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Pest Control Products Sales Report for 2007 and 2008

Canada 



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In November of 2006, the Pest Control Products Sales Information Reporting Regulations came into force, making mandatory under the *Pest Control Products Act* the reporting of sales information by Registrants to Health Canada's Pest Management Regulatory Agency (PMRA).

These regulations require Registrants to submit annually to the PMRA the total volume of all their products registered with the PMRA and made available for sale to users (referred to as "sold" in the remainder of this report).¹

The PMRA has been collecting and maintaining this sales information. This report, the first under the regulations, discusses the 2007 and 2008 calendar years. The sales data is used by the PMRA to better understand potential pesticide use in Canada. It is considered in risk assessments of pesticides, in policy decisions, in identifying trends in pesticide use, and in providing guidance for risk reduction strategies.

Introduction

The first collection period was the 2007 calendar year. Reports were to be submitted on or before 1 June 2008. This first year of reporting was a learning experience for both the registrants and the PMRA. Many errors were found in the subsequent data set that were too numerous to correct. The 2007 data was not analysed for this report. Lessons from the 2007 collection period were used to ensure a more complete and accurate data set for 2008. This involved revisions to the 2008 data reporting form, revisions to the accompanying documentation and further registrant training. Significant improvements were seen in the 2008 data set due in part to the changes made. The emphasis on the 2008 data submission ensured quality data that could be analysed and would be meaningful.

General information on compliance in 2007 has been included, but only detailed information on the 2008 sales data is provided. Interpretation, conclusions or inferences of the 2008 data have not been included as it is beyond the scope of this project. This report is only intended to represent the best information provided to the PMRA through the reporting program. As only one year of data is presented, readers should be careful in drawing conclusions about pesticide sales in Canada.

Data Submission

Table 1 provides data on the number of registrants submitting sales reports to the PMRA for 2007 and 2008. The nine per cent increase in the number of registrants submitting reports in 2008 may be due to increased awareness of the Regulations.

¹ Not all product that the registrant distributes is bought by users. The regulations allow the registrant to account for the amount of product distributed and made available for sale, but not necessarily bought by users.



Table 1: Registrant Compliance Information (as of May 6, 2011)

Year	2007	2008
Number of Registrants	737	702
Number of Registrants Submitting Sales Reports	448 (61%)	493 (70%)

Table 2 provides data on the number of products registered by the PMRA and the number of products for which a sales report was submitted. A slight increase was seen in the number of product reports submitted between 2007 and 2008. More than half of products reported to the PMRA did not have any sales for the given time period. The majority of registrants who have not submitted sales information to the PMRA usually only have one or two products registered.

Table 2: Product Compliance Information (as of May 6, 2011)

Year	2007	2008
Number of Registered Products	5892	5602
Number of Products for which a Report was Submitted	4972 (84%)	4974 (89%)
Number of Products Reported as Sold	2378	2327
Number of Products Reported as Not Sold	2732	2647

Canadian Overall Pesticide Sales Data

Overview

Registrants report the quantity of each of their products sold in a calendar year. Data can be submitted in different units depending on the product (for example, kilograms, litres). To standardize varying products, the data has been converted into kilograms of active ingredient (kg a.i.).

All technical grade active ingredient and manufacturing concentrate product information was excluded from calculation as the quantity is reported in the end-use products. Also, products where the data could not be converted to kg a.i. due to the reported units of measure were excluded from calculation. This includes products where units were reported incorrectly and could not be corrected, products that had unusual units, such as colony forming units and devices, which were counted in units. In total, 222 out of 2327 products reported as sold were excluded from the kg a.i. calculations.

Of the remaining 2105 products, the overall pesticide sales in Canada for 2008 were 87 522 435 kg a.i.

In the analysis of the overall quantity, it should be noted that 1% of the total number of products for which sales reports were submitted (50 products) made up 72% of the total kg a.i. sold in Canada in 2008 (63 120 467 kg a.i.). The top ten active ingredients made up 61 836 154 kg a.i. or 71% of the total (Table 3). A comprehensive list of rankings for all active ingredients sold in Canada in 2008 is provided in Appendix I.



Table 3: Top 10 Active Ingredients Sold in Canada in 2008

Active Ingredient	Product Type
Glyphosate	Herbicide
Oil-borne heavy duty wood preservatives*	Antimicrobial
Copper (Elemental)	Antimicrobial/Fungicide
Sodium Hypochlorite	Antimicrobial
2,4-D	Herbicide
Mancozeb	Fungicide
Chromic Acid	Antimicrobial
Glufosinate Ammonium	Herbicide
MCPA	Herbicide
Mineral Oil	Insecticide/Herbicide/other

*includes creosote and pentachlorophenol.

Sales Information by Sector

The products with reported sales were grouped according to their areas of use into three sectors: Agricultural, Non-agricultural, and Domestic. (Data from each of the sectors is discussed in more detail in the following sections.)

The groups were designed so there would be no overlap between the groupings. A product was placed into the Domestic sector if its classification was Domestic on its label. For the Non-domestic products, a product with any agricultural use on the label was grouped with the Agricultural sector, even if there were non-agricultural uses listed on the label. All remaining products were grouped as non-agricultural. In some cases, if upon analysis, it was determined a product in the Agricultural sector had its main usage in the Non-agricultural sector, the product was moved to the Non-agricultural sector group.

Over 60% of pesticide sales in Canada in 2008 were of Agricultural sector products (see Figure 1). Just over 35% of pesticide sales were of Non-agricultural sector products and 4.4 % were of Domestic sector products.

