per year for leaks
- make repairs to eliminate any leaks

Fuel delivery lines are often the source of leaks.

ALL UNDERGROUND TANKS (LIQUID FUEL HANDLING CODE/FUEL OIL CODE)

5-18. Unused tanks

BACKGROUND

Unused underground tanks are more of a risk to the environment than active tanks because they are usually forgotten about. Unused underground tanks include any tank that has not been removed or decommissioned. Tanks that have been crushed or filled up should be assessed as well.

Abandoned tanks that were not properly decommissioned may be a safety hazard, resulting in a collapse of the surface above the tank.

Underground fuel tanks previously filled with sand are not considered to be properly decommissioned. Filling with sand is no longer a recommended practice.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Properly decommission site. Contact TSSA, to determine the proper procedures for decommissioning.

Have a report prepared by an engineer or hydrogeologist in accordance with the Liquid Fuels Handling Code to identify the extent of all surface and subsurface contamination and recommend what actions will be taken to make the site safe.

Underground tanks previously filled with concrete are considered to be properly decommissioned if they meet the following three conditions:

- the tank was properly emptied of fuel and washed
- the tank did not leak and the surrounding soil was not contaminated
- the tank was adequately filled with concrete

5-19. Monitoring of registered, underground fuel storage tanks presently in use

BACKGROUND

An undetected leak from an underground fuel tank could severely damage groundwater and put human health at risk if water wells are affected.

All farmers must check their underground tanks regularly to prevent and identify any leaks. Monitoring and keeping records are mandatory. Consult with TSSA to ensure that your monitoring program is suitable for the size and type of your underground storage tank.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Maintain inventory control records for each tank. Collect daily tank measurements and compare to recorded use.

Check tank for presence of water (dip test). If water is leaking into the tank, the structure has been breached.

Keep fuel monitoring records for the life of the tank.

Fuel inventory monitoring can be achieved by measuring fuel levels with a dip stick and confirming that the reduction in inventory is equal to recorded fuel use.

EMERGENCY PLAN FOR ALL TANKS

5-20. Written emergency plan and cleanup equipment for spills

BACKGROUND

Both the Liquid Fuels Handling Code and the Fuel Oil Code requires that an emergency plan is prepared and placed where it is readily available at the site.

Having contact information and instructions at hand will greatly assist in dealing with a spill incident in an environmentally responsible manner.

The Spills Action Centre (24 hours a day, seven days a week) can be reached at **1-800-268-6060.**

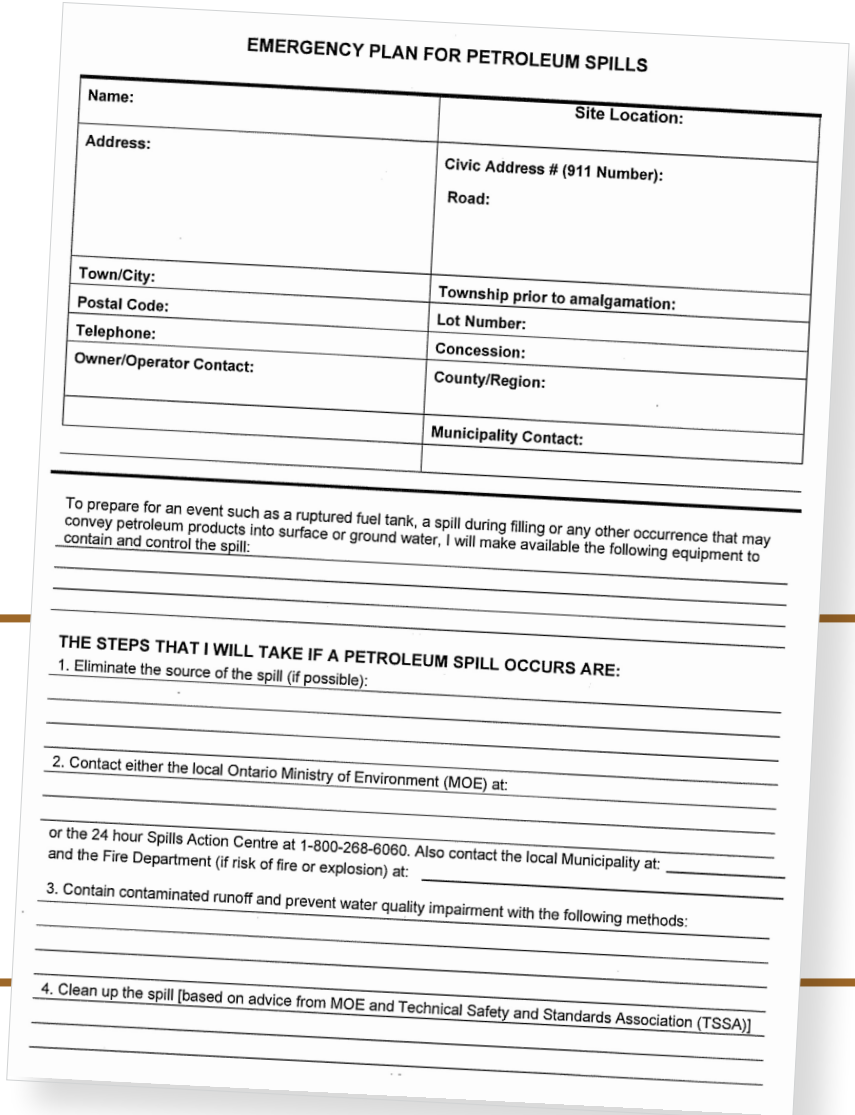
WHAT CAN YOU DO?

