

Drinking Water Source Protection Background Document

The Application, Handling, and Storage of Pesticides

v. 3 March 2011

(Amendments included as Tracked Changes and Blue Highlights)

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NOTE TO THE READER

This document is one of eighteen background reports now under development by staff at various Conservation Authorities and Conservation Ontario in support of Source Protection Plan development. The final set of reports will cover all nineteen prescribed water quality threat types. Each report looks at the nature of one or more types of drinking water threat, describes the local occurrence (“is” and “would be”) of those threats, assesses existing policies/programs, and introduces related ‘policy concepts’ for source protection planning. ***While every effort has been made to ensure the accuracy of the information in this document, it should not be construed as legal advice or relied on as a substitute for the legislation.***

This version is considered to be a ***working draft*** because it will be going through additional review by MOE and subject experts. SPA/SPRs can use these documents with the understanding that additional refinement will occur. Any questions on these reports can be directed to Nicole Barbato, Source Water Protection Liaison (via nbarbato@conservationontario.ca). Thank you!

1. Definition

This paper provides background information for **prescribed drinking water threat 10 – application of pesticide to land** and **prescribed drinking water threat 11 – handling and storage of pesticide**.

The main consideration for reducing or eliminating drinking water threats related to the land application, handling and storage of pesticides is to make sure it does not enter surface water and/or groundwater.

In Ontario, the Pesticides Act defines “pesticide” as any organism, substance or thing that is manufactured, represented, sold or used as a means of directly or indirectly controlling, preventing, destroying, mitigating, attracting or repelling any pest or altering the growth, development or characteristics of any plant life that is not a pest and includes any organism, substance or thing registered under the federal Pest Control Products Act. All of the pesticides considered through the drinking water source protection initiative are chemicals used to control weeds or fungi.

Deleted: Pesticides are typically chemicals, but could be organisms, that are used to control undesirable pests, such as weeds, insects, and fungi.

There is a cosmetic pesticide ban in effect in Ontario (since 2009) that is to reduce the amount of pesticides that make its way into sources of drinking water. This provincial ban prohibits the application of pesticides for cosmetic purposes on lawns, vegetable and ornamental gardens, patios, driveways, cemeteries, and in parks and school yards.

The application of pesticides to land, as well as the handling and storage of pesticides, is most commonly associated with agricultural, recreational, public works, and retail land uses (storage only).

2. What causes this activity to be a drinking water threat?

There are eleven (11) chemicals listed in the Ontario Ministry of the Environment (MOE) Tables of Drinking Water Threats (Ontario Ministry of the Environment, 2009) that could make their way into surface and groundwater as a result of the application of pesticides to land (circumstances 55 to 87), and through spills resulting from the improper handling and storage of pesticides (circumstances 1113 to 1200). These chemicals are listed below:

- Atrazine
- Dicamba
- ~~2,4-~~Dichlorophenoxy Acetic Acid (2,4-D)
- Dichloropropene-1,3
- Glyphosate
- MCPA (2-methyl-4-chlorophenoxyacetic acid)
- MCPB (4-(4-chloro-2-methylphenoxy)butanoic acid)
- Mecoprop
- Metalaxyl
- Metolachlor or s-Metolachlor
- Pendimethalin

These substances are active ingredients in herbicides; with the exception of Dichloropropene-1, 3 is a nematicide (used to control nematodes) and Metalaxyl that are fungicides.

The Summary of Drinking Water Threat Contaminants includes details on relevant drinking water standards, guidelines or objectives, the health or aesthetic concerns and other useful information for these parameters.

3. Understanding the nature of the drinking water threats

Application of Pesticides

The application of pesticides to land has been associated with a majority of land uses including agricultural, active recreational, institutional, industrial, commercial and residential. While the provincial ban prohibits the use of pesticides for cosmetic purposes, certain uses of pesticides are exempted; the ban contains exceptions for public health or safety (including the protection of public works and other buildings and structures), golf courses, specialty turf, specified sports fields, arboriculture and to protect natural resources, if certain conditions are met. There are also exceptions for agriculture, forestry, research and scientific purposes, and uses of pesticides for structural exterminations and uses of pesticides required by other legislation. Although the ban prohibits certain uses, the application of pesticides can still occur on agricultural, recreational, institutional, industrial, commercial and residential lands considered to be highly vulnerable aquifers (HVA), significant groundwater recharge areas (SGRA), intake protection zones (IPZ), and wellhead protection areas (WHPA).

Whether this activity is a significant, moderate or low drinking water threat depends on the proximity to the wellhead/intake and the vulnerability score. The provincial table of circumstances provides further details on determining the significance of the threat activity. The extent of pesticide application also affects the threat categorization; less than 1 ha, 1 to 10 ha, or greater than 10 ha are the circumstances that may increase or decrease the significance of the threat. In general, the greater the application area, the greater the risk to drinking water.

Deleted: Even though there is a cosmetic pesticide ban, there may be limited pesticide use in banned locations as remaining private stocks are used.

Deleted: This use will diminish and stop over time. In general, this activity can occur now and in the future on the highly vulnerable aquifers (HVA) and significant groundwater recharge areas (SGRA), and in the intake protection zones (IPZ) and wellhead protection areas (WHPA).¶

Deleted: area of land to which the pesticide is applied:

Significant Drinking Water Threats

Based on the MOE Tables of Drinking Water Threats (2008, as amended in 2009), the land application of specific pesticides can be a significant threat in intake protection zones (IPZ) that have a vulnerability score of 8.1 or higher, and in wellhead protection areas (WHPA) that have a vulnerability score of 10.

Moderate Drinking Water Threats

Based on the MOE Tables of Drinking Water Threats (2008, as amended in 2009), the land application of specific pesticides can be a moderate threat in IPZs that have a vulnerability score of 6.3 or higher and in WHPAs that have a vulnerability score of 8 or higher.

Low Drinking Water Threats

The land application of pesticides is or would be a low threat in all of the IPZs and WHPAs, as well as on the highly vulnerable aquifers and significant groundwater recharge areas (with a vulnerability score of 6).