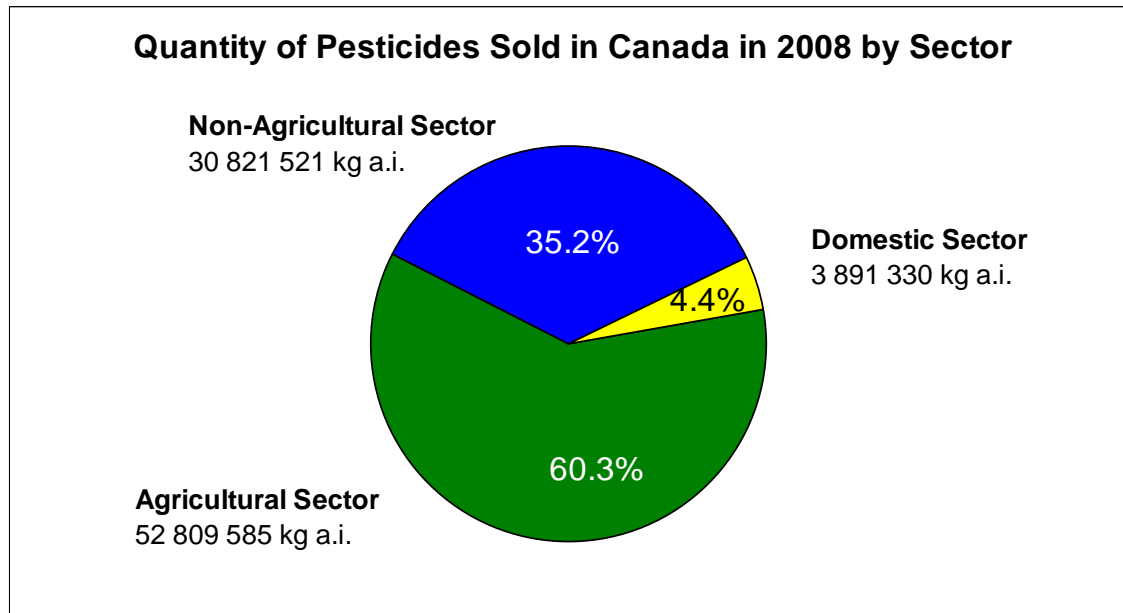


Figure 1: Quantity of pesticides sold in Canada in 2008 by sector

Within each sector, data was further broken down into product type groupings. These include: herbicides, insecticides, fungicides, antimicrobials, vertebrate controls and others (for the remaining products). A product may have a number of different uses on the label. As the sales reporting does not collect data on the relative amount of a product used for a specific label use, the data may not necessarily be separated into only one product type. This means that there may be overlap between the product type groupings and these numbers should not be summed to obtain total quantities sold in Canada in 2008, as an over-reporting would occur.

Agricultural Sector

Products with agricultural uses accounted for the majority of pesticide sales in Canada in 2008 (60.3%). A total of 52 809 585 kg a.i. of pesticides were reported as being sold in Canada in 2008 for use in the Agricultural sector.

Of the quantity of pesticides sold for use in the Agricultural sector, herbicides accounted for 79.4% of the pesticide sales, followed by fungicides at 12.5%, insecticides at 5.7% and antimicrobials at 0.5% (Figure 2). Vertebrate control (0.05%) accounted for a very small quantity of agricultural pesticides sold in 2008 and has been included in the “others” category, which accounted for 4.1% of agricultural pesticide sales.

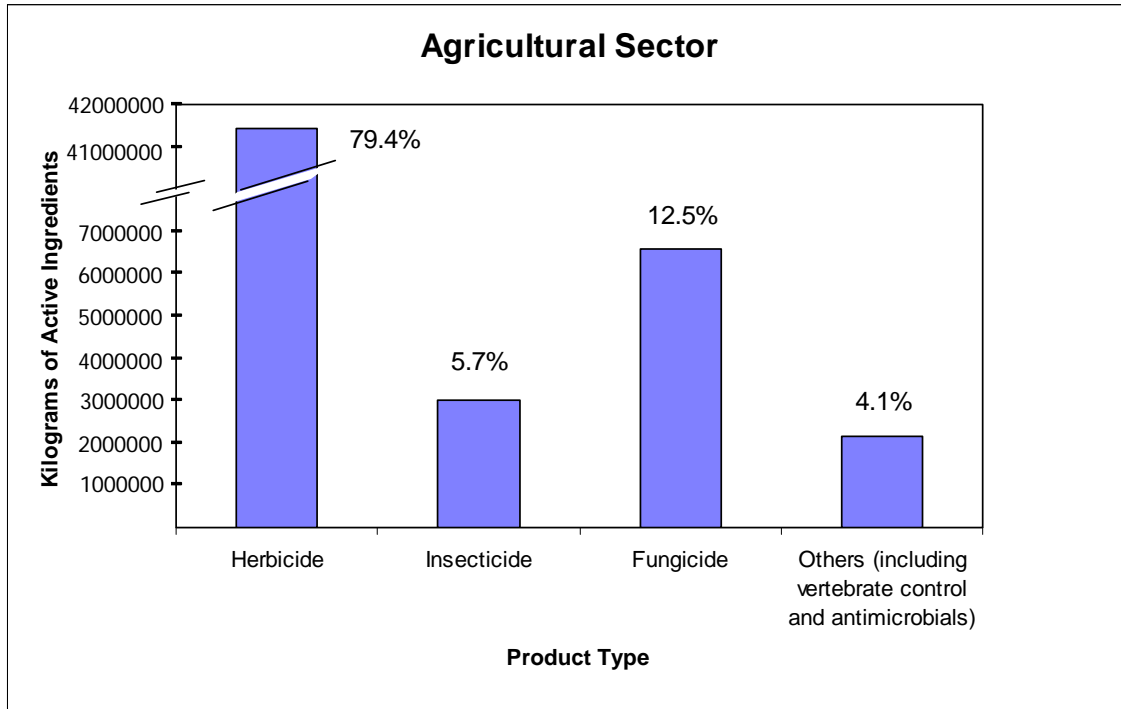


Figure 2: Kilograms of active ingredients sold in Canada in 2008 in the Agricultural sector.

The top 10 active ingredients sold in the Agricultural sector are shown in Table 4. Seven of the top ten Agricultural products were herbicides and adjuvants that are used in conjunction with herbicides. These top 10 active ingredients accounted for 78% of the Agricultural sector pesticides sold.

Table 4: Top 10 Active Ingredients Sold in Canada in 2008 in the Agricultural sector

Active Ingredient	Product Type
Glyphosate	Herbicide
2,4-D	Herbicide
MCPA	Herbicide
Mancozeb	Fungicide
Glufosinate Ammonium	Herbicide
Mineral Oil	Insecticide
Bromoxynil	Herbicide
Surfactant Blend	Other
Chlorothalonil	Antimicrobial/Fungicide
Atrazine	Herbicide



Non-agricultural Sector

Commercial products with non-agricultural uses accounted for the second-largest amount of all pesticides sold in Canada in 2008 at 35.2%. A total of 30 821 521 kg a.i. were sold in 2008.

