Pest Control Products Sales Report for 2010

Canada

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Forward

In November 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 purpose of the sales information reporting program is to collect sales data, which 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 third Pest Control Product Sales Report outlines the registrant and product compliance over the last four years, provides an overview of the quantity of pesticides sold in the 2010 calendar year, and briefly discusses changes in pesticide sales since the implementation of the regulations. This report is only intended to represent the best information provided to the PMRA through the reporting program. As there is limited years of data presented in this report, 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 the 2007 to 2010 calendar years. From year to year, there are continuous increases in the number of registrants submitting reports. In 2010, there was a five percentage increase in the number of registrants reporting.

Table 1 Registrant Compliance Information

Year	2007	2008	2009	2010
Number of registrants	737	702	699	723
Number of registrants Submitting Sales Reports	448 (61%)	493 (70%)	549 (79%)	608 (84%)

[1] Not all products that the registrants distribute is bought by users in a given year. The regulations allow the registrants to account for the amount of product distributed and made available for sale, but not necessarily bought by users.

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. An increase was seen in the number of product reports submitted between 2009 and 2010, leading to a 95% compliance rate. More than half of products reported to the PMRA did not have any sales for the 2010 calendar year. The majority of registrants who have not submitted sales information to the PMRA usually only have one or two products registered, of which most are domestic class products. Typically, it is not the same registrants who do not submit sales data from year to year. In general, when contacted by the PMRA regarding missing sales data, registrants promptly provide the required sales data for a given year.

Table 2 Product Compliance Information

Year	2007	2008	2009	2010
Number of Registered Products	5892	5602	5735	5992
Number of Products for which a Report was Submitted	4972 (84%)	4974 (89%)	5141 (90%)	5685 (95%)
Number of Products Reported as Sold	2378	2327	2400	2719
Number of Products Reported as Not Sold	2732	2647	2741	2966

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 in time, as well as products that had unusual units, such as colony forming units and devices, which were counted in units. In total, 103 out of the 2719 end-use products reported as sold were excluded from the kg a.i. calculations.

Of the remaining 2616 products, the overall pesticide sales in Canada in 2010 were 88 553 749 kg a.i., which is higher than the 84 363 417 kg a.i. sold in 2009.

In the analysis of the overall quantity, it should be noted that the sum of the top 50 products for which sales reports were submitted made up 54.6 % of the total kg a.i sold in Canada in 2010 (48 394 136 kg a.i.). The top ten active ingredients sold, presented in decreasing order in Table 3, made up 58 983 015 kg a.i. or 67 % of the total. A comprehensive list with the rankings for all active ingredients sold in Canada in 2010 is provided in Appendix I.

Table 3 Top 10 Active Ingredients Sold in Canada in 2010

Active Ingredient	Product Type
Glyphosate	Herbicide
Creosote	Antimicrobial
Sodium hypochlorite	Antimicrobial
2,4-D	Herbicide
4-nitro-3-(trifluoromethyl)phenol sodium salt	Vertebrate Control
MCPA	Herbicide
Mineral Oil	Insecticide, Herbicide, Fungicide, Other
Surfactant blend	Herbicide, Other
Chromic acid	Antimicrobial
Trichloro-s-triazinetrione	Antimicrobial

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.

Overall, 67.9% of pesticide sales in Canada were of Agricultural sector products (see Figure 1), whereas 26.5% of pesticide sales were of Non-agricultural sector products and 5.6% were of Domestic sector products.