Handling and Storage of Pesticides

The storage of pesticides is divided into two categories in the MOE Tables of Drinking Water Threats (2008, as amended in 2009): (1) storage at a facility where it is manufactured or processed, or from which it is wholesaled, and (2) storage for retail sale or extermination.

Manufacturing, processing and wholesale activities are generally permitted on lands that are zoned for industrial uses to provide separation between industrial establishments and incompatible land uses. Future industrial land uses ('would be' threats) would likely occur in the same location as existing industries because these are the only locations zoned for this use. Municipalities have strict control over where these activities can occur within their municipal boundaries, and the majority of IPZs and WHPAs are in established settlement areas that cannot accommodate an industrial use.

Pesticides can be stored for retail sale or for use in extermination (such as application to land) since this activity is generally associated with agricultural, recreational, and commercial land uses, and public works (roads and utility corridors).

The classification of this activity as a significant, moderate or low drinking water threat is dependent on the location as well as the quantity of pesticide stored. The circumstances in the MOE Tables of Drinking Water Threats (2008, as amended in 2009) are divided into four groups: less than 25 kg, between 25 kg and 250 kg, between 250 kg and 2500 kg, and greater than 2500 kg of product containing pesticide stored at the location. In general, the greater the amount of pesticide stored on-site, the greater the risk to drinking water.

Table 3.1 identifies where the storage of pesticides is or would be a significant, moderate or low drinking water threat based on the MOE Tables of Drinking Water Threats (2008, as amended in 2009), and whether or not they are generally feasible to occur in a given vulnerable area.

Table 3.1 – Pesticide Storage Threats in the Source Protection Area

Vulnerable area			Storage associated with manufacturing, processing, or wholesale of pesticides				Storage of pesticides associated with retail sale or extermination ¹			
			S	M	L	feasible	S	M	L	feasible
Name of well/groundwater system	WHPA A, B	10	✓	✓	✓		✓	✓	✓	
	WHPA C	8		✓	✓			✓	✓	
	WHPA D	6			✓				✓	✓
	WHPA E	7			✓			✓	✓	
Name of well/groundwater system	WHPA A, B	10	✓	✓	✓		✓	✓	✓	✓
	WHPA C	8		✓	✓			✓	✓	✓
	WHPA D	6			✓				✓	✓
	WHPA E	7			✓				✓	
Name of well/groundwater system	WHPA A, B	10	✓	✓	✓		✓	✓	✓	✓
	WHPA C	8		✓	✓			✓	✓	✓
	WHPA D	6			✓				✓	✓
HVA/SGRA		6			✓	✓			✓	✓
Name of surface water system	IPZ 1	9		✓	✓		✓	✓	✓	
	IPZ 2	8.1		✓	✓			✓	✓	✓
Name of surface water system	IPZ 1	9		✓	✓		✓	✓	✓	
	IPZ 2	8.1		✓	✓			✓	✓	✓
Name of surface water system	IPZ 1	9		✓	✓		✓	✓	✓	✓
	IPZ 2	8.1		✓	✓			✓	✓	✓
	IPZ 3a	6.3			✓				✓	✓
Name of surface water system	IPZ 1	6			✓				✓	✓
	IPZ 2	4.2	n/a	n/a	n/a		n/a	n/a	n/a	✓
Name of surface water system	IPZ 1	6			✓	✓			✓	✓
	IPZ 2	4.2	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓
Name of surface water system	IPZ 1	7			✓			✓	✓	✓
	IPZ 2	6.3			✓				✓	✓
Name of surface water system	IPZ 1	7			✓			✓	✓	✓
	IPZ 2	6.3			✓				✓	✓
Name of surface water system	IPZ 1	7			✓	✓			✓	✓
	IPZ 2	5.6			✓	✓			✓	✓
Name of surface water system	IPZ 1	7			✓			✓	✓	✓
	IPZ 2	5.6			✓				✓	✓

¹ Storage associated with agricultural, recreational, and commercial land uses, or public works.

4. Applicable legislation, policies and programs

a. Federal

In Canada, the federal government, through the Pest Management Regulatory Agency (PMRA), is responsible for approving the registration of pesticides across Canada and thereby prevent what it considers unacceptable risks to human health and the environment from the use of pesticides.

In Canada, the federal government, through the Pest Management Regulatory Agency (PMRA), is responsible for registering and evaluating pesticides for sale in use in Canada. Federal legislation relevant to pesticides are: *Pest Control Products Act*, *Food and Drugs Act*, *Fisheries Act*, *Migratory Birds Convention Act*, and *Transportation of Dangerous Goods Act*.

Pest Control Products Act and Regulations

Under the federal Pest Control Products Act 2002 (PCPA), the PMRA of Health Canada is responsible for approving the registration of pesticides across Canada and thereby prevent what it considers unacceptable risks to human health and the environment from the use of pesticides. In assessing pesticide products for registration, the PMRA uses a science-based approach to conduct detailed health, environmental and efficacy assessment for safety, value and merit. The PMRA also is responsible for approving the pesticide label for use which contains important information regarding use directions and restrictions, use precautions, toxicological information, etc., and must be followed. (Government of Canada, 1985).

Additional restrictions are placed on certain pesticides to lessen risk. For example, certain pesticide labels may specify buffer zones requirements, timing and frequency of applications, or rate at which the product must be applied.

Before a pesticide can be sold or used in Canada, it must be registered under the federal PCPA, and must be used in accordance with any label requirements. As described below, provincial jurisdictions may place additional conditions or prohibitions on its use, provided they are not less stringent than the federally approved label requirements.

The Pesticide Label

As part of the pesticide registration process, the PMRA will approve the product label. There are two main parts to a pesticide label. The front panel is called the principle display panel. The back or side panel is called the secondary display panel.

A pesticide label displays important information such as: the active ingredient, what the hazards are when you use the product, how dangerous the pesticide is, how to use it safely, the rates at which the product should be used, what to do in case of an accident.

If all the required information can't fit on the label, the company may include a booklet or pamphlet with the pesticide.

A pesticide label is a legal document which must be followed. It describes how the product must be used. It is against the law to use the product in any other way, or to use it in an unsafe way.