Of the total amount sold in the Non-agricultural sector, antimicrobials accounted for 96.3% of non-agricultural pesticide sales, followed by herbicides with 1.6%. Insecticides and fungicides accounted for 1.2 and 0.5%, respectively, of this amount. Vertebrate control and two “other” products accounted for less than 1% of the non-agricultural products (Figure 3).

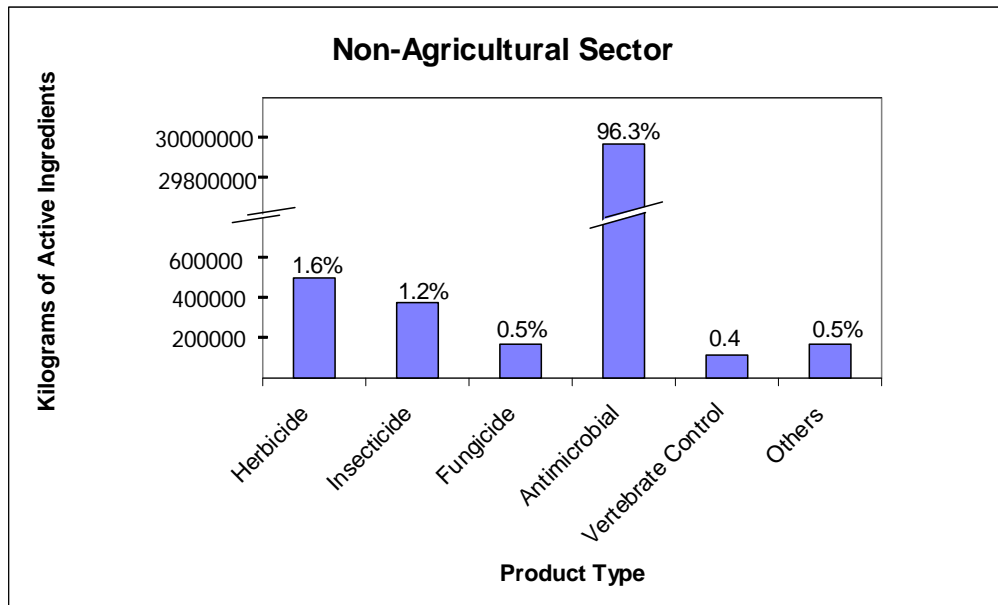


Figure 3: Kilograms of active ingredients sold in Canada in 2008 in the Non-agricultural sector.

The top 10 actives in the Non-agricultural sector were predominately antimicrobials (Table 5). The only exception was 2,4-D as the 10th most sold non-agricultural pesticide. While 2,4-D has many agricultural uses, there are products of 2,4-D that only have uses that the PMRA has deemed to be non-agricultural (such as on rights-of-way). Non-agricultural sector would be used predominantly in the wood preservative industry and for water treatment. The top 10 active ingredients accounted for 90% of the Non-agricultural sector pesticides sold.



Table 5: Top 10 Active Ingredients Sold in Canada in 2008 in the Non-agricultural sector

Active Ingredient	Product Type
Oil-borne heavy duty wood preservatives*	Antimicrobial
Copper (Elemental)	Antimicrobial
Sodium Hypochlorite	Antimicrobial
Chromic Acid	Antimicrobial
Arsenic Pentoxide	Antimicrobial
Glutaraldehyde	Antimicrobial
Cupric Oxide	Antimicrobial
Halobrom	Antimicrobial
Sodium Bromide	Antimicrobial
2,4-D	Herbicide

* includes creosote and pentachlorophenol

Domestic Products

The Domestic Class products accounted for 4.4% of overall pesticide sales in Canada for 2008. A total of 3 891 330 kg a.i. of Domestic sector products were sold.

Antimicrobial products accounted for 72.2% of domestic pesticides sold in Canada (Figure 4). This is mostly attributed to swimming pool and spa products. Herbicides and insecticides accounted for 18.3 and 21.2%, respectively, of the Domestic sector sales. Fungicides, vertebrate controls, and five other products accounted for 1.5% of the Domestic sector sales.

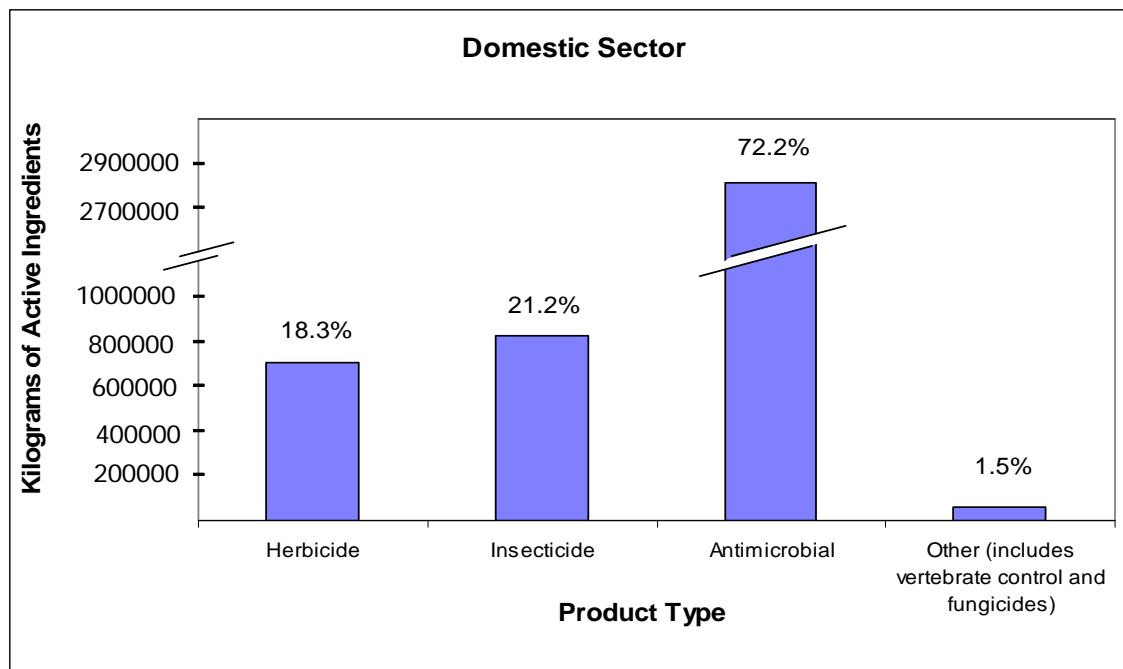


Figure 4: Kilograms of active ingredient sold in Canada in 2008 in the Domestic sector



The top 10 active ingredients sold in the Domestic sector are from three product type groups: antimicrobial, insecticide and herbicide (Table 6). Of the top 10 products, five are used for swimming pools and spas and accounted for 80% of the amount sold of the top 10 Domestic sector list. The top 10 active ingredients accounted for 84% of the Domestic sector pesticides sold.

