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11.0 HANDLING AND STORING AGRICULTURAL INPUTS

Agricultural inputs include fertilizer, pesticides and petroleum. When handling these products, maintain as great a distance as

possible from any water source. All products should be stored safely and securely.

11.1 Pesticide Storage and Handling

Improper pesticide storage can result in spillage, which can contaminate soil and water, and can harm humans, animals and plants. When mixing and loading pesticides, follow proper procedures and take extra caution.

General Storage

- The best practice is to avoid storing any pesticide on the farm. If on-farm storage is necessary, the amount of product stored must not exceed 20 litres or 20 kilograms. Storage should not exceed one month and should be in a signed and secure facility.
- Use pesticides immediately. If they cannot be used immediately, store pesticides at a supplier. Suppliers handle and store pesticides as hazardous goods. This eliminates the liability of on-farm accidents.
- Consult labels for specific storage instructions. Do not store near food, feed, seed, potable water or protective equipment.
- Store and handle pesticides at a distance greater than 30 metres (100 feet) from a water body and 90 metres (300 feet) from a water well. This distance also applies when mixing pesticides.
- Return unopened product to the dealer for a refund.
- All original containers must retain manufacturer's labels and any supplementary containers must also be properly labelled.

The best storage facility will contain spills, and eliminate the potential of soil and water contamination.

Key considerations for a storage facility are:

- The facility should have an impermeable floor (i.e. sealed concrete).
- Use curbs to contain leaks.
- Avoid the use of a floor drain. If using a drain, collect drainage in a proper holding tank.
- Use an overpack container if product container is leaking. Pack in a larger

container and surround with leak collection material (i.e. kitty litter). An overpack container must be large enough to fully contain a pesticide container.

- Site should be downslope from all water sources.
- Site should be more than 90 metres (300 feet) from a water well.
- Site should be more than 150 metres (500 feet) from a water body.

Emergency Plan

Producers must have an emergency plan for dealing with leaks or spills at the storage site or during handling. This written plan should include the location of emergency equipment, emergency telephone numbers, cleanup methods and steps that must be followed.

Have the following cleanup material readily available:

- Absorbent material (i.e. kitty litter).
- Shovel.
- Waste container.
- Protective equipment, including rubber gloves and rubber boots.

Mix and load pesticides properly to minimize the risk of water or soil contamination. On-site mixing is the best practice. Bring water in with a nurse tank. For field mixing and loading, move the mixing site with each application.

Permanent Storage

- The mixing and loading area should be able to contain spills and drips. It should have an impermeable floor and curbs to contain product.
- It should have a sump to collect product.
- It should be capable of containing 125 percent of the sprayer's tank volume.
- The pad should be covered to eliminate increased volumes from run-on and precipitation or be designed for these volume increases.

- The tank should be filled from the top with an air gap of at least 15 centimetres (6 inches). If another method is used to fill the tank, there should be a backflow prevention device on the hose.

For all pesticide handling situations:

- Ensure the filling operation is supervised continuously for the duration of the procedure.
- Have spill containment and cleanup equipment ready.
- Have emergency communication equipment available and ready to use.

When changing pesticide products, clean the tanks to prevent cross-contamination between products.

- Rinsate can be used as mix water for future applications when the same chemical is being applied.
- Rinsate can be applied to non-crop areas (i.e. farmsteads, waste areas) away from surface water, water wells, septic systems and other sensitive areas (i.e. gardens, shelterbelts).
- Rinsate can be applied for total vegetation control or used as a second spray over treated areas.

Transporting Pesticides

Pesticides must be secured during transportation. Do not transport pesticides with human or animal food, household furnishings, toiletries, clothes, bedding or similar items.

11.2 Fertilizer Storage and Handling

As with pesticides, storing and handling fertilizers must be done with extra caution. Leaks or spills can contaminate soil and water, and can harm humans, animals and plants.

Store all fertilizer in a secure storage facility. Ideally this means in a locked and fenced area, locked building or storage structure separate from all other activities.

Generally, it is best not to store any fertilizer on the property other than what is needed for immediate use. This reduces the potential of a spill or other accident. If product must be stored, the amounts stored must not exceed the following:

- Dry – Less than 1 tonne (2,205 pounds).
- Wet – Less than 200 litres (44 gallons).

Storage facilities should:

- Have a locked, fenced area, building or storage structure away from areas where other farm activities could damage containers or cause a fertilizer spill.
- Have sight gauges and lock-on valves if liquid fertilizer is being stored.
- Have appropriate signage indicating contents, in case of fire.
- Be located away from water sources. Ensure that the distance to water wells is more than 100 metres (300 feet) and the distance to water bodies is more than 20 metres (60 feet).

Producers should have an emergency plan in place in case of leak or spill. This written plan should include the location of emergency equipment, emergency telephone numbers, cleanup methods and steps to follow.

Store dry fertilizers in a building, or in an epoxy-lined bin situated on an impermeable surface, such as sealed concrete. If using a permanent mixing and loading area, it should be on an impermeable pad and be swept after use.

For liquid fertilizers, secondary containment of the storage is necessary. A secondary containment should be constructed from an impermeable material, either a synthetic or clay liner.

