

PETROLEUM PRODUCTS

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



Based on **Environmental Farm** Plan Workbook, 4th ed. 2013

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 5–15) of gasoline, diesel, heating oil or kerosene, and are used for farming purposes. It does not apply to liquid propane.

For petroleum storages that are located in a Source Water Protection Zone, the risk management measures needed to address the risk will be determined through the Source Water Protection process in your particular area. The measures may be the same as or more than required by EFP due to the proximity to a municipal drinking water supply. For more information, contact your local municipality or check their website under Source Water Protection Planning.

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 Best (4).
- 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. You should also consult with your fuel supplier prior to taking action.

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







ALL TANKS

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

BACKGROUND

How much is surface water at risk if a spill or leak develops in your fuel storage – taking into account soil characteristics and distance to surface water?

Legal implications apply, especially if a spill reaches surface water or causes environmental damage.



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).

WHAT CAN YOU DO?

OPTION 1 - ACTION

Move fuel storage the required distance 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.

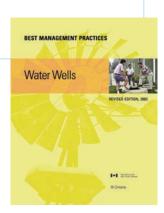
The diked area must be constructed so that:

- 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), and
- the sides are higher than the centre line of the fuel storage tank.



Water Management 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.

Water Wells 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.



5-2. Distance from petroleum storage to nearest well

BACKGROUND

Do you have a good sense of the level of natural protection afforded by the locations of your storage and well, and the soil type(s) onsite? It is important to consider.

Separation distance and soil type are indicators of whether extra attention should be given to maintenance, management or water testing. The greater the separation distance, the greater the opportunity for the soil to filter out any contaminants in the water before it reaches a well. The finer the texture of the soil, the slower the water moves through the soil, allowing more opportunity for filtering.

However, full protection is never guaranteed by distance or a good soil type such as clay.

There are legal implications. Minimum separation distances between fuel storage and the well are stated in the Liquid Fuels Handling Code and the Ontario Water Resources Act. Adherence to the legislation should have occurred at the time of well construction or fuel storage installation.

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.

Include moving your fuel storage in your future plans for improvements.

OPTION 2 - ACTION

Eliminate fuel storage on the farm:

• consider whether you need on-farm storage if offsite fuel supplies are available, e.g. at a nearby gas station, and whether you need both a gasoline and a diesel storage tank.

If fuel storage is 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 MOTOR VEHICLE FUELS – LIQUID FUELS HANDLING CODE

5-3. Dispenser (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 ground water 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 and external protection against corrosion – aboveground tanks

BACKGROUND

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

All fuel storage tanks must bear ULC rating plates.

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.

Note that only a licensed petroleum mechanic can install/repair fuel pumps, fuel equipment, or fuel tanks.

WHAT CAN YOU DO?

OPTION 1 - ACTION

Evaluate 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 ULC, CSA or cUL approved fuel storage tank with appropriate corrosion protection. It should have rust-inhibitor paint approved for application on steel. Corrosion protection must be maintained.



Evaluate condition of existing fuel storage tanks and maintain the corrosion protection.

Fuel storage tanks constructed of materials other than steel are being developed. They must be approved by ULC, CSA or cUL.

5-5. Security - aboveground tanks

BACKGROUND

Fuel storage must be secured adequately in order to prevent accidental spills or use by unapproved users.



A locked fuel storage will help to prevent unauthorized access.

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 to support position after each use.

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

OPTION 2 - ACTION

Eliminate fuel storage on the farm:

- consider whether you need on-farm storage if offsite fuel supplies are available, e.g. at a nearby gas station
- consider whether your operation needs both a gasoline and a diesel storage tank. If fuel storage is only required seasonally, use approved portable containers to supply fuel for short periods.

5-6. Separation distances - aboveground tanks

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)
- 3 m (10 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.

Install protective barriers to prevent vehicle contact.



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

5-7. Protection against spills and leaks - aboveground tanks

BACKGROUND

Spills or leaks can occur in large quantities from tank ruptures or small quantities from pinhole leaks. Consequences for both surface and ground water 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.

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 in the left column. (Tanks constructed and approved as self-contained tanks, i.e. manufactured with dike or double-walled tank, do not require additional diking.) If a dike is required, install it as soon as possible.

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.q. steel.



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

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 allowed. 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

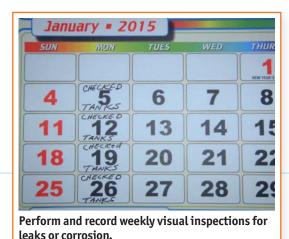
Even if a dike is not legally required, install a dike or double-walled tank or a concrete pad or spill containment area under the fuel storage tank(s) for leak detection and containment of small spills. This will provide easier leak detection and some level of spill containment as determined by the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

5–8. Monitoring aboveground tanks

BACKGROUND

The Liquid Fuels Handling Code requires all farmers 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 in 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. Simply get in the habit of following the procedures: 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.