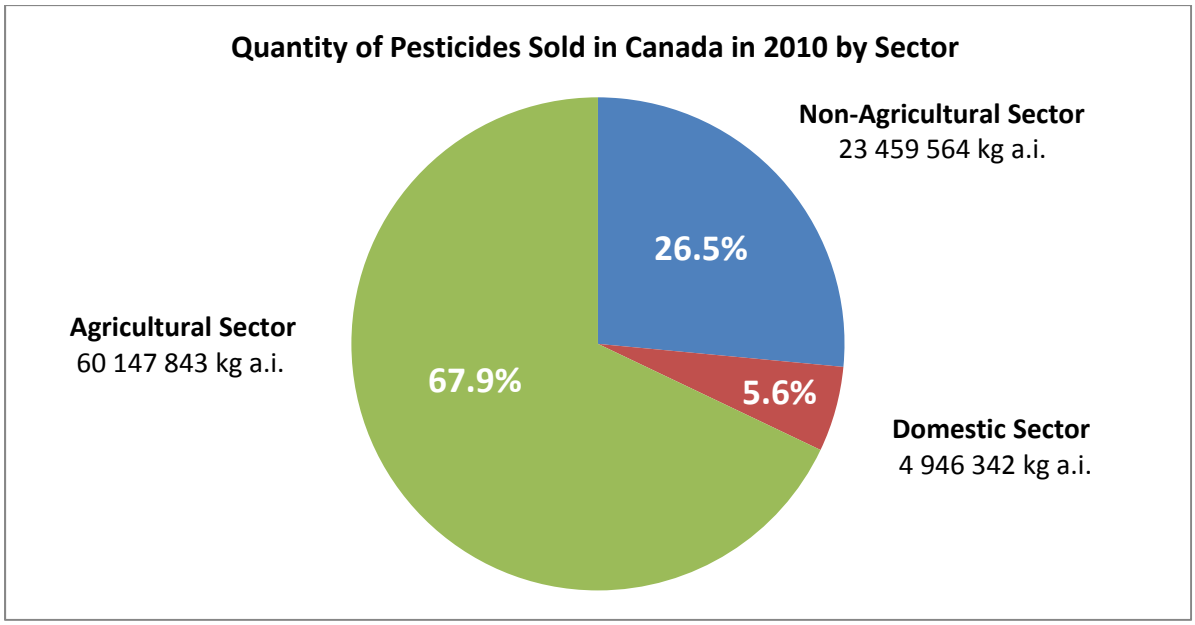

Figure 1 Quantity of pesticides sold in Canada in 2010 by sector.

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 2010, as an over-reporting could occur.

Agricultural Sector

Products with agricultural uses accounted for the majority of pesticide sales in Canada in 2010 at 67.9%. A total of 60 147 843 kg a.i. were sold in 2010.

Of the quantity of pesticides sold having Agricultural sector uses, herbicides accounted for 82% of the pesticide sales, followed by fungicides at 9.3%, and insecticides at 5% (Figure 2). Vertebrate control (0.001%) and antimicrobials (0.255%) accounted for a very small quantity of agricultural pesticides sold in 2010 and has been included in the “others” category, which accounted for 4.9% of agricultural sales.

