

INFOSHEET #3

PESTICIDE HANDLING AND STORAGE

How to address concerns identified in Environmental Farm Plan Worksheet #3



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 on-farm pesticide handling and storage.

For pesticide storages and handling facilities 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 (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.

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

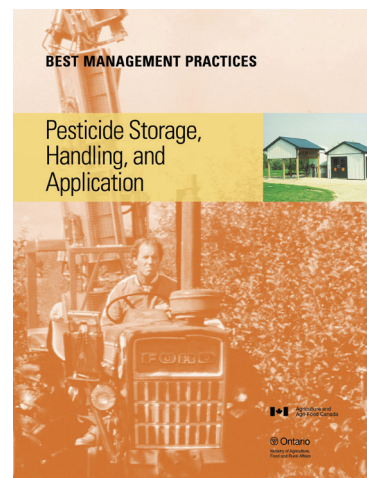
MIXING AND LOADING PESTICIDES

3-1. Mixing/loading area

BACKGROUND	WHAT CAN YOU DO?
<p>Containment is a key safety measure when handling pesticides. Pesticide leaks or spills, when contained, will not percolate down through soil into ground water, or run off the surface to contaminate streams, ditches, ponds, etc.</p> <p>If a water source is contaminated as a result of a pesticide spill from a mixing/loading area, the landowner will be held responsible.</p>	<p>OPTION 1 – ACTION</p> <p>Construct a mixing/loading area with an impermeable floor, curb, spill collection sump, and permanent roof to exclude rainfall:</p> <ul style="list-style-type: none"> • collect rinsate, store in separate labelled containers, and apply to crops noted on pesticide label • compare costs of construction options. <p>OPTION 2 – ACTION</p> <p>Mix and load pesticide products at site of spray application – away from surface water, wells, etc. in a new location each time:</p> <ul style="list-style-type: none"> • more easily done with a portable water supply • requires added labour for transporting water and pesticide. <p>OPTION 3 – ACTION</p> <p>Mix and load pesticides at field site using temporary plastic-lined berms for containment:</p> <ul style="list-style-type: none"> • more easily done with a portable water supply • will require added labour for transporting water and pesticide.



A dedicated mixing/loading area will reduce the risk of surface or ground water contamination.



To learn more about mixing/loading sites, see the BMP publication Pesticide Storage, Handling and Application, pages 38-41.

3-2. Distance from permanent mixing/loading area to nearest surface water

BACKGROUND

The shorter the distance between the permanent pesticide mixing/loading area and surface water, the greater the risk of contaminating surface water supplies.

Sloping topography and heavy soils increase the chance of contaminated runoff reaching surface water.



Slope and soil type are major factors in determining the risk of surface water contamination. To see a sample layout for a new storage, see the illustration on page 9.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Relocate the permanent mixing/loading area an adequate distance from surface water:

- verify that the new location will change the final EFP distance rating to a (3) or (4) Best.

OPTION 2 – ACTION

Increase the flow path distance between surface water and permanent pesticide mixing/loading area:

- reshape land or build diversion to direct runoff away from surface water to a location in the field or along a flow path where it will not likely reach the surface water
- ensure any land-forming changes will not cause or increase erosion on either your property or neighbouring lands.

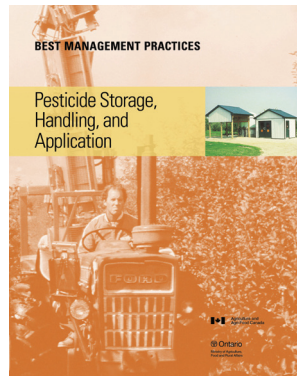
Professional assistance to site and design berms is recommended when such work is being considered, particularly along larger watercourses.

A permit may be required to do work adjacent to surface water. Contact your local Conservation Authority for additional information.