Fisheries Act

In general the *Fisheries Act* is enforced by Fisheries and Oceans Canada: however, the section that applies to contamination is under the authority of Environment Canada. The deposition of any deleterious substance (contaminant), including pesticides, is in contravention of the legislation. Section 36(3) of the *Fisheries Act* states that "... no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water" (Government of Canada, 1985). This could result from the improper application, handling and storage of pesticides and from spills.

Agrichemical Warehousing Standards Association

The Agrichemical Warehousing Standards Association (AWSA) consists of Canadian warehouse operators, manufacturers, distributors, and governments that cooperatively establish standards to ensure that crop protection products, such as pesticides, are stored in certified warehouses (see Appendix C for a link to the Association's website). They also inform, educate and communicate with stakeholders and provide other services as required.

The AWSA Certified Warehousing Standards apply to products based on their federal registration classification and their user. Currently, the standards apply to the storage facilities of vendors of all pesticides classified as agricultural or industrial, and to the storage facilities of custom applicators (e.g. ground or aerial crop sprayers). There is no distinction based on the volume or weight of pesticides in storage or on the length of time that they are in storage.

These standards do not apply to the storage facilities of someone who is only an end user (such as a farmer or golf course operator).

In general, the standards address and manage 11 areas of potential storage-related risk such as spills, floods, and shipping and receiving design safety. To address these potential risk areas, the standards have three primary components:

- Construction and structural requirements
- Employee training
- Documentation

Structural requirements incorporate the National Fire Code, National Building Code and Canadian Electrical Code. New pesticide storage facilities can only be built in certain areas, and precautions such as diking and containment must be taken to prevent potential contamination of environmentally sensitive areas. Persons storing pesticides must ensure that in addition to any standards set by the AWSA, any requirements set out in the provincial legislation must be followed.

Warning and emergency signs must be clearly posted at all storage facilities. For flammable and combustible products, special storage precautions must be provided. Every warehouse employee must be trained in the safe handling of pesticide products, first aid and emergency procedures. Emergency response planning for each storage facility is mandatory.

Warehouses are audited every two years by independent auditors who are specially trained and certified. The standards are enforced through the issuing and withdrawing of certificates by AWSA. Agrichemical manufacturers will not ship product to uncertified warehouses, and the AWSA maintains a database for certification and compliance tracking.

Approximately 300 certified warehouses exist in Ontario.

b. Provincial

In Ontario, the Ministry of the Environment is responsible for managing the sale, use, storage, transportation and disposal of federally registered pesticides. The Pesticides Act and Ontario Regulation 63/09 provide a comprehensive regulatory framework to prevent adverse effects of pesticides on health and the natural environment.

The ministry's pesticides program provides for mandatory licensing and training for pesticide applicators and vendors, restricting access to only federally registered pesticide products, issuing permits for special use pesticides, public notification for land based applications, risk-based inspections, emergency response and ensures compliance with ministry acts (e.g. the Pesticides Act) and regulations.

Pesticides Act and Ontario Regulation 63/09

Ontario Regulation 63/09 establishes a classification system for pesticides which allows the province to apply specific rules on the sale, use, storage, transportation and disposal of pesticides to protect human health and the environment.

The Pesticide Classification Guideline for Ontario sets out specific criteria based on scientific and technical information for each Class of pesticides to establish which products can be sold and used in Ontario.

The classifications are as follows:

Classification	Description	Criteria
Class 1	Products intended for manufacturing purposes	The pesticide is designated under the Pest Control Products Act (Canada) as a pesticide of the Manufacturing class or is registered under the Fertilizers Act (Canada).
Class 2	Restricted or commercial products	<ol style="list-style-type: none"> The pesticide is designated under the Pest Control Products Act (Canada) as a pesticide of the Commercial or Restricted class or is registered under the Fertilizers Act (Canada). The pesticide meets the description of Very Hazardous in the Guideline mentioned in subsection 4 (5). The pesticide does not meet the description of a Controlled Sales pesticide in the Guideline mentioned in subsection 4 (5).
Class 3	Restricted or commercial products	<ol style="list-style-type: none"> The pesticide is designated under the Pest Control Products Act (Canada) as a pesticide of the Commercial or Restricted class or is registered under the Fertilizers Act (Canada). The pesticide meets the description of Moderately Hazardous in the Guideline mentioned in subsection 4 (5). The pesticide does not meet the description of a Controlled Sales pesticide in the Guideline mentioned in subsection 4 (5).
Class 4	Restricted or commercial products	<ol style="list-style-type: none"> The pesticide is designated under the <i>Pest Control Products Act</i> (Canada) as a pesticide of the Commercial or Restricted class or is registered under the Fertilizers Act (Canada). The pesticide meets the description of Less or Least Hazardous in the Guideline mentioned in subsection 4 (5). The pesticide does not meet the description of a Controlled Sales pesticide set out in the Guideline mentioned in subsection 4 (5).
Class 5	Domestic products intended for household use	<ol style="list-style-type: none"> The pesticide is, <ol style="list-style-type: none"> designated under the <i>Pest Control Products Act</i> (Canada) as a pesticide of the Domestic class and meets the description of Less Hazardous in the Guideline mentioned in subsection 4 (5), or registered under the <i>Fertilizers Act</i> (Canada) and the size of its container is greater than 1 kg or 1L. If the pesticide may be used in, on or over land, <ol style="list-style-type: none"> the only pesticide ingredient it contains is a Class 11 pesticide, or every use set out on the pesticide's label is a use mentioned in subsection 7.1 (2) of the Act.
Class 6	Domestic products intended for household use	<ol style="list-style-type: none"> The pesticide is, <ol style="list-style-type: none"> designated under the <i>Pest Control Products Act</i> (Canada) as a pesticide of the Domestic class and meets the description of Least Hazardous in the Guideline mentioned in subsection 4 (5), or registered under the <i>Fertilizers Act</i> (Canada) and the size of its container is less than or equal to 1 kg or 1L. If the pesticide may be used in, on or over land, <ol style="list-style-type: none"> the only pesticide ingredient it contains is a Class 11 pesticide, or every use set out on the pesticide's label is a use mentioned in subsection 7.1 (2) of the Act.
Class 7	Controlled sales products (domestic and restricted)	<ol style="list-style-type: none"> The pesticide is designated under the <i>Pest Control Products Act</i> (Canada) as a pesticide of the Domestic or Restricted class. The pesticide may be used in, on or over land. The pesticide meets the description of a Controlled Sales pesticide set out in the Guideline mentioned in subsection 4 (5).

