

Infosheet #3 Pesticide Handling and Storage

This infosheet provides background to Worksheet #3 of the *Environmental Farm Plan Workbook*. It outlines options you could adopt to address problem areas in your operation. In most cases you'll need more information before implementation: please refer to the resource materials listed in the infosheet, and consult OMAF Environmental Farm Plan (EFP) Technical Advisors.

All options are classed as Actions, Compensating Factors or Monitoring. Actions address the areas of concern identified, and will change the EFP rating to (3) or Best (4). Compensating Factors are alternatives that will adequately address the concerns, but will not change the rating in the EFP worksheets. Monitoring is an alternative only in special circumstances and is explained in the infosheet when and how it can be used.

Mixing and Loading Pesticides

March 2005

ISSUE	WHAT CAN YOU DO?
3-1 Mixing/loading area Pesticide leaks or spills, if contained, will not percolate down through the soil into ground water or run off the surface to contaminate streams, ditches, ponds, etc. If a water source is contaminated as a result of a pesticide spill from a mixing/loading area, the landowner may be penalized.	OPTION #1 – ACTION Construct a mixing/loading area with impermeable floor, curb and permanent roof to exclude rainfall: <ul style="list-style-type: none">• rinsate to be collected, stored in separate labelled containers and applied to labelled crops• consider cost of facility• exclude rainwater from mixing/loading area OPTION #2 – ACTION Construct a mixing/loading area with impermeable floor, curb and collection sump. Collect and store rinsate in separate labelled containers and apply to <u>labelled</u> crops: <ul style="list-style-type: none">• consider a temporary cover over mixing/loading area for non-use periods• construct mixing/loading area with a floor area as small as possible• consider cost of this facility versus covering the mixing/loading area with a permanent roof OPTION #3 – ACTION Mix and load pesticide products at site of spray application away from surface water, wells, etc. No regular mixing/loading area at one location: <ul style="list-style-type: none">• consider portable water supply• increased labour of transporting water.

OPTION #4 – ACTION

Mix and load pesticides at field site using temporary plastic-lined berms for containment:

- consider portable water supply.

FOR MORE INFORMATION:

Guide to Handling & Applying Herbicide to Protect Water Supplies and Reduce Personal Exposure, OMAF Factsheet Order No. 87-044

Pesticide Contamination of Farm Water Supplies, OMAF Factsheet Order No. 00-099

Pesticide Handling Facility, OMAF Factsheet Order No. 94-037

Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, pp 38-45; *Water Management*, Order No. BMP 07, page 39

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

The shorter the distance between the permanent pesticide mixing/loading area and the surface water, the greater the risk of contaminating surface water supplies. Steeply sloping topography and heavy soils will further increase the chance of contaminated runoff reaching surface water if a pesticide spill occurs.

OPTION #1 – ACTION

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

- locate downslope from surface water where possible
- new location should change the final EFP distance rating to a (3) or better
- moving permanent structures could result in damage and may be cost prohibitive
- portable containment liners are available as mixing/loading areas.

OPTION #2 – ACTION

Move surface water away from permanent pesticide mixing/loading area:

- a small watercourse could be redirected and moved farther away from the mixing/loading area or moved underground through a pipe system – make sure necessary approvals are received for this change
- new surface water location should change the final EFP distance rating to a (3) or better.

OPTION #3 – COMPENSATING FACTOR

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

- earthen berms can be built that will redirect any spillage to run away from or alongside the watercourse for a distance instead of running directly into the watercourse
- flow path distance should change the final EFP distance rating to a (3) or better.

OPTION #4 – MONITORING

For mixing/loading areas that have an impermeable floor with no cracks and a curb installed to collect spills, monitor mixing/loading area regularly, visually checking for leaks, cracks or seepage of liquids from the structure.