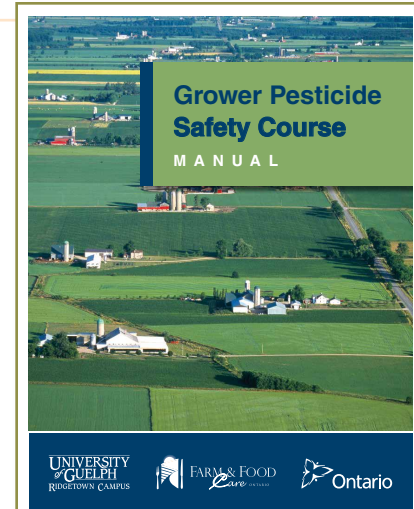
OPTION 3 – MONITORING

For the permanent mixing/loading area with a roof and impermeable floor with curb for containment:

Monitor the mixing/loading area regularly during use – visually checking for leaks, cracks or seepage of liquids from the structure.



For more information on siting permanent mixing/loading areas, see BMP Pesticide Storage, Handling and Application, pages 16-17.



The Grower Pesticide Safety Course teaches you how to keep you, your family and the environment safe when handling pesticides. See www.opep.ca for more information.

3-3. Distance from permanent mixing/loading area to well

BACKGROUND

The greater the distance between the permanent mixing/loading area and the well, the better. Distance lowers the chance of a spill collecting in the vicinity of the well and causing direct contamination, which could have human health impacts.

Also, if leakage from the permanent mixing/loading area reaches ground water, the well is less likely to be contaminated if it is located as far from the mixing/loading area as possible.

Soil type, depth to water table and bedrock will also influence the contamination potential.



Separation distances to water wells help protect drinking water quality. Soil type and depth to water table also affect risk of contamination.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Locate the permanent mixing/loading area the required distance away from the well:

- verify that the new location will change the final EFP distance rating to a (3) or (4) Best
- locate the mixing/loading area downslope of well
- monitor well water for pesticides used at least once a year until the new mixing/loading area is built
- note that moving permanent structures could result in structural damage to the building and may be cost-prohibitive – a replacement structure may be the best option.

OPTION 2 – ACTION

Drill a new well the required distance from the permanent pesticide mixing/loading area:

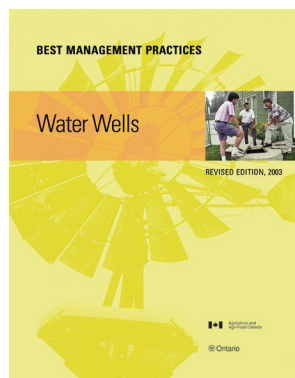
- verify that the new location will change the final EFP distance rating to a (3) or (4) Best
- where the minimum legal separation distances cannot be attained due to site restrictions, seek guidance from Ontario Ministry of the Environment and Climate Change
- monitor well water for pesticides at least once a year until the new well is constructed
- make sure the old well is properly abandoned according to Ontario Regulation 903 under the Ontario Water Resources Act.

OPTION 3 – MONITORING WELL WATER

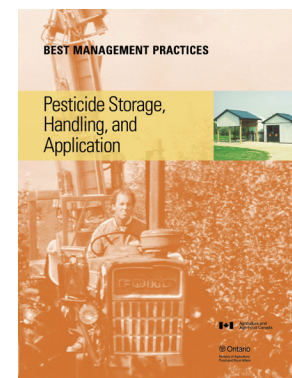
For existing permanent pesticide mixing/loading areas that have an impermeable floor with no cracks and a curb installed to collect spills:

Test the well water for pesticides at least once a year.

If a test reveals contamination, stop drinking the water or providing it to livestock, and have an action plan in place to identify and address the problem immediately.



To better understand site considerations to safeguard well water quality, see pages 33–36 of this BMP publication.



For more information about risks to ground water and wells, see pages 14–17 of BMP Pesticide Storage, Handling and Application.

3–4. Backflow prevention on water supply when filling sprayer

BACKGROUND

The backflow of a pesticide from a sprayer tank can quickly contaminate surface water and ground water – and possibly reach well water.

Eliminating potential pesticide backflow from a sprayer tank protects the quality of drinking water.



Anti-backflow devices should be attached to any faucet that supplies water for pesticide application.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Use a separate water tank to supply water to the sprayer:

- pump water from a source (well, watercourse, etc.) into a water-holding tank at the mixing/loading area, or moved to the mixing/loading area, located at the required distance from wells and surface water
- consider location and availability of the water source, and the location of mixing/loading area.