Class 8	Domestic products that are banned for sale and use in Ontario	<ol style="list-style-type: none"> 1. The pesticide is designated under the <i>Pest Control Products Act</i> (Canada) as a pesticide of the Domestic class or is registered under the <i>Fertilizers Act</i> (Canada). 2. The pesticide may be used in, on or over land. 3. The pesticide contains a Class 9 pesticide. 4. The pesticide meets one of the following descriptions: <ol style="list-style-type: none"> i. Its label does not set out any of the uses mentioned in subsection 7.1 (2) of the Act. ii. If its label sets out a use mentioned in paragraph 4 of subsection 7.1 (2) of the Act, the pesticide does not meet the description of a Controlled Sales pesticide set out in the Guideline mentioned in subsection 4 (5).
Class 9	Ingredients in products for use only under exceptions to the ban	<ol style="list-style-type: none"> 1. The pesticide is an ingredient in a Class 2, 3, 4, 5, 6, 7 or 8 pesticide. 2. The label of the Class 2, 3, 4, 5, 6, 7 or 8 pesticide sets out at least one use that is not a use mentioned in subsection 7.1 (2) of the Act. 3. The pesticide does not meet the description of a Category I pesticide in the Guideline mentioned in subsection 4 (5).
Class 10	Ingredients in products for the poisonous plant exception	<ol style="list-style-type: none"> 1. The pesticide is a Class 9 pesticide. 2. The pesticide meets the description of a Category II pesticide in the Guideline mentioned in subsection 4 (5).
Class 11	Ingredients in products for cosmetic use	<ol style="list-style-type: none"> 1. The pesticide is an ingredient in a Class 2, 3, 4, 5, 6 or 7 pesticide. 2. The pesticide meets the description of a Category I pesticide in the Guideline mentioned in subsection 4 (5).

The pesticides listed in the MOE Tables of Drinking Water Threats (2008, as amended in 2009) may be ingredient in products under various classes. fall into the classes as set out below.

Cosmetic Pesticide Ban

Ontario's cosmetic pesticides ban took effect April 22, 2009. The requirements of the ban are detailed in Ontario Regulation 63/09 of the Pesticides Act, which was amended by the Cosmetic Pesticides Ban Act, 2008 (Government of Ontario, 2009).

The provincial ban renders inoperative municipal by-laws that regulate the use, sale or transfer of cosmetic pesticides to create one clear, transparent and understandable set of rules across the province. The ban prohibits the sale and use of pesticides for cosmetic purposes on lawns, vegetable and ornamental gardens, patios, driveways, cemeteries, and in parks and school yards and includes many herbicides, fungicides and insecticides. There are no exceptions for pest infestations (insects, fungi or weeds) in these areas.

The ban contains exceptions for public health or safety (including the protection of public works and other buildings and structures), golf courses, specialty turf, specified sports fields, arboriculture and to protect natural resources, if certain conditions are met. There are also exceptions for agriculture, forestry, research and scientific purposes, and uses of pesticides for structural exterminations and uses of pesticides required by other legislation.

Under the *Pesticides Act* and Ontario Regulation 63/09, certain pesticides can be purchased and used in and around home to protect the health and safety of your family, including:

- Controlling wasps or mosquitoes that can transmit West Nile Virus

- Killing plants that are poisonous to the touch, such as poison ivy and giant hogweed.

The pesticides with both non-cosmetic uses and cosmetic uses are listed in Class 7. Such pesticides will only be allowed for non-cosmetic purposes. A retailer must notify you of this when you purchase the product. For example, the use of a pesticide to control poison ivy cannot be used on patios or driveways to control other weeds. Other pesticide uses that are allowed around the home include:

- To protect the health of pets (e.g. to control fleas)
- To control indoor pests or pests that can cause structural damage to the home.

You can purchase and use biopesticides (e.g., microorganisms that control pests, such as the bacterial insecticide used to control Gypsy moths) and lower risk pesticides (such as acetic acid) to manage weeds, insects and plant diseases. These pesticides must be used in accordance with their label.

Integrated Pest Management Accreditation/Certification

In order to be excepted from the cosmetic pesticides ban and continue using Class 9 pesticides in their maintenance operations, golf courses must meet certain conditions including becoming fully accredited by the Integrated Pest Management Council of Canada (IPMCC), the integrated pest management (IPM) body approved for the purpose of Section 18 of Ontario Regulation 63/09. Accredited golf courses are able to apply Class 9 pesticides only on the actual playing surfaces and not on lawns, gardens, patios and other outdoor areas associated with the facility. Other conditions that must be met in order to be excepted from the ban include: preparing annual reports on pesticide use, and holding public meetings to present the annual reports

The IPM accreditation program involves:

- employing an IPM certified agent who is responsible for IPM at the golf course,
- completing annual desk audits assessing conformance with pest monitoring, sprayer calibration, pesticide usage, alternative treatments, pesticide use reduction where appropriate, and employee training on the principles of IPM.
- completing an on-site audit once every three years further assessing golf course management activities as they relate to the principles of IPM

In addition, pesticide use on speciality turf (such as lawn bowling, cricket, lawn tennis or croquet), and certain public works (related to health or safety) is excepted from the cosmetic pesticide ban provided the treatment is done by a licensed exterminator certified by the IPMCC.

Owners or operators of specialty turf or public works must also prepare annual reports on pesticide use, detailing their use of pesticides, why they were used, and how future uses could be reduced.

The IPM Council of Canada consists of industry associations, and advisors, and other interested parties. According to the IPM Council of Canada, integrated pest management (IPM) is a

process that uses all necessary techniques to suppress pests effectively, economically and in an environmentally sound manner. IPM employs a two-pronged approach: managing the plant environment to prevent problems and using thresholds to decide how and when to treat pests.