FOR MORE INFORMATION:

Guide to Handling and Applying Herbicide to Protect Water Supplies and Reduce Personal Exposure, OMAF Factsheet Order No. 87-044

Pesticide Contamination of Farm Water Supplies, OMAF Factsheet Order No. 00-099

Pesticide Handling Facility, OMAF Factsheet Order No. 94-037

Grower Pesticide Safety Course Manual, 2004

Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, pp 40, 41; *Water Management*, Order No. BMP 07, page 39

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

The greater the distance between the permanent mixing/loading area and the well, the less chance there is that a spill will collect in the vicinity of the well and cause direct contamination. Also, if leakage out of the permanent mixing/loading area occurs to ground water, contamination reaching the well is less likely if the well is located farther away from the permanent mixing/loading area. The soil type, depth to water table and bedrock will also influence the contamination potential.

OPTION #1 – ACTION

Locate permanent mixing/loading area an adequate distance away from well:

- locate mixing/loading area downslope of well if possible
- new location should change the final EFP distance rating to a (3) or better
- where the minimum legal separation distance cannot be attained due to site restrictions, seek guidance from MOE
- monitor well water for pesticides at least once a year until the new mixing/loading area is built
- moving permanent structures could result in structural damage and may be cost prohibitive.

OPTION #2 – ACTION

Relocate well away from permanent pesticide mixing/loading area:

- make sure old well is properly removed from use (abandoned according to *Ontario Regulation 903*)
- new location should change the final EFP distance rating to a (3) or better
- where the minimum legal separation distances cannot be attained due to site restrictions, seek guidance from MOE
- monitor well water for pesticides at least once a year until the new well is constructed
- investigate water well records in the area before constructing new well.

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:

- monitoring of well water is **NOT A SOLUTION** – if a test reveals contamination, have a plan of action in place to identify and address the problem immediately
- if you have an EFP rating of (1), contact MOE for further guidance
- testing of well water for pesticides can be **very expensive**.

FOR MORE INFORMATION:

Management of Pesticides on the Farm, OMAF Factsheet Order No. 88-083

Guide to Handling and Applying Herbicide to Protect Water Supplies and Reduce Personal Exposure, OMAF Factsheet Order No. 87-044

Grower Pesticide Safety Course Manual, 2004

Pesticide Handling Facility, OMAF Factsheet Order No. 94-037

Pesticide Contamination of Farm Water Supplies, OMAF Factsheet Order No. 00-099

Planning a New Water Well, OMAF Factsheet Order No. 85-115

Water Wells & Groundwater Supplies, the Protection of Water Quality in Bored and Dug Wells, MOE, 2003

Water Wells & Groundwater Supplies, the Protection of Water Quality in Drilled Wells, MOE, 2003

Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, pp 40,41; *Water Management*, Order No. BMP 07, pp. 14-21, 39

3-4 Backflow prevention on water supply

Eliminating the potential for backflow of pesticides from a sprayer tank to a water well or surface water will reduce the potential risk to human health. The backflow of a pesticide from a sprayer tank can quickly contaminate a water well or surface water.

OPTION #1 – ACTION

Use a separate water tank to supply water to the sprayer. Water would be pumped from a source (well, watercourse, etc.) into the water tank and moved to the mixing/loading area, which would be located at an adequate distance from wells and surface water:

- consider location and availability of water source
- consider location for mixing/loading site.

OPTION #2 – ACTION

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

OPTION #3 – ACTION

Maintain a permanently fixed 6 inch air gap between the water supply line and the sprayer tank.

FOR MORE INFORMATION:

Pesticide Contamination of Farm Water Supplies, OMAF Factsheet Order No. 00-099
Guide to Handling and Applying Herbicide to Protect Water Supplies and Reduce Personal Exposure, OMAF Factsheet Order No. 87-044
Pesticide Handling Facility, OMAF Factsheet Order No. 94-037
Grower Pesticide Safety Course Manual, 2004
Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, pp 45, 46; *Water Management*, Order No. BMP 07, pp. 17, 39; *Field Crop Production*, Order No. BMP 02, pp. 36-37

3-5 Sprayer tank filling supervision

The supervision of sprayer filling will reduce the potential for spills and possible surface and ground water contamination.