Table 6: Top 10 Active Ingredients Sold in Canada in 2008 in the Domestic sector

Active Ingredient	Product Type
Calcium Hypochlorite	Antimicrobial
Halobrom	Antimicrobial
Trichloro-S-triazinetrione	Antimicrobial
Poly[oxyethylene(dimethyliminio)ethylene(dimethyliminio)ethylene dichloride]	Antimicrobial
Naphthalene	Insecticide
N-alkyl (40% c12, 50% C14, 10% C16) Dimethyl Benzyl Ammonium Chloride	Antimicrobial
DEET	Insecticide*
Silicon Dioxide	Insecticide
Carbaryl	Insecticide
Glyphosate	Herbicide

* While DEET is an insect repellent, it has been grouped with the insecticides.

Sales Information by Product Type

In the following sections, all pesticides are discussed according to their product type (including herbicides, insecticides, fungicides, antimicrobials, vertebrate controls, and other product types). As previously discussed, a product may have a number of different uses on the label. As the sales reporting does not collect data on the relative amount of a product used for a specific label use, the data may not necessarily be separated into only one product type. This means that there may be overlap between the product type groupings and these numbers should not be summed to obtain total quantities sold in Canada in 2008, as an over-reporting would occur.

Herbicides

Herbicides accounted for 49.2% (43 135 196 kg a.i.) of all pesticides sold in Canada in 2008. This is mainly due to large amounts of herbicides used in agricultural settings. The top 10 herbicides sold in 2008, as listed in Table 7, accounted for 90% of all herbicide sales in Canada.



Table 7: Top 10 Herbicide Active Ingredients Sold in Canada in 2008

Active Ingredient
Glyphosate
2,4-D
Glufosinate Ammonium
MCPA
Bromoxynil
Atrazine
S-metolachlor and R-enantiomer
Dicamba
Ethalfuralin
Triallate

Insecticides

Insecticides accounted for 4.8% (4 213 849 kg a.i.) of all pesticides sold in Canada in 2008. Many of the insecticides are used in agricultural settings, though the fourth- and fifth-most sold insecticides (naphthalene and DEET) are used only in the Domestic sector. The top 10 insecticides sold in 2008, as listed in Table 8, accounted for 79% of all insecticide sales in Canada

Table 8: Top 10 Insecticide Active Ingredients Sold in Canada in 2008

Active Ingredient
Mineral Oil
Chlorpyrifos
Sulphur
Naphthalene
DEET*
Silicon Dioxide
Carbaryl
Carbon Dioxide Gas
Metam-Sodium
Diazinon

* While DEET is an insect repellent, it has been grouped with the insecticides.

Fungicides

Fungicides accounted for 7.8% (6 806 669 kg a.i.) of all pesticides sold in Canada in 2008. The vast majority of fungicides are used in the Agricultural sector (97%). The top 10 fungicides sold in Canada in 2008, as listed in Table 9, accounted for 74% of fungicide sales.



Table 9: Top 10 Fungicide Active Ingredients Sold in Canada in 2008.

Active Ingredient
Mancozeb
Chlorothalonil
Captan
Metiram
Sulphur
Propiconazole
Metam-Sodium
Iprodione
Tebuconazole
Thiram

Antimicrobials

Antimicrobials accounted for 37% (32 756 325 kg a.i.) of all pesticides sold in Canada in 2008. While most of the antimicrobial active ingredients are used in the Non-agricultural sector, there are a number where the majority of the active ingredient is used in the Domestic sector. This is true of the active ingredients halobrom, calcium hypochlorite, and trichloro-S-triazinetrione. The high volume is due to large quantities used in swimming pools and spas. The top 10 antimicrobial active ingredients sold in 2008, as listed in Table 10, accounted for 90% of all antimicrobial sales in Canada.

Table 10: Top 10 Antimicrobial Active Ingredients Sold in Canada in 2008

Active Ingredient
Oil-borne heavy duty wood preservatives*
Cuprous Oxide
Sodium Hypochlorite
Chromic Acid
Halobrom
Arsenic Pentoxide
Glutaraldehyde
Cupric Oxide
Calcium Hypochlorite
Trichloro-S-triazinetrione

* includes creosote and pentachlorophenol

Vertebrate Control

Vertebrate controls accounted for less than 0.2% (146 024 kg a.i.) of all pesticides sold in Canada in 2008. Non-agricultural use accounted for 79% of the vertebrate controls sold in 2008. The top 10 vertebrate controls, as listed in Table 11, accounted for 99% of all vertebrate control sales in 2008.



Table 11: Top 10 Vertebrate Control Active Ingredients Sold in Canada in 2008

Active Ingredient
Carbon Dioxide Gas
Putrescent Whole Egg Solids
Thiram
Strychnine
Zinc Phosphide
Oil of Black Pepper
Methyl Nonyl Ketone
Polybutene
Brassica Hirta White Mustard Seed Powder
Sodium Alpha-olefin Sulfonate

Others

Products that fall into the “Others” type accounted for 2.3% (2 033 691 kg a.i.) of pesticide sales in Canada for 2008. The majority of the use of these other active ingredients is in the Agricultural sector (91%). The top 10 active ingredients sold in Canada in 2008 that fall into this type are listed in Table 12 and accounted for 99% of “other” type sales.

Table 12: Top 10 Other Active Ingredients Sold in Canada in 2008

Active Ingredient
Surfactant Blend
Nonylphenoxypolyethoxyethanol
Mineral Oil (Adjuvants)
Paraffin Base Petroleum Oil
Octylphenoxypolyethoxyethanol
Polyoxyalkylated Alkyl Phosphate Ester
1,3-Dichloropropene
Siloxylated Polyether
Petroleum Hydrocarbon Blend
Surfactant Mixture

Biopesticides

Biopesticides are microbial pesticides (contain a bacterium, fungus, virus, protozoan, or alga as the active ingredient), pheromones and other semiochemical pesticides, and other non-conventional (formerly biochemical) pesticides.