Appendix C contains a link to the IMP Council's website. Additional information is also available on the MOE website at www.ene.gov.on.ca/environment/en/category/pesticides/index.htm.

Pesticide Licensing and Certification

Unless exempted under Ontario Regulation 63/09, a pesticide licence is required to sell pesticides (Vendor Licence), apply pesticides (Exterminator Licence), or to operate a business that employs persons that apply pesticides commercially (Operator Licence). Pesticide vendors and exterminators are also required to meet certain certification requirements.

Operators

Any person that operates a pesticide extermination business in Ontario must hold an Operator Licence of the General class issued by the Ministry of the Environment. If you apply pesticides commercially you must have an Operator Licence or be working for someone that has an Operator Licence. A licensed Operator must have insurance for their extermination business.

Vendors

A person or business that sells and/or transfers pesticides must hold a pesticide Vendor Licence. There are two types of vendor licence – a Limited Vendor Licence and a General Vendor Licence.

A Limited Vendor Licence authorizes the holder to sell Class 5, 6 or 7 pesticides, or a Class 3 pesticide that is a bactericide in cutting oil, marine or aviation fuel. A General Vendor Licence authorizes the holder to sell Class 1-7 pesticides, whether wholesale or retail. A General Vendor must employ a full-time, certified outlet representative that has completed the Pesticide Vendor Certificate Course.

Vendor training and certification is administered by Ridgetown Campus, University of Guelph under the Ontario Pesticide Education Program (www.opep.ca). Vendors become certified by taking a two-day Pesticide Vendor Course that provides information on how to sell, store, and handle pesticides properly. They must also pass an exam. Once certified, vendors can apply for a "General Vendor Licence" from the MOE.

Certified Farmers (Certified Growers)

Farmers, as defined under Ontario Regulation 63/09, require certification in order to buy or use Class 2 or 3 pesticides on the land they farm. To become certified, they must attend and pass the Grower Pesticide Safety Course (GPSC) administered by Ridgetown Campus, University of Guelph under the Ontario Pesticide Education Program (www.opep.ca). Grower certification is valid for five years. Certified Farmers cannot use pesticides as part of a business or sell pesticides.

Pesticide safety training is also mandatory for any farmer assistant, such as a farm employee, farm family member, or seasonal foreign worker, who handles Class 2 or 3 pesticides. Trained Assistants cannot buy Class 2 or 3 products and may only handle these products under the supervision of a Certified Farmer. To become trained, a farm assistant can either attend a GPSC and not write the exam, or attend an on-farm training session presented by a qualified Assistant Instructor. Training is valid for five years.

Licensed Exterminators and Technicians

A person that applies pesticides commercially and is not a Technician or Trainee requires an Exterminator Licence from the MOE authorizing pesticide use according to the terms and conditions of the licence. All new exterminators are required to take an MOE approved course (including passing a certification exam). Exterminator training and certification is administered by Ridgetown Campus, University of Guelph under the Ontario Pesticide Training and Certification Program (www.ontariopesticide.com/optc/).

The following is a summary of the main types and classes of exterminator licences:

- Structural
 - Structural; Termite; Greenhouse/Interior Plant; Fumigation General; Fumigation Vault; Fumigation Commodity; and Fumigation Soil.
- Land
 - Landscape; Agriculture; Industrial Vegetation; Aerial; and Forestry.
- Water
 - Aquatic Vegetation; Mosquito/Biting Flies; and Fish/Mollusc.

Exterminators may also include farmers who custom apply pesticides for other farmers and charge a fee for the service. All pesticide exterminator licence holders must be at least sixteen years of age. Exterminator licences are valid for a five year period, after which time the licence may be renewed.

A Technician is defined as a person who has successfully completed (within the last 24 months) a course approved by the ministry concerning basic pesticide safety. A Technician may perform specific duties and apply certain types of pesticides under the in-direct supervision of a licensed exterminator

The ministry has agreements in place with Ridgetown Campus – University of Guelph (www.ontariopesticide.com/optc/) and two pesticide industry associations (Pesticide Industry Council (www.ptpic.com) and Pesticide Industry Regulatory Council (www.oipma.ca) to administer ministry approved pesticide safety courses for Technician certification. These organizations issue Technician certificates to applicants that have successfully completed the approved safety course and training program.

Unlicensed assistants who do not train to become technicians are considered “Trainees” and must be directly supervised by licensed exterminators at all times.

Pesticide Permits

Section 7 of the Pesticides Act states that unless exempt under the regulations no person shall perform a land, structural or water extermination (i.e., application of pesticides to exterminate an unwanted pest) unless the person is the holder of a permit for the extermination. In general, pesticide applications that may pose a higher risk to human and environmental health require a permit from the ministry. Permits are specific to a particular application and may impose further site specific restrictions/requirements on the use of the pesticide.

The purpose of issuing pesticide permits for particular applications is to manage the use and to prevent excessive and indiscriminate use of pesticides that may pose a higher risk to human health and the environment. This is accomplished by placing additional limits, controls, and requirements on the selection, use, and reporting of pesticides regulated under the Pesticides Act. In addition to the terms and/or conditions included on a permit, any person who uses a pesticide is also required, under provincial and federal legislation, to comply with all label requirements. The federally approved pesticide label specifies how to use a product safely and effectively and contains information related the use precautions to minimize any potential risks to human health or the environment.

Sections 7 and 11 of the *Pesticides Act* are prescribed instruments under the *Clean Water Act*. These sections relate to issuance, renewal and revocation of permits for land extermination, structural exterminations and water exterminations.

In processing permit applications, the ministry considers a number of factors to ensure protection of human health and the environment, including the protection of drinking water sources. Pesticide permits are only valid for one year and are not required to be posted on the Environmental Registry in accordance with the Environmental Bill of Rights. Permits may be appealed to Environmental Review Tribunal.

As outlined in Ontario Regulation 287/07 under the Clean Water Act, 2006 only pesticide applications to land and the handling and storage of pesticides are prescribed as drinking water threats under the Clean Water Act, 2006.

For the land application of pesticides, Ontario Regulation 63/09 (section 72) requires permits for the following types of pesticide applications.