OPTION 2 – ACTION

Install a permanent anti-backflow device on the water supply line:

- place a check valve in the supply line near the tap or install an anti-backflow siphoning device on the tap.

OPTION 3 – ACTION

Maintain a permanently fixed, 15 cm (6 in.) air gap between the water supply line and the sprayer tank.

3–5. Sprayer tank water filling supervision

BACKGROUND

Vigilance is required to avoid handling-related spills and possible surface and ground water contamination.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Ensure constant supervision during filling of the sprayer tank.



Never leave a sprayer unattended during filling.

3–6. Disposal of sprayer and container rinsate (rinse water)

BACKGROUND

Rinsate is a mixture of water and a low concentration of a pesticide, left over from spraying and held in spray lines, pumps and filters.

Every effort should be made to minimize excess spray mix by mixing the tank correctly in the first place.

Sprayer and container rinsate must be treated in the same manner as the spray: applied to crops listed on the pesticide label, and at the required distance from surface water and wells.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Apply rinsate to crops listed on label at the required separation distances from surface water and wells.

Collect each type of rinsate separately so that it is applied only to the crop(s) listed on the label:

- don't mix rinsate from different spray materials unless the labelled crops are similar and the materials are compatible.
- verify that the location of rinsate application will change the final EFP distance rating to a (3) or (4) Best.


Minimize excess spray mix/rinsate to be stored:

- mix tank as precisely as possible
- during cleaning, spray immediately on a labeled crop (rather than collect) – in a different location each time, never exceeding the per hectare amount.

For more information, see BMP Pesticide Storage, Handling and Application, pages 51–52.

DISPOSAL OF PESTICIDE CONTAINERS

3-7. Return, rinsing and disposal of empty containers

BACKGROUND	WHAT CAN YOU DO?
<p>Proper rinsing and disposal of empty pesticide containers and/or the use of returnable or refillable containers will lessen the threat of contamination of surface and ground water.</p> <p>Improper disposal of unrinsed containers could result in pesticides escaping to surface and ground water.</p>  <p>Use returnable or refillable containers. Return emptied containers to the supplier as soon as possible.</p>	<p>OPTION 1 – ACTION</p> <p>Use returnable or refillable containers, and return empty containers to the supplier as soon as possible:</p> <ul style="list-style-type: none"> • consider the convenience and availability of this option. <p>OPTION 2 – ACTION</p> <p>Triple-rinse or pressure-rinse empty pesticide containers, then take them to a pesticide container recycling depot:</p> <ul style="list-style-type: none"> • note that the maximum limit on the size of container accepted is 23 L • for pesticide containers that are greater than 23 L in size, contact your local dealer for details on disposal of these containers or contact CleanFARMS at www.cleanfarms.ca • check your community for recycling options – many farm supply outlets are pesticide container recycling depots as well. <p>OPTION 3 – ACTION</p> <p>Triple-rinse or pressure-rinse containers. Take clean containers and paper or cardboard containers to your municipal landfill.</p>

For more information regarding disposal of pesticide containers, see BMP Pesticide Storage, Handling and Application, page 55.

3-8. Unwanted/obsolete commercial pesticides

BACKGROUND	WHAT CAN YOU DO?
<p>Proper disposal of unwanted/obsolete pesticides will lessen the threat of contamination of surface or ground water supplies.</p>  <p>Unwanted pesticides must be securely stored until disposed of in a safe manner. Keep in original labelled containers and check for leaks.</p>	<p>OPTION 1 – ACTION</p> <p>Store products properly in a secure dry location, and return them to a pesticide collection depot as soon as possible:</p> <ul style="list-style-type: none"> • to find a location near you, go to www.cleanfarms.ca. <p>OPTION 2 – ACTION</p> <p>Store products properly in a secure, dry location, and arrange for pickup by a hazardous waste hauler who is licensed by Ontario Ministry of the Environment and Climate Change.</p>

EMERGENCY PLAN

3–9. Emergency plan and cleanup equipment for spills

BACKGROUND

Without a written emergency plan in place and spill cleanup equipment at hand, you will be very vulnerable to damages incurred as the result of a spill. You must be aware of who to notify and what procedures to follow to halt the spill and then clean it up.