In 2008, there were 83 active ingredients identified as biopesticides, which accounted for 349 registered products (Table 13).



Table 13: Biopesticide Product Compliance Information (as of 16 June 2011).

	Registered Biopesticide Products
Number of Registered Products	349
Number of Products for which a Report was Submitted	291 (83%)
Number of Products Reported as Sold	169
Number of Products Reported as Not Sold	122

Of the products that were reported as sold, 138 can be converted into kg a.i. The remaining 31 products have unconventional units, such as colony forming units and international units. As it is difficult to comment on the products with unconventional units, only the products that could be converted to kg a.i. are included in the following information on biopesticides.

The 138 products that could be converted to kg a.i. accounted for 4 743 643 kg a.i. sold in 2008. Other product types accounted for more than 50% of biopesticide sales in 2008 (Figure 4). This is mainly due to a mineral oil adjuvant. Vertebrate control and antimicrobials accounted for 0.1% each of the biopesticides sold in 2008 and were added to the “others” product type. Insecticides accounted for the next largest portion of biopesticide sales in 2008 at 37.8%.

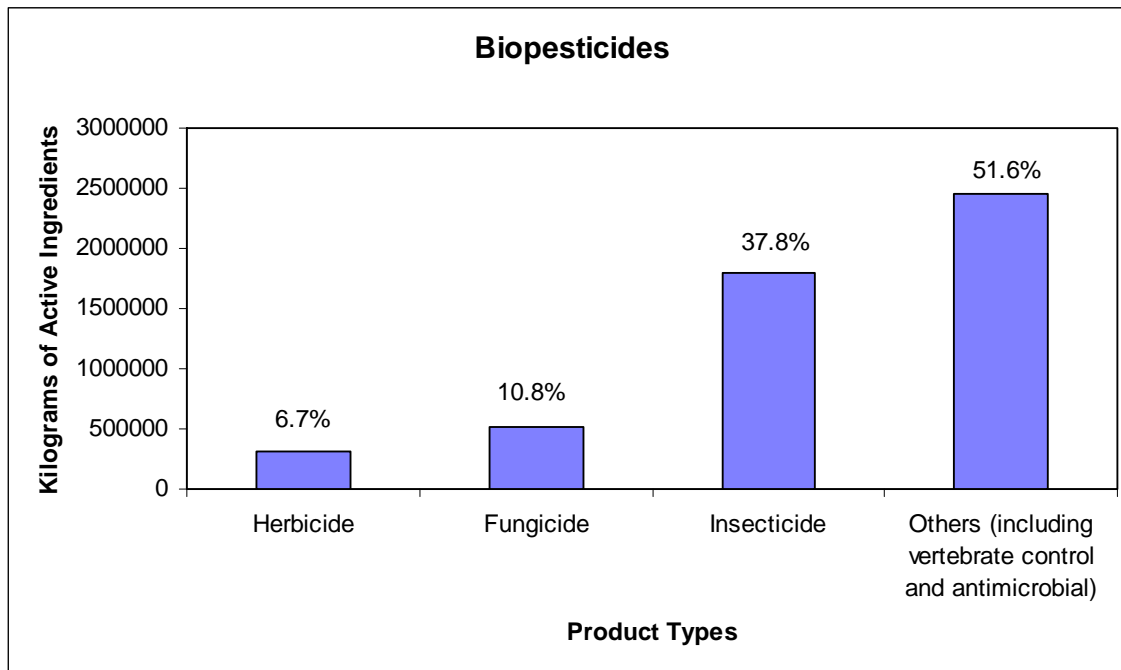


Figure 4: Kilograms of active ingredients of biopesticides sold in Canada in 2008.

The top 10 biopesticide active ingredients sold in Canada are listed in Table 14. Mineral oil was the top biopesticide and represents a herbicidal adjuvant and an insecticidal mineral oil. The top 10 active ingredients accounted for 99.6% of sales of biopesticides that could be converted to kg a.i.



Table 14: Top 10 Biopesticide Active Ingredient Sold in Canada in 2008

Active Ingredient	Product Type
Mineral Oil	Herbicide, Insecticide, Others
Sulphur	Fungicide, Insecticide
Silicon Dioxide	Insecticide
N-Decanol	Herbicide
Potassium Bicarbonate	Fungicide
Insecticidal Soaps	Insecticide
Ferrous Sulphate	Herbicide
Lime Sulphur	Fungicide, Insecticide
Corn Gluten Meal	Herbicide
Acetic Acid	Herbicide

Comparison with United States Environmental Protection Agency data

The United States Environmental Protection Agency (USEPA) compiles data on pesticide used in the United States, while the PMRA collects information on the amount of each product sold. As the collection and interpretation are not identical, most direct comparisons between the USEPA data and the PMRA data cannot be made. However, some general observations can be made comparing the 2007 USEPA data (the latest available American data) and the 2008 PMRA data.

Total sales of pesticides in Canada in 2008 were less than four per cent of the overall amount of pesticides used in the United States in 2007. There is a difference in the relative amount of each product type sold in Canada and used in the United States with the largest difference being in the herbicide product type (Table 15). Antimicrobials are not included in the table as the American data can not be directly compared to the Canadian data.

Table 15: Percentage of Pesticide Sold in Canada or Used in the United States by Product Type.

Product Type	Percentage of pesticide sales or use (excluding antimicrobials)	
	Canada (2008 Sales Data)	United States (2007 Usage Data)
Herbicide	77	47
Insecticide	7	8
Fungicide	12	6
Others	4	39*

* The USEPA includes nematicides, fumigants and other miscellaneous conventional pesticides and other chemicals used as pesticides such as sulphur, petroleum oil and sulphuric acid in "Others". In Canada, most of these pesticides were grouped into more specific product types.

Some differences are seen in the pesticide profiles in Canada and the United States. In both Canada and the United States, glyphosate is the most used or sold pesticide in the Agricultural sector and creosote is the most used or sold in the Non-agricultural sector. In Canada, glyphosate



is the most sold pesticide overall and creosote is the second. In the United States, this is the opposite, with creosote used four times as much as glyphosate.