OPTION – ACTION

Ensure constant supervision of sprayer filling.

FOR MORE INFORMATION:

Guide to Handling and Applying Herbicide to Protect Water Supplies and Reduce Personal Exposure, OMAF Factsheet Order No. 87-044
Pesticide Contamination of Farm Water Supplies, OMAF Factsheet Order No. 00-099
Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, page 47; *Water Management*, Order No. BMP 07, page 39

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

Sprayer and container rinsate must be treated in the same manner as the spray and applied to crops so as not to contaminate water supplies. Rinsate that is applied to crops close to surface water and wells may cause water contamination problems. Rinsate must be applied to crops listed on the label; otherwise, this practice may cause a health hazard.

OPTION – ACTION

Apply rinsate to crops listed on label at adequate separation distances from surface water and wells:

- each type of rinsate will have to be collected separately so that it may be applied to its labelled crop, i.e., rinsate for different spray materials cannot be mixed unless the labelled crop is similar and the materials are compatible.

FOR MORE INFORMATION:

Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, pp. 44, 51, 52; *Water Management*, Order No. BMP 07, page 39

Disposal of Pesticide Containers

3-7 Return, rinsing and disposal

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 or ground water supplies.

Improper disposal of unrinsed containers may result in pesticides escaping to surface or ground water supplies, causing contamination.

OPTION #1 – ACTION

Use returnable or refillable containers whereby containers are returned to supplier when empty:

- consider the convenience and availability of this option.

OPTION #2 – ACTION

Triple or pressure rinse empty pesticide containers and take to a pesticide container recycling depot. Take paper or cardboard containers to municipal landfill:

- note the maximum limit on the size of container accepted, i.e., up to 23 litres
- generally widely available across province, many farm supply outlets are pesticide container recycling depots as well.

FOR MORE INFORMATION:

Pesticide Container Rinsing, OMAF Factsheet Order No. 87-057

Grower Pesticide Safety Course Manual, 2004

Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, page 55; *Water Management*, Order No. BMP 07, page 40

Emergency Plan

3-8 Emergency plan and cleanup equipment for spills

Without a written emergency plan in place and without spill cleanup equipment on-hand, you will be very vulnerable to damages incurred as the result of a spill. You must be aware of proper procedures to halt the spill and clean it up.

OPTION – ACTION

Prepare a written emergency plan and have spill cleanup equipment/materials readily available:

- include necessary details in plan
- keep plan in location where it is readily accessible
- inform others on the farm of the plan and its location
- re-evaluate plan periodically, and after a spill.

FOR MORE INFORMATION:

Farm Contingency Plans – EFP Program

Grower Pesticide Safety Course Manual, 2004

Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, pp. 34-36, 52-54; *Water Management*, Order No. BMP 07, page 40

Pesticide Transportation

3-9 Transportation

Pesticides must be secured during transportation to prevent a spill that could potentially contaminate water. In transport, pesticides cannot be placed with food or other specified household items that may become contaminated, resulting in a health hazard. A pesticide warning sign must be displayed on your vehicle when transporting more than 500 litres.

OPTION – ACTION

During transportation, secure pesticides from physical damage and ensure that other people do not have access to pesticides. Do not transport pesticides with food or other specified household items. Place a warning sign on your vehicle when travelling on any road when transporting more than 500 litres of pesticides.

FOR MORE INFORMATION:

Grower Pesticide Safety Course Manual, 2004

Best Management Practices Book: *Pesticide Storage, Handling and Application*, Order No. BMP 13, page 37

Pesticide Storage

3-10 Total amount of pesticide stored

The smaller the quantity of pesticides stored on the farm, the lower the risk of spills and contamination of surface or ground water.

If you do purchase pesticides, purchase only the quantity required, as close to the time of use as possible.

OPTION #1 – ACTION

Have your pesticides custom applied:

- no more than 20 kg or 20 litres of pesticide stored for longer than immediate use period
- reduces the environmental and safety risk of handling and storing pesticides
- assess availability of custom applicators and economics.