Please review and complete the attached sheets as they apply to your farm operation.

EMERGENCY TELEPHONE LIST	EMERGENCY TELEPHONE LIST
Farm Name:	Farm Name:
Address:	Address:
Town/City:	Town/City:
Postal Code:	Postal Code:
Telephone:	Telephone:
Owner/Operator Contact:	Owner/Operator Contact:
Civic Address # (911 Number):	Civic Address # (911 Number):
Road:	Road:
Township prior to amalgamation:	Township prior to amalgamation:
Lot: Concession:	Lot: Concession:
County/Region:	County/Region:
DIRECTIONS TO FARMSTEAD:	DIRECTIONS TO FARMSTEAD:
FARM MANAGER:	FARM MANAGER:
ALTERNATE CONTACT:	ALTERNATE CONTACT:
FAMILY DOCTOR:	FAMILY DOCTOR:
AMBULANCE:	AMBULANCE:
FIRE DEPARTMENT:	FIRE DEPARTMENT:
POLICE DEPARTMENT:	POLICE DEPARTMENT:
HOSPITAL:	HOSPITAL:
ONTARIO HYDRO:	ONTARIO HYDRO:
LOCAL MUNICIPALITY:	LOCAL MUNICIPALITY:
MOE:	MOE:
POISON INFORMATION CENTRE (24 HRS.) TORONTO 1-800-268-9018 OTTAWA (BILINGUAL) 1-800-267-1373	POISON INFORMATION CENTRE (24 HRS.) TORONTO 1-800-268-9018 OTTAWA (BILINGUAL) 1-800-267-1373
SPILLS ACTION CENTRE 24-HOUR SERVICE CALL 1-800-268-6060	SPILLS ACTION CENTRE 24-HOUR SERVICE CALL 1-800-268-6060

If a spill occurs, eliminate the source and then call the Spills Action Centre at 1-800-268-6060.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Prepare a written emergency plan such as the one included in the EFP Contingency Plan booklet:

- keep the plan where it is readily accessible and post one copy in a visible location at or near the storage
- inform others on the farm of the plan and its location
- have spill cleanup equipment/materials readily available
- re-evaluate the plan periodically.

If a pesticide spill occurs, take these actions:

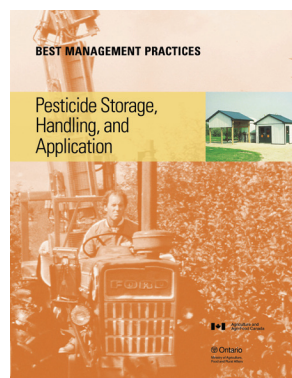
1. Identify the product and eliminate the source of the spill if possible. Always protect yourself from pesticide contamination.
2. Immediately contact the local Ontario Ministry of the Environment, Conservation and Parks (MOECP) or the 24 hour Spills Action Centre. If an explosion/fire occurs or there is a risk of one, contact the fire department.
3. Contain the spill – act according to the advice supplied by MOECP.

For liquid spills:

- a. Cover the spill with a thick layer of absorptive material (soil, vermiculite, kitty litter, etc.). Allow pesticide to be soaked up by the absorptive material.
- b. Sweep or shovel absorptive material into the waste drum.

For dust, granular, or powder spills:

- a. Sweep or shovel into the waste drum.
4. Clean up the spill. Contact MOECP for the appropriate method of disposal and decontamination.



For more details on how to properly clean up after a pesticide spill, see BMP Pesticide Storage, Handling and Application, pages 52–54.

PESTICIDE TRANSPORTATION

3-10. Transportation

BACKGROUND	WHAT CAN YOU DO?
<p>Pesticides must be secured during transportation to prevent a spill that could potentially contaminate water.</p> <p>During transport, pesticides cannot be placed with food or other specified household items that may become contaminated.</p> <p>A pesticide warning sign must be displayed on your vehicle when transporting more than 500 L of pesticide.</p>	<p>OPTION 1 – ACTION</p> <p>During transportation, secure pesticides from physical damage and ensure that other people do not have access to these pesticides. Unless pesticides are secure and out of sight, there must be continuous supervision.</p> <p>Do not transport pesticides with food or other specified household items.</p> <p>Place a warning sign on your vehicle when travelling on any road when transporting more than 500 L of pesticides.</p>



A pesticide storage warning sign must be placed on a vehicle that is transporting more than 500 L of pesticides on any road. The sign must also be displayed on unattended vehicles carrying pesticides.