Future Years

The PMRA is working on analyzing the sales data for the 2009 calendar year and is receiving data for the 2010 calendar year. The PMRA will publish the 2009 data once the analysis is complete.

When sufficient data has been submitted, there will be the ability to look at trends in pesticide sales. This trend analysis will allow for insight into shifts in pesticide sales, for example, from higher-risk products to lower-risk products.



Appendix I: Ranking of all active ingredients sold in Canada in 2008

Active Ingredient	Kilograms of Active Ingredient Sold
Glyphosate	> 25 000 000
Oil-borne heavy duty wood preservatives (creosote and pentachlorophenol)	> 10 000 000
Copper (Elemental)	> 5 000 000
Sodium Hypochlorite	> 1 000 000
2,4-D	
Mancozeb	
Chromic Acid	
Glufosinate Ammonium	
MCPA	
Mineral Oil	
Bromoxynil	
Halobrom	
Surfactant Blend	
Arsenic Pentoxide	
Glutaraldehyde	
Cupric Oxide	> 500 000
Chlorothalonil	
Calcium Hypochlorite	
Atrazine	
Chlorpyrifos	
S-metolachlor and R-enantiomer	
Captan	
Dicamba	
Ethalfuralin	
Trichloro-S-triazinetrione	> 100 000
Sodium Bromide	
Metiram	
Sulphur	
Nonylphenoxypolyethoxyethanol	
Propiconazole	
Poly[oxyethylene(dimethyliminio)ethylene(dimethyliminio)ethylene dichloride]	
Triallate	
Dichlorprop	
Diquat	
Metam-Sodium	
Naphthalene	
Trifluralin	



Active Ingredient	Kilograms of Active Ingredient Sold
N-alkyl (40% c12, 50% C14, 10% C16) Dimethyl Benzyl Ammonium Chloride	
Hexahydro-1,3,5-tris(2-hydroxyethyl)-S-traizine	
Tralkoxydim	
Available Chlorine	
Mecoprop	
Bentazon	
Iprodione	
Potassium Dimethyldithiocarbamate	
DEET	
1,3-Dichloropropene	
Tebuconazole	
Fenoxaprop-P-ethyl	
Fluroxypyr	
Dimethenamid	
Silicon Dioxide	
Thiram	
N-Decanol	
Carbaryl	
Quintozene	
Boscalid	
Imazamethabenz-methyl	
Chloropicrin	
Carbathiin	
Carbon Dioxide Gas	
Didecyl Dimethyl Ammonium Chloride	
Pendimethalin	
Acrolein	
N-alkyl (67% C12, 25% C14, 7% C16, 1% C18) Dimethyl Benzyl Ammonium Chloride	
1-Alkyl (C8-C18)-1,3-Propanediamine Acetate	
Linuron	
Paraffin Base Petroleum Oil	
Prothioconazole	> 50 000
Diazinon	
Potassium Bicarbonate	
Sodium Chlorite	
Halane	
Dimethoate	
Thiamethoxam	
Insecticidal Soap	



Active Ingredient	Kilograms of Active Ingredient Sold
Dazomet	
Diuron	
Clethodim	
Phorate	
Metam-Potassium	
Metribuzin	
2,2-Dibromo-3-Nitrilopropionamide	
Malathion	
Octylphenoxyethoxyethanol	
Pyraclostrobin	
Clopyralid	
2,4-DB	
Ferrous Sulfate	
Azoxystrobin	
Fosetyl-AL	
Triclopyr-Butotyl	
Polyoxyalkylated Alkyl Phosphate Ester	< 50 000
Bronopol	
Paradichlorobenzene	
Lime Sulphur	
Maleic Hydrazide	
Phosmet	
Ethylene Oxide	
1-(3-Chloroallyl)-3,5,7-Triaza-1-Azoniaadamantane Chloride	
Trifloxystrobin	
N-Alkyl (5% C12, 60% C14, 30% C16, 5% C18) Dimethyl Benzyl Ammonium Chloride	
Sodium Dichloro-s-Triazinetrione	
Imazethapyr	
Isoxaflutole	
Methyl Bromide	
Picloram	
2-(Thiocyanomethylthio)Benzothiazole	
1,2-Benzisothiazolin-3-one	
Mesotrione	
Sodium Dimethyldithiocarbamate	
1,3-Dichloro-5-ethyl-5-methylhydantoin	
Zineb	
Folpet	
Methylene Bis(thiocyanate)	
Siloxylated Polyether	



Active Ingredient	Kilograms of Active Ingredient Sold
Corn Gluten Meal	
Petroleum Hydrocarbon Blend	
Nabam	
Difenoconazole	
Chlorpropham	
Endosulfan	
Imazamoz	
Disodium Octaborate Tetrahydrate	
EPTC	
Oxirane Derivatives	
2-(Hydroxymethyl)-2-Nitro-1,3-Propanediol	
Tepraloxydim	
Paraquat	
Acetic Acid	
Simazine plus related active Triazines	
Pyrasulfotole	
Metalaxyl-M and S-Isomer	
Thiophanate-methyl	
Sethoxydim	
Borax	
Oxydiethylene Bis(alkyl diemthyl ammonium chloride)	
Mineral Spirits	
N-Alkyl (68% C12, 32% C14) Dimethyl Ethylbenzyl Ammonium Chloride	
N-Coco-Alkyltrimethylene Diamines present as Monobenzoate Salt	
Fomesafen	
Amitrole	
Flucarbazone (present as flucarbazone-sodium)	
Zinc Borate	
Imidacloprid	
Sodium Fluoride	
Barium Metaborate Monohydrate	
Propamocard Hydrochloride	
Acephate	
Methamidophos	
Tribenuron-methyl	
5-Chloro-2-Methyl-4-Isothiazolin-3-one	
Quizalofop P-ethyl	
Formaldehyde	
Fluazifop-P-butyl	
Ethephon	
Florasulam	