OPTION #2 – ACTION

Purchase only the quantity of pesticides required to spray the crops:

- no more than 20 kg or 20 litres of pesticide stored for longer than immediate use period
- requires accurate estimation of pesticide quantities needed.

OPTION #3 – COMPENSATING FACTOR

Storage in pesticide storage structures that have an impermeable floor with a curb installed and comply with storage requirements listed in Question #15, Worksheet #3:

- all pesticide containers must be properly labelled.

FOR MORE INFORMATION:

Grower Pesticide Safety Course Manual, 2004

Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, pp. 12-37; *Water Management*, Order No. BMP 07, page 37

3-11 Distance from pesticide storage to nearest surface water

The shorter the distance between the pesticide storage and surface water, the greater the risk will be of contaminating surface water supplies. Steeply sloping topography and heavy soils will further increase the chance of contaminated runoff reaching surface water if a pesticide spill occurs.

OPTION #1 – ACTION

Move the pesticide storage an adequate distance from surface water:

- locate downslope from surface water where possible
- new storage location should change the final EFP distance rating to a (3) or better
- most suitable for portable storage
- moving permanent structures could result in structural damage and may be cost-prohibitive.

OPTION #2 – ACTION

Move surface water away from pesticide storage:

- a small watercourse could be redirected and moved farther away from the storage or moved

underground through a non-perforated pipe system – make sure necessary approvals are received for this change

- new surface water location should change the final EFP distance rating to a (3) or better.

OPTION #3 – COMPENSATING FACTOR

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

- earthen berms can be built that will redirect any spillage to run away from or alongside the watercourse for a distance instead of running directly into the watercourse
- flow path distance should change the final EFP distance rating to a (3) or better.

OPTION #4 – MONITORING

For storages that have an impermeable floor with no cracks and a curb installed to collect spills, monitor storage regularly, visually checking for leaks, cracks or seepage of liquids from the storage.

FOR MORE INFORMATION:

Pesticide Handling Facility, OMAF Factsheet Order No. 94-037

Grower Pesticide Safety Course Manual, 2004

Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, pp. 12-17; *Water Management*, Order No. BMP 07, page 38

3-12 Distance from pesticide storage to well

The greater the distance between the pesticide storage and well, the less chance there is that a spill will collect in the vicinity of the well head and cause contamination. Also, if leakage out of the storage occurs to the ground water, contamination reaching the well is less likely if the well is located farther away from the storage. The soil type, depth to water table and bedrock will also influence the contamination potential.

OPTION #1 – ACTION

Locate storage an adequate distance from well:

- locate storage downslope of well if possible
- new storage location should change the final EFP distance rating to a (3) or better
- where the minimum legal separation distance cannot be attained due to site restrictions, seek guidance from MOE
- monitor well water for pesticides at least once a year until the new storage is built or existing storage is relocated
- most suitable option for portable storage
- moving permanent structures could result in structural damage and may be cost-prohibitive.

OPTION #2 – ACTION

Relocate well away from pesticide storage:

- make sure old well is properly removed from use (abandoned according to Ontario Regulation 903)
- new location should change the final EFP distance rating to a (3) or better
- where the minimum legal separation distances cannot be attained due to site restrictions,
- seek guidance from MOE
- monitor well water for pesticides at least once a year until the new well is constructed
- investigate water well records in the area before constructing new well.

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 the well water for pesticides at least once a year:**

- monitoring of well water is **NOT A SOLUTION** – if a test reveals contamination of the well water, have a plan of action in place to immediately identify and address the problem
- if you have an EFP rating of (1), contact MOE for further guidance
- testing of well water for pesticides can be **very expensive**.