5-9. Combustible materials - aboveground tanks

BACKGROUND

The area in the near vicinity of 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. Hydro poles that are in use are not included.

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.



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

5–10. Fuel storage signage

BACKGROUND	WHAT CAN YOU DO?
Proper signage helps to ensure the tanks are filled with the right fuel and also that 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.	OPTION 1 – ACTION
	Contact fuel supplier to obtain the correct signage for the fuel storage area:
	tanks should have product identification signsNo Smoking sign posted in storage areaNo Ignition sign posted in storage area.



Fuel suppliers can provide proper signage for fuel storage tanks.

5-11. 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 of installation 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, indicate 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.



Proper wiring is a must for fuel pumps.

5–12. 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. Only approved containers are allowed.

Unapproved portable tanks must not be used. Injury and death have occurred as a result of the use of non-approved portable containers

Protect yourself!



WHAT CAN YOU DO?

OPTION 1 - ACTION

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

- distance is the main obstacle to this option
- if the field you are working in is too far away from the farm tank source, you should investigate the location of the nearest service station. This may be a viable option.

OPTION 2 - ACTION

Use only approved 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 containers (petroleum)"
- jerry-type and plastic-type fuel containers can be checked for the easily identifiable codes that must be 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 or ULC C142.13 standard), and
- 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

5-13. Type of tank, external protection against corrosion, tank venting, 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.

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.



Confirm fuel oil storage is ULC-approved.

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.

5-14. 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.

5–15. Secondary containment for aboveground tank(s) having greater than 5,000 L capacity

BACKGROUND	WHAT CAN YOU DO?
These storages are legally required to have:	OPTION 1 – ACTION
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.	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.

5–16. Fuel delivery system

BACKGROUND	WHAT CAN YOU DO?	
Transfer equipment between fuel storage and an appliance (e.g. furnace, water heater) is another location with a high likelihood for leaks or spills due to equipment failure.	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.	

For more information about the TSSA's Fuel Safety Program, see www.tssa.org/en/fuels/fuels.aspx



Lines are often the source of leaks.

UNDERGROUND TANKS

5-17. Unused underground tanks

BACKGROUND

Unused underground tanks are probably 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. 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 Fuels Safety Program, 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 to recommend what actions will be taken to make the site safe.

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

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

5-18. Monitoring underground tanks

BACKGROUND

An undetected leak from an underground fuel tank could severely damage ground water, 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

Monitor underground fuel tank as indicated in Question 5–18 in the EFP Workbook under Best rating (4).

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.



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

5–19. Written emergency plan and cleanup equipment for spills

BACKGROUND

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

Having telephone numbers 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

Prepare a customized emergency plan and make it accessible near the fuel storage site.

Complete the Emergency Plan and the Contingency Plan developed for the EFP and post them in a very visible location.

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.

EMERGENCY PLAN FOR PETROLEUM SPILLS Name: Civic Address # (\$11 Number): Road: Township prior to amalgamation: Postal Code: Lot Number:

Planning ahead will pay off if the unexpected happens.



BMP materials are excellent sources to better understand on-farm environmental issues and discover a range of proven, practical options to address them.

FOR MORE INFORMATION

Ontario Ministry of Agriculture, Food and Rural Affairs

The Ministry of Agriculture, Food and Rural Affairs offers a wide variety of information resources about Ontario agriculture. Most can be found online at www.ontario.ca/omafra or ordered through ServiceOntario.

BEST MANAGEMENT PRACTICES

BMP publications are available at no charge to Ontario farmers. Below is a sampling:

Buffer Strips

Controlling Soil Erosion on the Farm

Cropland Drainage

Establishing Tree Cover

Field Crop Production

Irrigation Management

Managing Crop Nutrients

Manure Management

No-Till: Making it Work

Nutrient Management Planning

On-Farm Energy: A Primer

Phosphorus Primer

Soil Management

Water Management

Water Wells

Woodlot Management

To order, see ServiceOntario information.

Inquiries to the Ontario Ministry of Agriculture, Food and Rural Affairs

Agricultural Information Contact Centre

Ph: 1-877-424-1300

Email: ag.info.omafra@ontario.ca
Web: www.ontario.ca/omafra

Order through ServiceOntario

Online at ServiceOntario Publications – www.ontario.ca/publications

By phone through the ServiceOntario Contact Centre

Monday-Friday, 8:30 am-5:00 pm

416-326-5300

416-325-3408 TTY

1-800-668-9938 Toll-free across Ontario

1-800-268-7095 TTY Toll-free across Ontario

Consultation

Technical Standards & Safety Authority (TSSA) Fuels Safety Program

www.tssa.org

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