For more information about transportation requirements, see page 37 of BMP Pesticide Storage, Handling and Application.

PESTICIDE STORAGE

3-11. Total amount of pesticide stored

BACKGROUND	WHAT CAN YOU DO?
<p>Long-term storage of pesticides is not desirable. The smaller the quantity of pesticides stored on the farm, the lower the risk of spills and contamination of surface or ground water.</p>	<p>OPTION 1 – ACTION</p> <p>Have your pesticides custom-applied:</p> <ul style="list-style-type: none"> • assess economics, availability and timeliness of custom applicators. <p>OPTION 2 – ACTION</p> <p>Purchase only the quantity of pesticides required to spray the crops:</p> <ul style="list-style-type: none"> • plan to purchase only enough pesticide for immediate use • store no more than 20 kg or 20 L of pesticide for longer than immediate use period • will require an accurate estimation of pesticide quantities needed. <p>OPTION 3 – COMPENSATING FACTOR</p> <p>Use only pesticide storage structures that have an impermeable floor with a full curb installed and comply with storage requirements listed in Question 15, Worksheet #3.</p> <p>All pesticide containers must be properly labelled.</p>



In some situations, custom application may be a viable option to reduce on-farm environmental and safety risk in pesticide handling and storage.

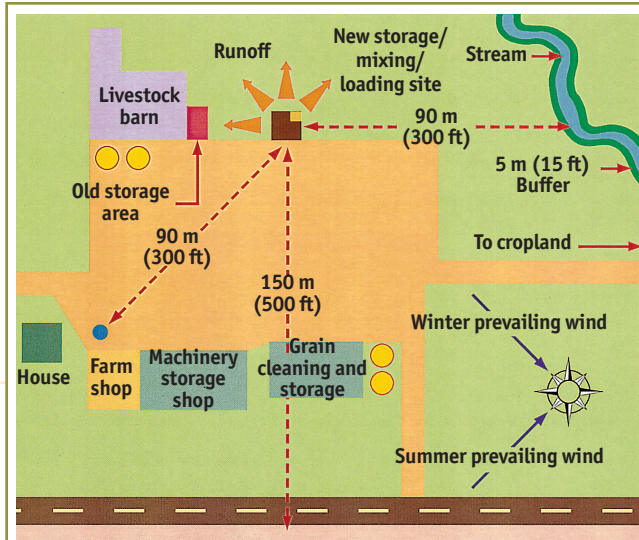
For more information about pesticide storages, see pages 18-34 of BMP Pesticide Storage, Handling and Application.

3-12. Distance from pesticide storage to nearest surface water

BACKGROUND

The greater the distance between the pesticide storage and surface water, the lower the risk of contaminating surface water supplies.

Sloping topography and heavier soils will further increase the chance of contaminated runoff reaching surface water if a pesticide spill occurs.



The distance from a pesticide storage to the nearest surface water should be at least 61 m (200 ft).

WHAT CAN YOU DO?

OPTION 1 – ACTION

Situate the pesticide storage the required distance from surface water:

- note that the new storage location should change the final EFP distance rating to a (3) or (4) Best
- be aware that moving permanent structures could result in structural damage to the building and may be cost-prohibitive.

OPTION 2 – ACTION

Increase the flow path distance between surface water and the pesticide storage:

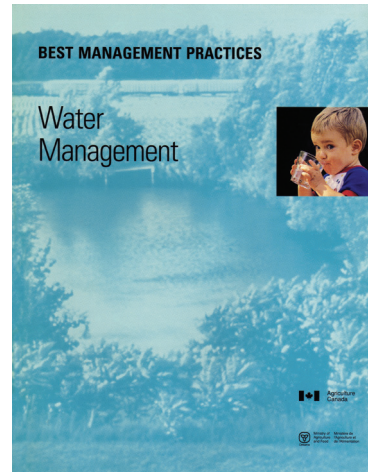
- ensure any land-forming changes will not cause or increase erosion on either your property or neighbouring lands.
- seek professional assistance to site and design berms if you are considering such work, particularly along larger watercourses
- contact your local Conservation Authority to see if a permit is required to do work adjacent to surface water, and for additional information
- note that the flow path length must meet or exceed the minimum distance specified in the (3) category.