Active Ingredient	Kilograms of Active Ingredient Sold
Lambda-Cyhalothrin	
Sulfuryl Fluoride	
Piperonyl Butoxide	
Thiabendazole	
Tetrachlorvinphos	
Aluminum Phosphide	
1,2-Dibromo-2,4-Dicyanobutane	
Thifensulfuron-methyl	
Surfactant Mixture	
Hexazinone	
Clodinafop-Propargyl	
Ferbam	
MCPB	
Naled	
Silica Gel	
Azinphos-Methyl	
Diodofon	
Cymoxanil	
1,3-Dimethylol-5,5-Dimethylhydantoin	
Prometryne plus related active triazines	
Triticonazole	
Maneb	
Pyrimethanil	
Tri-N-Butyltin Maleate	
Permethrin	
Octhilinone	
Fenamidone	
Fludioxonil	
Imazapyr	
Iodocarb	
10,10'-Oxybis(phenoxarsine)	
2-Methyl-4-Isothiazolin-3-one	
Phosalone	
Chloroacetamide	
Boracic Acid	
Ethofumesate	
Aminopyralid	
Ziram	
Dichlorvos	
Hydrogen Peroxide	
Vinclozolin	



Active Ingredient	Kilograms of Active Ingredient Sold
Chlorthal-dimethyl	
Didecyldimethylammonium	
Formetanate	
Diflufenzopyr	
Chlorantraniliprole	
Zinc	
Myclobutanil	
Novaluron	
Methomyl	
Fenhexamid	
Zoxamide	
Pyroxsulam	
Metaldehyde	
Pinoxaden	
Bromacil	
Ferric Sodium Ethylenediaminetetraacetic Acid	
Daminozide	
Chlormequat Chloride	
Methylated Seed Oil of Soybean	
Metallic Copper Powder	
Paraformaldehyde	
Chloridazon	
Flufenacet	
Oxamyl	
Thiacloprid	
Fatty Acids	
Pyrethrins	
Octylbicyclo Heptene Dicarboximide	
Putrescent Whole Egg Solids	
Cyazofamid	
Kresoxim-methyl	
Foramsulfuron	
Quinclorac	
2-Phenylphenol	
Tefluthrin	
Deltamethrin	
1- or 3-Monomethylol-5,5-Dimethylhydantoin	
Acetamiprid	
Chlorimuron-ethyl	
Rimsulfuron	
Spinosad	



Active Ingredient	Kilograms of Active Ingredient Sold
Fluazinam	
Strychnine	
Sodium Omadine	
Dodemorph-acetate	
Flumetsulam	
1,4-Bis(Bromoacetoxy)-2-butene	
Cypermethrin	
Nicosulfuron	
Peracetic Acid	
Propoxur	
Tetramethrin	
Cyrodinil	
Famoxadone	
Desmedipham	
Phenmedipham	
Tebufenozide	
Propyzamide	
4,5-Dichloro-2-N-octyl-3(2H)isothiazolone	
Zinc Phosphide	
Bensulide	
Spirodiclofen	
Disodium Cyanodithioimidocarbonate	
D-cis, trans Allethrin	
Acequinocyl	
Dithiopyr	
Dodecylguanidine Hydrochloride	
Trinexapac-etyl	
Oil of Black Pepper	
Terbacil	
Spirotetramat	
1-Alkyl C6-C18 1,3-Propane Diamine	
Gum Resin	
Methoxyfenozone	
Methyl Nonyl Ketone	
D-trans Allethrin	
Magnesium Phosphide	
3-(Trimethoxysilyl)-Propyldimethyloctadecyl Ammonium Chloride	
Oxadiazon	
Metalaxyl	
Streptomycin	
2,2'-(1-Methyltrimethylenedioxy)Bis-(4-methyl-1,3,2-dioxaborinane)	



Active Ingredient	Kilograms of Active Ingredient Sold
Chloroneb	
Ferric Phosphate	
Bifenazate	
Pyridaben	
Herbicide Soap	
Polybutene	
Diphenylamine	
5-Chloro-2(2,4-Dichlorophenoxy)Phenol	
Fenbutatin Oxide	
Oxycarboxin	
Rotenone	
Etridiazole	
Brassica Hirta White Mustard Seed Powder	
D-Phenothrin	
Carbofuran	
Topramezone	
Cyfluthrin	
Spinetoram	
Butoxypolypropylene Glycol	
Cloransulam-methyl	
Alkanolamine Salts of Fatty Acids	
Methoprene	
Sodium Alpha-olefin Sulfonate	
Chlorocresol	
Oil of Citronella	
2,2-Oxybis(4,4,6-Trimethyl-1,3,2-Dioxaborinane)	
Sodium Salt of 2-Mercaptobenzothiazole	
Metsulfuron-methyl	
Chlorsulfuron	
Capsaicin	
Copper 8-Quinolinolate	
Ethametsulfuron-methyl	
Resmethrin	
Tributyltin Oxide	
Propetamphos	
Primisulfuron-methyl	
Spiromesifen	
Fluvalinate-tau	
Diocetyl Dimethyl Ammonium Chloride	
Oxine Benzoate	
Prohexadione Calcium	



Active Ingredient	Kilograms of Active Ingredient Sold
Hydramethylnon	
Abamectin	
Coumaphos	
6-Benzylaminopurine	
Phosphine	
Kinoprene	
Flusilazole	
Dialkyl (5% C12, 60% C14, 30% C16, 5% C18) Methyl Benzyl Ammonium Chloride	
Bispyribac-sodium	
Artificial Grape Extract	
Copper (present as Picro Cupric Ammonium Formate and Tannate complex)	
Dichlobenil	
Warfarin	
Pyriproxyfen	
Aviflycine Hydrochloride	
Piperine	
Di-N-Propyl-isocinchomeronate	
Bromadiolone	
Paclobutrazol	
Amitraz	
Azadirachtin	
Gibberellic Acid	
Denatonium Benzoate	
Chlorophacinone	
Diphacinone	
Muscalure	
Brodifacoum	
Difethialone	
4-Aminopyridine	
Octyl Decyl Dimethyl Ammonium Chloride	
Citronella Terpene	
Uniconazole-P	
Natamycin	
Pymetrozine	
1-MCP	
Prosulfuron	
Beauveria bassiana	
Cyromazine	
Naphthylacetic Acid	