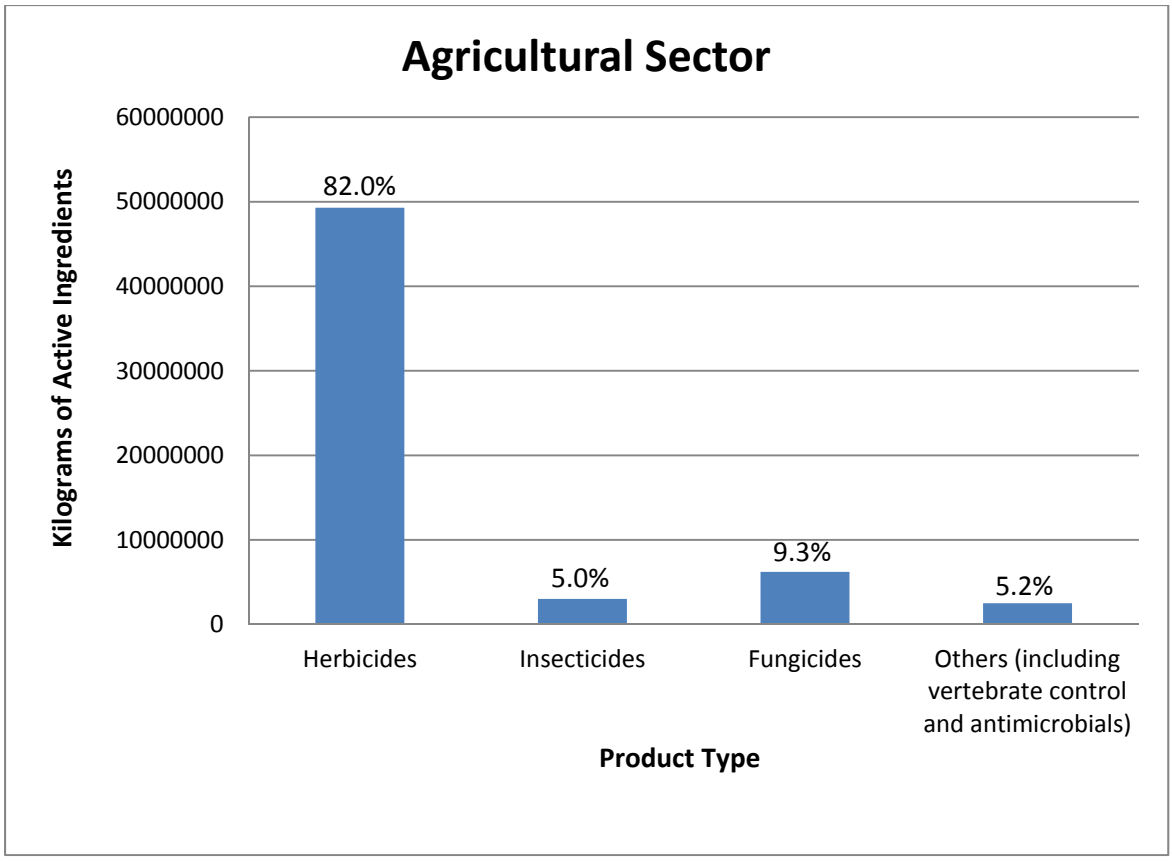

Figure 2 Kilograms of active ingredients sold in Canada in 2010 in the Agricultural sector.

The top 10 active ingredients sold having agricultural uses are shown in Table 4 in decreasing order. Seven of the top 10 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 2010 in the Agricultural Sector

Active Ingredient	Product Type
Glyphosate	Herbicide
MCPA	Herbicide
2,4-D	Herbicide
Mineral Oil	Insecticide, Herbicide, Fungicide, Other
Surfactant blend	Herbicide
Tribenuron-methyl	Herbicide
Bromoxynil	Herbicide
Chlorothalonil	Fungicide
Mancozeb	Fungicide
1,3-dichloropropene	Other

Non-Agricultural Sector

Commercial products with non-agricultural uses accounted for the second-largest amount of all pesticides sold in Canada in 2010 at 26.5%. A total of 23 459 564 kg a.i. were sold in 2010.

Of the total amount sold for Non-agricultural sector uses, antimicrobials accounted for 80.8% of non-agricultural pesticide sales, followed by vertebrate control with 11.1%. Herbicides accounted for 5.6% of this amount. Insecticides (0.5%), fungicides (0.7%), and "other" products (1.7%) accounted for 3% of the non-agricultural products (Figure 3).