- For use of a Class 2, 3, or 4 pesticide that contains picloram (i.e., Tordon101);
- For aerial application of a Class 3 or 4 pesticide performed in connection with the management of a Crown forest;
- For aerial application of a Class 2 pesticide;
- For aerial application of a Class 3 pesticide that contains 2,4-D, 2,4-DB, mecoprop, MCPA, MCPB, dichlorprop, dicamba, paraquat or triclopyr.

It is noted that most agricultural use of pesticides is not covered by Sections 7 and 11, and provincial instruments are not applicable to regulate this use.

Pesticide Storage, Use and Handling Requirements

Ontario Regulation 63/09 sets out requirements related to: pesticide storage, mixing and loading of pesticides, washing of pesticide equipment, safe and secure transportation of pesticides, proper disposal of empty and damaged pesticide containers, and pesticide spill clean up.

It is illegal to store pesticides under unsafe condition. Storage requirements under Ontario Regulation 63/09 include ensuring:

- The pesticides are not likely to impair the health or safety of any person;
- The pesticides will not come into contact with food or drink intended for human or animal consumption;
- The storage area is maintained in good repair with precautions to prevent pesticides from contaminating the environment or other pesticides;
- The storage area is properly secured, posted with warning signs, and has emergency telephone numbers prominently displayed nearby;
- Pesticides stored in an unsupervised vehicle must be in a place inaccessible to the public or in a locked compartment and the vehicle must display the required warning sign.
- Class 1, 2 and 3 pesticides are to be stored in areas that are inaccessible to the public, ventilated to the outdoor atmosphere, do not have floor drains leading to a watercourse, and with emergency response equipment readily available.
- Licensed vendors, licensed operators, manufacturers, and persons storing Class 1 pesticides are required to provide written notice annually to the fire department responsible for the area in which the pesticide is stored.

Additional information on design and construction of pesticide storage facilities can be found in the Ontario Ministry of Agriculture, Food and Rural Affairs fact sheet Agdex 607 entitled "Farm Pesticide Storage Facility", available at www.omafra.gov.on.ca/english/engineer/facts/07-059.pdf

Unsold pesticides or unused surplus pesticide concentrate must be disposed of in accordance with Ontario Regulation 63/09 and Regulation 347 (General Waste Management) under the *Environmental Protection Act*. Generally, all pesticide wastes must be disposed of at a waste disposal facility that has been approved by the MOE, and can only be transported by a waste management company that has obtained the appropriate approvals from the MOE.

In addition, sections 61- 73 of Ontario Regulation 347 under the *Environmental Protection Act* outline the requirements for "pesticide container depots"; locations that receive containers originally used to hold commercial pesticides. The procedures and requirements are described for owning or operating a depot, including restricting access to the depot and ensuring that workers are familiar with safe pesticide handling and storage practices. Additional provisions describe methods of safe handling and storage, such as labeling, security, inspection, ventilation, and record keeping.

Ontario Regulation 63/09 (sections 114 to 115) outlines the requirements for transportation of pesticides. Pesticides are to be secured to prevent discharge of the pesticide from the vehicle, and are to be separated from food and drink and other commodities.

In accordance with section 12 of Ontario Regulation 63/09, appropriate measures must be taken to prevent the backflow of pesticides into the water if using water from a well or from a lake, river or other body of surface water in an extermination. In addition, any equipment used in an extermination must not be washed in or near a well or in or near a lake, river or other body of surface water in a manner that causes or may cause a pesticide to be directly or indirectly discharged into the well, or into the lake, river or other body of surface water.

Best Management Practices for Industrial Sectors

XCG Consultants Ltd. (2007) prepared a number of documents for the Ministry of the Environment that describe various best management practices (BMPs) to achieve pollution prevention and a reduction of specific contaminants that may be present in the effluent discharges of specific facilities. The sectors that are targeted include: textiles, fabricated metal products, motor vehicle parts manufacturing, automotive repair and maintenance, dry cleaning and laundry services, and chemical manufacturing. The BMPs for the pesticide, fertilizer and other agricultural chemical manufacturing sector focus on the manufacture of pesticides, and ways to reduce risks posed by their component chemicals.

Enforcement of the Pesticides Act

The MOE manages its approach to compliance and enforcement through education and outreach, inspections, response to incidents, voluntary abatement, orders, tickets and prosecutions. The ministry uses a risk-based approach when determining how to respond to issues of non-compliance, in accordance with the Ministry's Compliance Policy.

The ministry has Provincial Officers located in communities throughout the province that are responsible for ensuring compliance and providing enforcement under the Pesticides Act. These provincial officers have power of, inspection, seizure, and evacuation and may make use of local and provincial police forces when deemed necessary.

The ministry also conducts inspections as a means to evaluate compliance with the pesticide legislation and the terms and conditions of issued permits. The application of a pesticide by a person without the required permit or not in accordance with all the terms and conditions of a permit may be considered an offence under the Pesticides Act and is subject to the penalties as prescribed in the legislation.

Canada-Ontario Environmental Farm Plan

The Environmental Farm Plan (EFP) is delivered locally through the Ontario Soil and Crop Improvement Association with expertise provided by the Ontario Ministry of Agriculture, Food and Rural Affairs. It is a voluntary educational program for farmers delivered through local workshops. Participants are provided instruction on how to progress through the risk assessment and action plan development contained in the EFP workbook. Limited funds (50/50 cost share) are available to address areas identified in the plan as needing improvement.

One of the 23 areas assessed through the EFP is the handling and storage of pesticides (Ontario Soil and Crop Association, 2005). The information sheet on this activity suggests the following actions to address existing issues:

- Relocate permanent mixing/loading and storage areas away from surface water and wells
- Increase the flow path distance between surface water and mixing/loading and storage areas
- Relocate wells away from mixing/loading and storage areas
- For existing mixing/loading and storage areas which have an impermeable floor, a curb installed to collect spills and floors that are not cracked or leaking, test the well water at least once a year
- Construct a mixing/loading and storage areas with impermeable floor, curb and permanent roof to exclude rainfall, and a collection sump.
- Mix and load pesticide products at site of spray application away from surface water and wells. No regular mixing/loading area at one location.
- Storage in one designated area
- Mixing/loading done at field site using temporary plastic-lined berms for containment
- Use a separate tank to supply water to the pesticide tank to prevent the potential for backflow into well or surface water source
- Apply rinsate to crops listed on label at adequate separation distances from surface water and wells
- Have pesticides custom applied
- Prepare a written emergency plan and have spill clean-up equipment available.

c. Municipal

Education and Outreach

In Ontario, the *Pesticides Act* and Regulation 63/09 (Cosmetic Pesticides Ban) render local municipal pesticides bylaws inoperative in order to create one clear set of rules across the province. However, some municipalities provide outreach and education programs to ensure the safe use of allowable pesticides, and to encourage more natural forms of gardening. For example, the City of Toronto provides fact sheets on natural gardening.