Active Ingredient	Kilograms of Active Ingredient Sold
Clofentezine	
Ancymidol	
Bromethalin	
4-CPA	
Triflurosulfuron Methyl	
Sodium Cyanide	
Dichloran	
<i>Bacillus thuringiensis</i> sp. tenebrionis	
Asphalt solids	
<i>Bacillus subtilis</i> (strain MBI600)	
Cellulose (from powdered corn cobs)	
(Z)-11-tetradecen-1-yl acetate + (E,E)-8,10-dodecadien-1-ol + 1-dodecanol + 1-tetradecanol	
Dimethoxane	
1-dodecanol	
Naptalam (present as acid or as sodium salt)	
Octadec-9-enoic acid, ethyl ester	
Aromatics	
Octenol	
Soybean oil	
Propylene glycol	
Difenzoquat (present as methyl sulphate salt)	
Cholecalciferol	
Niclosamide	
Dimethomorph	
<i>Agrobacterium radiobacter</i>	
(Z)-11-tetradecenyl acetate	
Neodiprion abietis nucleopolyhedrovirus	
Sodium chlorate	
Thiencarbazone-methyl	
Pirimicarb	
Sodium 2-phenylphenate	
(E,E)-8,10-dodecadien-1-ol	
Napropamide	
Nicotine (present as alkaloid or as sulphate)	
Fosamine ammonium	
Mono- and dipotassium phosphate	
Kaolin	
Nucleopolyhedrovirus for gypsy moth larvae	
Octadec-9-onoic acid, methyl ester	
Triforine	



Active Ingredient	Kilograms of Active Ingredient Sold
2-bromo-4'-hydroxyacetophenone	
Decyl isononyl dimethyl ammonium chloride	
Sodium monofluoroacetate	
<i>Chondrostereum purpureum</i> (strain PFC2139)	
B-bromo-B-nitrostyrene	
(E,Z)-11-tetradecenal	
<i>Bacillus thuringiensis berliner</i> sp. Kurstaki strain HD-1	
<i>Gliocladium catenulatum</i>	
Dinocap (plus related active compounds)	
Trichlorfon	
4-chloro-3-methylphenol (sodium salt)	
(Z)-8-dodecen-1-ol	
<i>Pseudozyma flocculosa</i>	
Triadimenol	
<i>Bacillus sphaericus</i>	
Diflubenzuron	
Imiprothrin	
<i>Bacillus subtilis</i> (strain QST 713)	
Nucleopolyhedrovirus for Douglas-Fir tussock moth	
3-chloro-1,2-propanediol	
<i>Trichoderma harzianum</i> strain KRL-AG2	
Glyphosate (present as trimethylsulfonium salts)	
Ammonium Bromide	
Bis(trichloromethyl)sulfone	
Isoxaben	
German cockroach extract	
Isopropyl alcohol	
Fenbuconazole	
N-octanol	
Ethylene	
(E)-8-dodecen-1-yl acetate	
Diclofop-methyl	
Prallethrin	
(Z)-9-tetradecen-1-yl acetate	
(E,Z)-3,13-octadecadienyl acetate	
4-nitro-3-(trifluoromethyl) phenol sodium salt	
Dodine	
<i>Sclerotinia minor</i> IMI 3144141	
<i>Pantoea agglomerans</i> C9-1	
(E)-4-tridecenyl acetate	
Carfentrazone-ethyl	



Active Ingredient	Kilograms of Active Ingredient Sold
Clomazone	
(Z)-11-tetradecenal	
(Z,Z)-3,13-octadecadienyl acetate	
<i>Streptomyces griseoviridis</i> strain K61	
(Z)-11-tetradecen-1-ol	
Clothianidin	
(E,E)-8,10-dodecadien-1-ol + 1-dodecanol + 1-tetradecanol	
(Z)-9-dodecenyl acetate + (Z)-11-tetradecenyl acetate	
Terbufos	
Naphthaleneacetamide	
Sulfentrazone	
(Z)-4-tridecenyl acetate	
1-tetradecanol	
Sulfosulfuron	
<i>Bacillus thuringiensis israelens</i>	
Oxyfluorfen	
Iodosulfuron-methyl-sodium	
Mandipropamid	
Picolinafen	
Mecoprop (present as amine salt)	
Device	
Trisulfuron	
P-Menthane-3,8-diol	



Appendix II: Glossary

Active ingredient:	That ingredient of a pesticide that actually controls the targeted pest.
Adjuvant:	Any substance that is added to a spray tank (separate from the pesticide formulation) that will improve the performance of the pesticide.
Agricultural sector:	Commercial pesticides applied to farms involved in the production of raw agricultural commodities, such as food, fibre, and tobacco; excluding non-crop and post harvest applications.
Antimicrobial:	A pest control product that intends to control microorganisms and fouling organisms on/in inanimate objects, industrial processes and systems, surfaces, water and air.
Biopesticide:	Microbial pesticides (contain a bacterium, fungus, virus, protozoan, or alga as the active ingredient), pheromones and other semiochemical pesticides, and other non-conventional (formerly biochemical) pesticides.
Colony forming unit:	A measure of viable bacterial or fungal numbers.
Commercial product:	A product that is used in commercial activities, such as farming.
Device:	An instrument or apparatus that generates or applies a pest control product.
Domestic product:	A product that is used in or around the house by the public.
End-use product:	A product containing active ingredient(s) and usually formulant(s) that is labelled with instructions for direct pest control use or application.
Fungicide:	Pesticides used to kill or inhibit fungi or fungal spores.
Herbicide:	Pesticides used to kill or inhibit weeds.
Insecticide:	Pesticides used to kill or inhibit insects.
Insect repellent:	Pesticides used to repel insects.
Manufacturing concentrate:	A product containing a registered technical grade of active



	ingredient(s) and formulant(s) intended for further reformulating and/or repackaging into end-use products.
Non-agricultural sector:	Commercial pesticides that are not applied to farms involved in the production of raw agricultural commodities.
Pest control product or Pesticide:	Any product, device, organism, substance or thing that is manufactured, represented, sold or used as a means for directly or indirectly controlling, preventing, destroying, mitigating, attracting or repelling any pest
Product type:	Pesticide products can be grouped by their main target pest, into herbicide, insecticide, fungicide, antimicrobial, vertebrate control and "other".
Registrant:	A company that holds the registration of a pesticide with the PMRA.
Technical grade active ingredient:	Contains the active ingredient and normally contains impurities that are by-products of the manufacturing process.
Vertebrate control:	A product used to control vertebrates.
Water treatment:	Products to control microorganisms in swimming pools and industrial process waters (for example, paper mill whitewater, wastewater systems, cooling water).
Wood preservative:	Antimicrobials applied to wood to control wood-destroying organisms and increase the service life of the wood.