OPTION 1 – ACTION

Complete the Emergency Plan and the Contingency Plan developed for the EFP and post them in a visible location near the fuel storage site.

Ensure anyone on the farm who may use the fuel storage (spouse, hired labour, children, etc.) knows where the plan is and understands what to do if there is a spill.

Planning ahead will pay off if the unexpected happens.



EMERGENCY PLAN FOR PETROLEUM SPILLS

Name:	Site Location:
Address:	Civic Address # (911 Number): Road:
Town/City:	Township prior to amalgamation:
Postal Code:	Lot Number:
Telephone:	Concession:
Owner/Operator Contact:	County/Region:
	Municipality Contact:

To prepare for an event such as a ruptured fuel tank, a spill during filling or any other occurrence that may convey petroleum products into surface or ground water, I will make available the following equipment to contain and control the spill:

THE STEPS THAT I WILL TAKE IF A PETROLEUM SPILL OCCURS ARE:

1. Eliminate the source of the spill (if possible):

2. Contact either the local Ontario Ministry of Environment (MOE) at:

or the 24 hour Spills Action Centre at 1-800-268-6060. Also contact the local Municipality at: _____ and the Fire Department (if risk of fire or explosion) at:

3. Contain contaminated runoff and prevent water quality impairment with the following methods:

4. Clean up the spill [based on advice from MOE and Technical Safety and Standards Association (TSSA)]

FOR MORE INFORMATION

ONTARIO MINISTRY OF AGRICULTURE, FOOD AND AGRIBUSINESS (OMAFA)

- Agricultural Information Contact Centre (AICC)
  Toll free: 1-877-424-1300 | e-mail: ag.info.omafa@ontario.ca

  Find most of the resources listed below at www.ontario.ca

Best Management Practices Series

- Water Management
- Water Wells

ONTARIO SOIL AND CROP IMPROVEMENT ASSOCIATION

- Emergency Plan

CANADIAN STANDARDS ASSOCIATION (CSA)

- Liquid Fuels Handling Code, 2017
- B139ON-19 Ontario Installation Code for Oil-Burning Equipment, 2019

CANADIAN GENERAL STANDARDS BOARD

- Tel: 416-757-3611
- Intermediate Bulk Containers for Mobile Fueling CGSB-43.146 (Design, Manufacture and Use of Intermediate Bulk Containers for the Transportation of Dangerous Goods)

LEGISLATION/ACTS

- Technical Standards and Safety Authority Act, 2000
- Ontario Regulation 213/01 – Fuel Oil
- Ontario Regulation 217/01 – Liquid Fuels