Land Use Planning

Manufacturing, processing and wholesale activities are generally permitted on lands that are zoned for industrial uses to provide separation between industrial establishments and incompatible land uses. Municipalities have strict control over where these activities can occur within their municipal boundaries, and the majority of IPZs and WHPAs are in [small established settlement areas](#) that are unlikely to accommodate an industrial use [of this magnitude](#).

Deleted: Future industrial land uses ('would be' threats) would likely occur in the same location as existing industries because these are the only locations that permit this use
Deleted:

[Municipalities often designate certain types of uses, such as commercial, industrial and larger scale residential uses, as being subject to site plan control. Site plan control allows the municipality to negotiate the layout of a site; including locating internal roadways, waste disposal areas, storage areas, building and septic envelopes, etc.](#) The location and type of storage could be addressed at the site plan control stage for new construction. **NOTE: This can only occur where the property is subject to site plan control (i.e. the building official can only then negotiate the layout of the site beyond the requirements of the zoning by-law).**

Deleted: and/or building permit

a. Other Programs

Safe Pesticide Education

Both the federal and provincial government provide information on the proper storage, disposal, and application of pesticides [allowable](#) for domestic use. For example, the federal government publishes "Homeowner Guidelines for Pesticide Use" and "Proper Use of Pesticides." Appendix C includes links to both documents.

Natural Gardening Outreach and Education Programs

Many voluntary education-based programs promote eco-friendly lawn and garden care that does not rely on pesticides. Eco-friendly management includes using mowing, aeration, watering, fertilization and seeding techniques to produce a healthy lawn that discourages weeds and better resists insect infestations. The Ontario government provides links to useful information through their "add it up" website (see Appendix C for link), and the federal government also provides information to interested community members. Many non-governmental organizations are also involved in communicating this information.

Other programs, such as the "yellow fish" stormwater drain program remind community members of the potential environmental consequences of using harmful products, and passively encourage the use of gentler products.

5. Gaps in existing legislation, policies and programs

There are no identified gaps in legislation, policies or programs.

6. Policy considerations

- REMINDER: The main consideration for reducing or eliminating drinking water threats related to the application and storage of pesticides is to make sure that it does not enter surface water and/or groundwater.
- The source protection plan will need to include a high-level policy approach (“a catch-all policy”) to address those “would be” drinking water threats that are unlikely to occur in a given vulnerable area.

Examples of risk management measures and policy ideas

The measures that have been identified in the Risk Management Catalogue for the handling and storage of pesticides are by and large based on best practices. These include, but are not limited to:

- Spill and containment reporting and response in Stormwater management Systems
- Location of farm containment systems, down slope of wells
- Usage of filter strips and riparian zones
- Spill contingency plans
- Minimization of risk through source reduction
- Enhanced environmental monitoring within highly sensitive areas
- Proper container storage, by following labels and directions
- Establish a buffer zone to ensure location of chemical storage is a minimum distance from watercourses.
- Monitoring as well as implementation of preventative measures
- In general better standards for design and installation of pesticide equipment and storage containers.

For discussion purposes, this section of the report provides examples of risk management measures and policy ideas that could be applicable to the application of pesticides to land, and to the handling and storage of pesticides. It is not an exhaustive list.

The examples are categorized by the types of policy tools that can be used to meet the source protection plan objectives. The MOE Risk Management Measures Catalogue was reviewed as part of this exercise and measures were incorporated where appropriate.

Table 6.1 – Examples of risk management measures and policy ideas for pesticides

Policy Tool	Examples
Education and Outreach	<ul style="list-style-type: none"> • Area-wide education and outreach programs promoting integrated pest management; alternative pest control particularly for farms, golf courses and sports fields. • Retail education program and requirement for spill contingency plans • Using pesticides in accordance with the manufacturer’s product label • Lawn care maintenance for pesticide reduction
Incentive Programs	<ul style="list-style-type: none"> • Area-wide incentive programs for agricultural/rural landowners to establish buffers of a suitable width based on site specific considerations on lands adjacent to surface water. • Area-wide program for farmers to improve the design and maintenance of on-farm subsurface tile drainage systems • EFP Cost-Share Program should include funds to help implement projects from the EFP action plans for farms in IPZs and WHPAs.
Land Use Planning	<ul style="list-style-type: none"> • Prohibit storage or require setbacks for storing pesticides within the IPZs and WHPAs where it can be a significant drinking water threat, in official plans and zoning by-laws. • Require the use of filter strips or riparian buffers adjacent to surface water. • Restrict future manufacturing and processing of pesticides and wholesale storage from locating in areas where the threat could be significant if established. • Ensure extra consideration is given for new development that includes the storage of pesticides.
Prescribed Provincial Instruments	<ul style="list-style-type: none"> • Require/encourage (depending on level of threat) MOE to take extra care in its review of applications for permits under the <i>Pesticides Act</i> for people or businesses that apply pesticides commercially • Require/encourage MOE to review approved permits to ensure compliance with the Source Protection Plan (i.e. require amendments to existing permits). • Require/encourage MOE to prioritize inspections for these areas, and to conduct regular inspections.
Municipal Operations / Infrastructure	<ul style="list-style-type: none"> • Evaluate municipal pesticide storage locations for potential impact on drinking water sources, and address identified problems. • Reduce the volume of pesticides used along roads and utility corridors through integrated pest management. • Emergency response plans – consideration for how and where to contain emergency response water (e.g. water used to fight a fire).
Land Securement	Purchase or place easements on land in IPZs and WHPAs.