If using a permanent mixing and loading area, ensure that spills and leaks can be collected and contained. The water supply should have a backflow prevention device or have a 15 centimetre (6 inch) air gap above the tank. When filling the tank, it must be constantly supervised. Use a closed handling system when possible.

Monitor storage sites regularly and inspect all tanks, valves and plumbing.



11.3 Petroleum Storage and Handling

Any fuel or lubricant can cause problems if it contaminates soil or water. Under Alberta's *Environmental Protection and Enhancement Act*, all gasoline and diesel fuel spills and leaks of 200 litres (44 gallons) or more must be reported to Alberta Environment. Spills of a lesser amount must be reported if the spill is causing, has caused or may cause an adverse effect on the environment. A leak or spill of any amount into a watercourse, water body or groundwater must also be reported. Cleanup costs can be applied as a penalty.

Currently, the *Alberta Fire Code: 1997* governs the storage and handling of petroleum products. This *Code* is administered by Alberta Municipal Affairs. On-farm storage and handling of petroleum products are exempt. However, the following suggested practices serve as a reasonable set of guidelines for Alberta farms.

Liquid petroleum products, such as gasoline, diesel fuel and kerosene, must be stored safely to prevent spills and leaks. These products can move quickly through the soil and into groundwater. A leak of one drop per second can release about 900 litres (200 gallons) of gasoline into the groundwater in one year. It only takes a few litres of gasoline to severely contaminate a farmstead's drinking water supply. It is difficult to detect low levels of fuel contamination in water because it is almost impossible to smell or taste any petroleum product. Water that seems pure may be contaminated and can affect human health.

Explosions are another potential danger. Explosions can occur from leaking vapours that collect in basements, sump pits or other underground structures.

The following guidelines are suggested for storing petroleum products:

- Protect aboveground tanks, underground storage tanks and piping against corrosion to prevent leaks.
- Install tanks in accordance with the *Alberta Fire Code*.
- Lock all fuel tanks when not in use. This reduces the risk of spills caused by vandalism and theft.

- Mount tanks at ground level or support on concrete. This provides at least a two-hour fire resistant rating.
- Keep the area around the tank free of vegetation.
- All storage tanks should have secondary containment, such as dikes or double-walled tanks, to contain spills.
- Protect all pumps, lines and tanks to prevent collision damage. Install bollards (barriers constructed of a sturdy material, such as steel piping filled with cement) close to fuel tanks to guard against collision damage. Ensure fill-up hoses are long enough so vehicles and farm equipment are kept at a safe distance from the tanks.
- Install anti-siphon valves between the pump and the tank to prevent the tank from draining if the line breaks.
- If no dike is present, locate tanks downslope from buildings, grain storages, water wells and surface water so any spilled or leaked fuel drains away from these.

Emergency Plan

Producers should have an emergency plan for dealing with leaks or spills. This written plan should include the location of emergency equipment, emergency telephone numbers, cleanup methods and steps that must be followed.

Contact Alberta Environment at 1-800-222-6514 if a spill or leak occurs.

If an aboveground spill or leak occurs:

- Stop the flow of fuel.
- Contain the spilled fuel with earth or another suitable absorbent material.
- Shovel the contaminated earth or absorbent material into a clean container.
- Dispose of contaminated cleanup materials in accordance with Alberta Environment guidelines.

For lubricant leaks or spills on floors, clean up using sawdust, rags or other absorbent material. Spills on soil should be excavated. In both cases, the soil or absorbent material must be disposed of in accordance with Alberta Environment guidelines.

Dispensing Fuel

- Fuel can be dispensed using hand or electric pumps, but must take place under constant supervision. Gravity feed is not acceptable. The dispensing tool must also be ULC and CSA approved.
- Close valves on tank discharges after use to prevent leakage through the hose or nozzle.
- When filling containers such as jerry cans, ensure they are in an upright, stable position.

Storage Facility Monitoring

- Keep fuel lines, hoses, valves and nozzles in good repair.
- Inspect overhead tanks and the area around the tanks for leaks twice monthly.
- Monitor the volume of fuel in on-ground and below-ground tanks to detect leaks.
- It is important to monitor fuel storage for leaks. The best way to determine if a leak exists is to meter fuel use and track the amount of fuel used.

Figure 11.1 Separation Distance Guidelines for Fuel Storage

Potential contamination to	Minimum distance from fuel storage	
	metres	feet
Water well	90	300
Water body	30	100
Any building	3	10
Source of ignition*	6	20
Another fuel tank	1	3
Propane cylinder	3	10
Propane tanks	6	20

* This includes sources such as motors and electrical sparks unless electrical sources meet the electric code.

11.4 For More Information

Contact the following offices for the publications listed or for more information.

Alberta Agriculture, Food and Rural Development (AAFRD)

Agriculture Information Centre 1-866-882-7677

Publications 1-800-292-5697

www.agric.gov.ab.ca

- *Crop Protection Manual* Agdex 606-1.
- *Fertilizer and the Environment (Video)*.
- *Storing and Handling of Fuel on the Farm* Agdex 769-8.

Alberta Environment

(780) 944-0313

www.gov.ab.ca/env

- *Pesticide Storage: Regulatory Requirements and Guidelines*.

Canadian Association of Agri-Retailers

(204) 989-9300

www.caar.org

- *Fertilizer Storage and Handling*.



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