OPTION 3 – MONITORING

For fixed permanent storages that have an impermeable floor with no cracks and a curb installed to collect spills:

Monitor the storage on a scheduled routine, visually checking for leaks, cracks or seepage of liquids from the storage.

For more information about siting pesticide storage facilities, see pages 14-17 of BMP Pesticide Storage, Handling and Application.



This BMP publication shows how surface and ground water moves through a farm setting, and what can be done around the farm to protect water quality.

3-13. Distance from pesticide storage to well

BACKGROUND

The greater the distance between the pesticide storage and the well, the lower the chance that a spill will collect in the vicinity of the well head and cause contamination, which could have human health impacts.

Also, if leakage from the storage reaches ground water, contamination reaching the well is less likely if the well is located farther from the storage.

Soil type, depth to water table and bedrock will also influence the contamination potential.



The distance from a pesticide storage to the nearest drilled well should be at least 24 m (76 ft).

WHAT CAN YOU DO?

OPTION 1 – ACTION

Locate the storage the recommended distance from the well:

- storage should be downslope of well if possible
- new storage location should change the final EFP distance rating to a (3) or (4) Best
- moving permanent structures could result in structural damage and may be cost-prohibitive
- where the minimum legal separation distance cannot be attained due to site restrictions, seek guidance from Ontario Ministry of the Environment and Climate Change.

OPTION 2 – ACTION

Relocate the new well the required distance from the pesticide storage:

- the old well must be properly abandoned according to Ontario Regulation 903 under the Ontario Water Resources Act
- the new location should change the final EFP distance rating to a (3) or (4) Best.

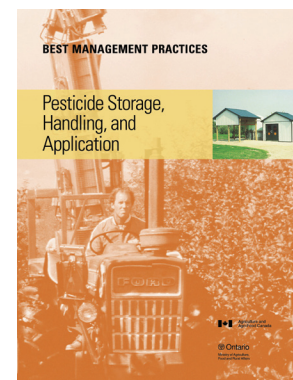
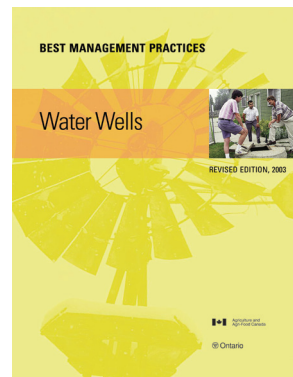
OPTION 3 – MONITORING WELL WATER

For existing pesticide storages that have an impermeable floor with no cracks and a curb installed to collect spills:

Test well water for pesticides at least once a year:


- if a test reveals contamination of the well water, stop drinking the water or providing it to livestock, and have a plan of action in place to immediately identify and address the problem.

This BMP publication describes common well types, risk factors, maintenance and troubleshooting to protect your family's drinking water.




You can also refer to pages 14-17 of BMP Pesticide Storage, Handling and Application for more information about siting storages and risks to ground water and wells.