Deleted: ,

Deleted: sell pesticides and/or

Policy Tool	Examples
Risk Management Plans	<ul style="list-style-type: none"> Require risk management plans for the application and/or storage of pesticides in IPZs and WHPAs where this activity is or would be a significant drinking water threat. The RMPs could cover topics such as those described above under the Ontario Environmental Farm Plan.
Prohibition	<ul style="list-style-type: none"> Prohibit the application and storage of pesticides in IPZs and WHPAs where this activity is or would be a significant drinking water threat.
Restricted Land Uses	<ul style="list-style-type: none"> Flag land uses that are associated with the application and storage of pesticides (such as agricultural, active recreational, public works) as restricted land uses in IPZs and WHPAs where these activities are or would be significant drinking water threats so that municipal planners and building officials ensure the proposed use is reviewed by RMO and risk is mitigated so that it will not become a significant threat.

Appendix A – Local Information on Drinking Water Threats

1. Local scale of the drinking water threat?

[Insert description and/or map of local threat context with reference to Table 3.1]

- The Application of pesticide is or would be a significant threat in {insert names of IPZs} and {insert names of WHPAs}.
 - This activity is most likely to occur in {insert area}
- This activity is or would be a moderate threat in.....
- This activity is or would be a low threat in.....
- The handling and storage of pesticide is or would be a significant threat in {insert area}.
 - This activity is most likely to occur in {insert area}
 - The application of pesticides to land, and the storage of pesticides for retail sale or for application, can occur throughout the [name of] Source Protection Area. These activities are or would be significant drinking water threats in [number of] locations and [specify the municipalities].
 - Of the 300 certified warehouses in Ontario, there {is/are (insert number of)} certified warehouse(s) in the (insert name) Source Protection Area; it is (or is not) located in a vulnerable area.
 - The storage of pesticides associated with the manufacturing, processing or wholesale of fertilizer would be a low drinking water threat in the [name of] IPZ, [name of IPZ], and the HVAs and SGRAs if the activity were to occur in the future.
 - In the (insert name) Source Protection Area, the majority of lands set aside for industrial uses are located in the (specify the vulnerable areas here).
 - In the (insert name of) Source Protection Area, the majority of land set aside for industrial uses are located in the (specify the vulnerable areas here) and (specify the locations) and (specify the municipalities here).

2. Local approaches to managing these drinking water threats.

a. Land Use Planning

[Insert description of local land use approaches that are being used]

- Is the land application of pesticides currently addressed by municipalities?

b. Other Local Programs

[Insert discussion on local programs including Stewardship, Education/Outreach, Incentive, etc. implemented by Conservation Authority, Municipality, or other watershed/community groups.]

c. Cross Jurisdiction Considerations

[Insert discussion on policy approaches being considered by neighboring Source Protection Areas/Regions.]

3. Further Research for Specific Vulnerable Areas

- [insert additional background research needed, where applicable]

Appendix – B Reference List

Government of Canada. 1985. Fisheries Act. <http://laws.justice.gc.ca/en/F-14/index.html>

Government of Canada. 1985. Pesticides Control Products Act. <http://laws.justice.gc.ca/eng/P-9/FullText.html>

Government of Ontario. 1990. Environmental Protection Act. www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90e19_e.htm

Government of Ontario. 1990 Pesticides Act. www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90p11_e.htm

Government of Ontario. 2009. Pesticides Act. Ontario Regulation 63/09 – General Regulation. www.e-laws.gov.on.ca/html/source/regs/english/2009/elaws_src_regs_r09063_e.htm

Government of Ontario. 2009. Ontario's cosmetic pesticides ban. www.ene.gov.on.ca/environment/en/category/pesticides/index.htm

Ontario Ministry of the Environment. 2009. Tables of Drinking Water Threats. 2008, as amended in 2009. www.ene.gov.on.ca/publications/cw/7561e03.pdf

Ontario Soil and Crop Association. 2005. Canada-Ontario Environmental Farm Plan. www.ontariosoilcrop.org/en/programs/programsaboutefp.htm

University of Guelph. 2010. Ontario Pesticide Education Program (accessed December 2010). www.opecp.ca

XCG Consultants Ltd. 2007. Best Management Practices for Industrial Sectors. www.ene.gov.on.ca/environment/en/resources/STD01_076218.htm

Appendix C - Additional Resources

1. Agrichemical Warehousing Standards Association www.awsacanada.com
2. Drinking Water Threat Contaminants Summary (DRAFT). [\(include link\)](#)
3. Integrated Pest Management Council of Ontario. www.ontarioipm.com
4. Ontario Ministry of the Environment. "Add it up"
www.additupontario.ca/en/commitments/incentives/rewards.php
5. Health Canada. Homeowner Guidelines to Using Pesticides. www.hc-sc.gc.ca/cps-spc/pest/part/protect-proteger/use-utiliser/home-maison/index-eng.php
6. Health Canada 2009. Proper Use of Pesticides. www.hc-sc.gc.ca/cps-spc/pest/part/protect-proteger/use-utiliser/index-eng.php
7. The MOE Water Quality Risk Management Measures Catalogue (Version 2, 09/07/2010)
<http://maps.thamesriver.on.ca/swpCAMaps/rmc/disclaimer.aspx>
8. Ministry of the Environment. SPP Bulletins available at:
www.conservationontario.ca/members/members_source_protection_committee/spc_index.html

Available as of December 2010:

- Overview of Source Protection Plan requirements
- Notice of when Source Protection Plan preparation begins
- Existing municipal authorities and land use planning
- Section 57 Prohibition
- Overview of Prescribed Instruments
 - Table 2 – Prescribed Instruments Management of Drinking Water Threats
 - Pesticide permits
 - Renewable energy approval
 - Municipal drinking water licence and drinking water works permits
 - Example of municipal drinking water licence
 - Example of drinking water works permit
 - Nutrient Management Instruments
 - Sample letter of approval – nutrient management strategy
 - Sample nutrient management strategy and plan
 - Sample record of approval – nutrient management strategy
 - Sample multiple year nutrient management strategy and plan