FOR MORE INFORMATION:

Planning a New Water Well, OMAF Factsheet Order No. 85-115

Water Wells & Groundwater Supplies, the Protection of Water Quality in Bored and Dug Wells, MOE, 2003

Water Wells & Groundwater Supplies, the Protection of Water Quality in Drilled Wells, MOE, 2003

Pesticide Handling Facility, OMAF Factsheet Order No. 94-037

Pesticide Contamination of Farm Water Supplies, OMAF Factsheet Order No. 00-099

Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, pp. 12-17; *Water Management*, Order No. BMP 07, pp. 14-21

3-13 Pesticide storage area

For health and safety reasons, it is important to store pesticides in a location where they and not create a health hazard for humans and animals. In the event of a fire, pesticides

OPTION #1 – ACTION**Store pesticides in a separate free-standing storage building:**

- locate storage away from the well and/or surface water
- consider the proximity to mixing/loading area
- new storage building must meet requirements of *Pesticides Act*

should be stored in a separate facility where fumes, explosions, water, etc., will not affect the health and safety of humans and livestock or contaminate other stored materials.

A separate storage area is required under the *Pesticides Act*, R.S.O. 1990, MOE.

- consider building alternatives, i.e., prefab or built on-site
- check with municipality re: building permit requirements, setbacks, etc.

OPTION #2 – ACTION

Store pesticides in a cabinet (insulated for winter storage):

- suitable where storing a small volume of pesticides
- must meet requirements of *Pesticides Act*
- consider the distances to the well and surface water when choosing location.

OPTION #3 – ACTION

Store pesticides in designated area that is partitioned off within another storage area:

- meet requirements of *Pesticides Act* and *Ontario Building Code* (check with municipality)
- adjacent storage can only be used for non-food (human or animal) items, e.g., farm equipment.

FOR MORE INFORMATION:

Grower Pesticide Safety Course Manual, 2004

Pesticide Handling Facility, OMAF Factsheet Order No. 94-037

Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, 18-36; *Water Management*, Order No. BMP 07, page 38

3-14 Spills or leaks containment in storage area

Spills or leaks are to be contained in the storage area so as not to contaminate ground or surface water. Impermeable floors can contain small spills and allow them to be easily soaked up.

OPTION – ACTION

Ensure that floor in the storage area is impermeable, i.e., sealed concrete, with curb:

- no floor drain
- provide a well-drained, compacted gravel base under slab if reinforced concrete is used
- construct floor slab (concrete) so that cracking will be minimal.

FOR MORE INFORMATION:

Pesticide Handling Facility, OMAF Factsheet Order No. 94-037

Grower Pesticide Safety Course Manual, 2004

Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, pp. 25-28; *Water Management*, Order No. BMP 07, page 38

3-15 Storage Requirements for Human Safety

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, MOE.

OPTION #1 – ACTION

Store pesticides in a free-standing storage building, a cabinet or a designated area partitioned off within another storage building that meets all safety requirements as listed in question # 15, EFP Worksheet #3.

FOR MORE INFORMATION:

Pesticide Handling Facility, OMAF Factsheet Order No. 94-037

Grower Pesticide Safety Course Manual, 2004

Best Management Practices Books: *Pesticide Storage, Handling and Application*, Order No. BMP 13, pp. 18, 19; *Water Management*, Order No. BMP 07, page 38

*At the request of the **Ontario Farm Environmental Coalition**, consisting of Ontario Federation of Agriculture, Christian Farmers Federation of Ontario, AGCare and the Ontario Farm Animal Council, the following people contributed to the development of Infosheet #3.*

Bob Stone, OMAFRA (Chair)

Craig Hunter, OMAFRA

Doug Morrow, MOEE

Helmut Spieser, OMAFRA

Technical Editing Committee:

Brent Kennedy, OMAFRA

Jim Myslik, OMAFRA

Bob Stone, OMAFRA

The following people contributed to the revisions (2004) of Infosheet #3

Bob Stone, OMAF (Chair)

Doug Morrow, MOE

Helmut Spieser, OMAF

Steven Eastep, OSCIA

Angela Fawcett, CropLife Canada

Leslie Huffman, OMAF

Les Daniel, EFP

Technical Editing Committee;

H.J.Smith, OMAF

Jim Myslik, OMAF

Bob Stone, OMAF