3-14. Pesticide storage area

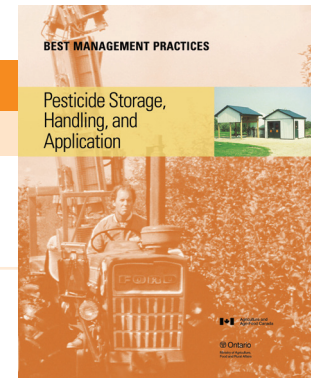
BACKGROUND	WHAT CAN YOU DO?
<p>It is important to store pesticides in a location where they do not create a health hazard for humans and animals.</p> <p>Pesticides should be stored in a separate facility so that in the event of fire in the storage, fumes, explosions, water, etc., they will not affect the health and safety of humans and livestock or contaminate other stored materials.</p>  <p>A separate pesticide storage area is required under the Pesticides Act, R.S.O. 1990, Ontario Ministry of the Environment and Climate Change. The storage must meet the Act's requirements, including no floor drain.</p>	<p>OPTION 1 – ACTION</p> <p>Store pesticides in a separate free-standing storage building:</p> <ul style="list-style-type: none"> • locate the storage the required distance from the well and surface water • consider the proximity to the mixing/loading area • ensure the storage building meets requirements of the Pesticides Act, R.S.O. 1990 • consider building alternatives, i.e., prefab or built on-site • check with municipality re: building permit requirements, setbacks, etc. <p>OPTION 2 – ACTION</p> <p>Store pesticides in a cabinet (insulated for winter storage):</p> <ul style="list-style-type: none"> • can be suitable where storing a small volume of pesticides • must meet the requirements of the Pesticides Act • consider the required distances to the well and surface water when choosing location. <p>OPTION 3 – ACTION</p> <p>Store pesticides in designated area that is partitioned off within another storage area:</p> <ul style="list-style-type: none"> • must meet requirements of the Pesticides Act and Ontario Building Code (check with municipality) • note that the adjacent storage can only be used for non-food (human or animal) items, e.g. farm equipment. <div style="border: 1px solid #0070c0; padding: 5px; margin-top: 10px;"> <p>For more information about storage types and designs, BMP Pesticide Storage, Handling and Application, pages 18-26.</p> </div>

3-15. Spill or leak containment in storage area

BACKGROUND	WHAT CAN YOU DO?
<p>Spills or leaks are to be contained in the storage area so as not to contaminate ground or surface water. Impermeable floors with a curb can contain small spills and allow them to be easily cleaned up.</p>	<p>OPTION 1 – ACTION</p> <p>Ensure that the floor in the storage area is impermeable, i.e. sealed concrete, with a full curb:</p> <ul style="list-style-type: none"> • must not have a floor drain • construct floor slab (reinforced concrete) so that cracking will not occur • provide a well-drained, compacted gravel base under the concrete slab.  <p>An impermeable floor with curb will contain spills for ease of cleanup.</p>

3-16. Storage requirements for human safety

BACKGROUND	WHAT CAN YOU DO?
When handling or storing pesticides, human health and safety issues are major concerns. Human safety in pesticide storages is covered by the Pesticides Act, R.S.O. 1990, Ontario Ministry of the Environment and Climate Change.	<p>OPTION 1 – ACTION</p> <p>Store pesticides in a free-standing storage building, a cabinet or a designated area partitioned off within another storage building that meets all the requirements in the (3) rating.</p>



FOR MORE INFORMATION

Ontario Ministry of Agriculture, Food and Rural Affairs

Many sources of supplementary information are available. Below are some suggestions to get you started. Most can be found online at www.ontario.ca/omafra or ordered through ServiceOntario.

Farm Pesticide Storage Facility, Order no. 11-005

Pesticide Contamination of Farm Water Supplies, Order no. 10-097

BEST MANAGEMENT PRACTICES

BMP publications are excellent sources to better understand on-farm environmental issues and discover a range of proven, practical options to address them. BMP materials are available at no charge to Ontario farmers. To order, see ServiceOntario information.

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

Agricultural Information Centre

Ph: 1-877-424-1300

Email: ag.info.omafra.ontario.ca

Web: www.ontario.ca/omafra

Ontario Ministry of the Environment, Conservation and Parks

Green Tips: Important Facts About Water Well Construction – PIBS No. 3788e01, 2003

Water Wells and Groundwater Supplies: the Protection of Water Quality in Bored and Dug Wells

Water Wells and Groundwater Supplies: the Protection of Water Quality in Drilled Wells

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

Additional Resources

CleanFARMS – www.cleanfarms.ca/programs-at-a-glance/on-programs-events/. See A Guide to Recycling Non-Nutrient Agricultural Waste in Ontario

Farm Contingency Plans – Environmental Farm Plan Program

Ontario Pesticide Education Program: Grower Pesticide Safety Course Manual – www.opep.ca

Stewardship Ontario, Orange Drop Program – www.makethedrop.ca

ACKNOWLEDGEMENTS

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