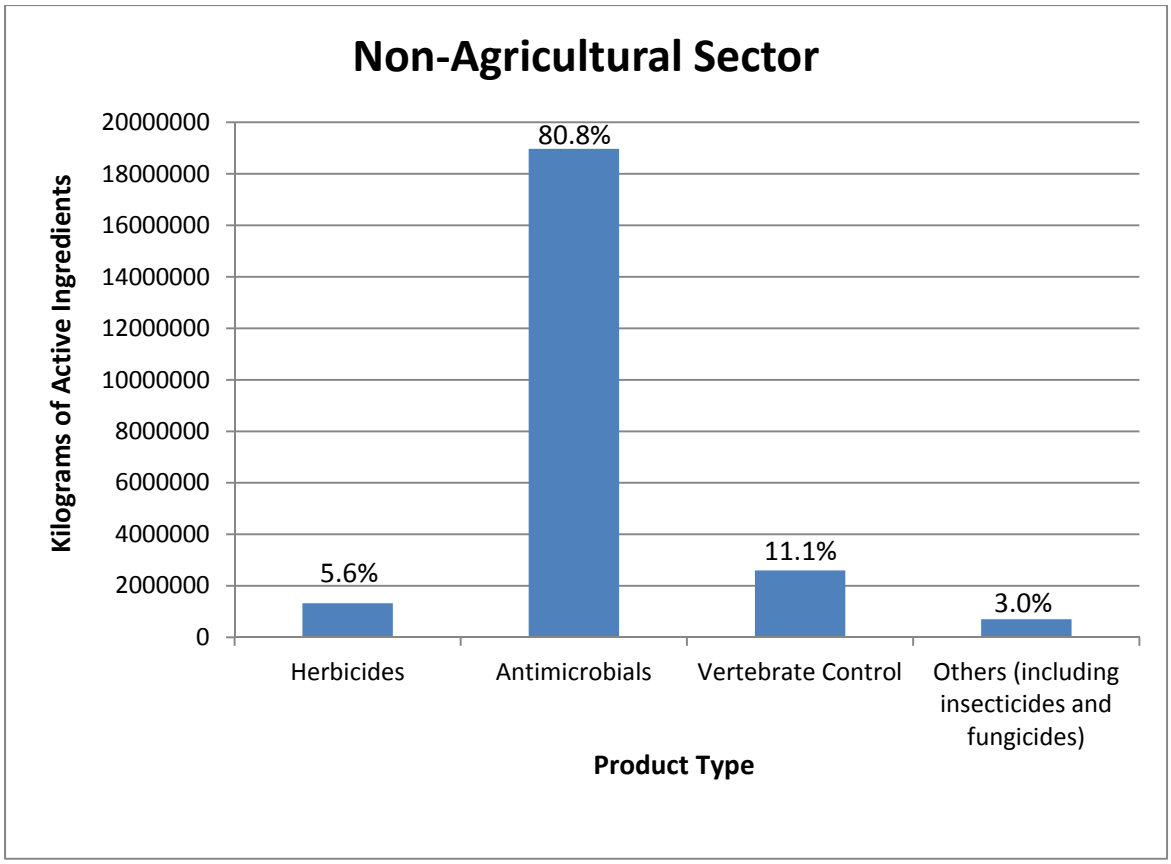

Figure 3 Kilograms of active ingredients sold in Canada in 2010 in the Non-agricultural sector.

The top 10 actives for Non-agricultural sector uses were predominately antimicrobials. These are presented in Table 5 in decreasing order. Two actives, including a vertebrate control and a herbicide were also in the top 10. Non-agricultural sector products would be used predominantly in the wood preservative industry and for water treatment. The top 10 active ingredients accounted for 80% of the Non-agricultural sector pesticides sold.

Table 5 Top 10 Active Ingredients Sold in Canada in 2010 in the Non-agricultural Sector

Active Ingredient	Product Type
Creosote	Antimicrobial
Sodium Hypochlorite	Antimicrobial
4-nitro-3-(trifluoromethyl)phenol sodium salt	Vertebrate Control
Chromic acid	Antimicrobial
Glutaraldehyde	Antimicrobial
Arsenic pentoxide	Antimicrobial
Cupric oxide	Antimicrobial
Copper as elemental	Herbicide, Antimicrobial
Pentachlorophenol plus related actives chlorophenols	Antimicrobial
Sodium bromide	Antimicrobial

Domestic Sector

The Domestic Class products accounted for 5.6% of overall pesticide sales in Canada for 2010. A total of 4 946 342 kg a.i. of Domestic sector products were sold.

Antimicrobial products accounted for 80.6% of domestic pesticides sold in Canada (Figure 4). This is mostly attributed to swimming pool and spa products. Herbicides and insecticides accounted for 11.1 and 13.4%, respectively, of the Domestic sector sales. Fungicides (0.9%), vertebrate controls (0.3%), and four other actives accounted for 1.3% of the Domestic sector sales.

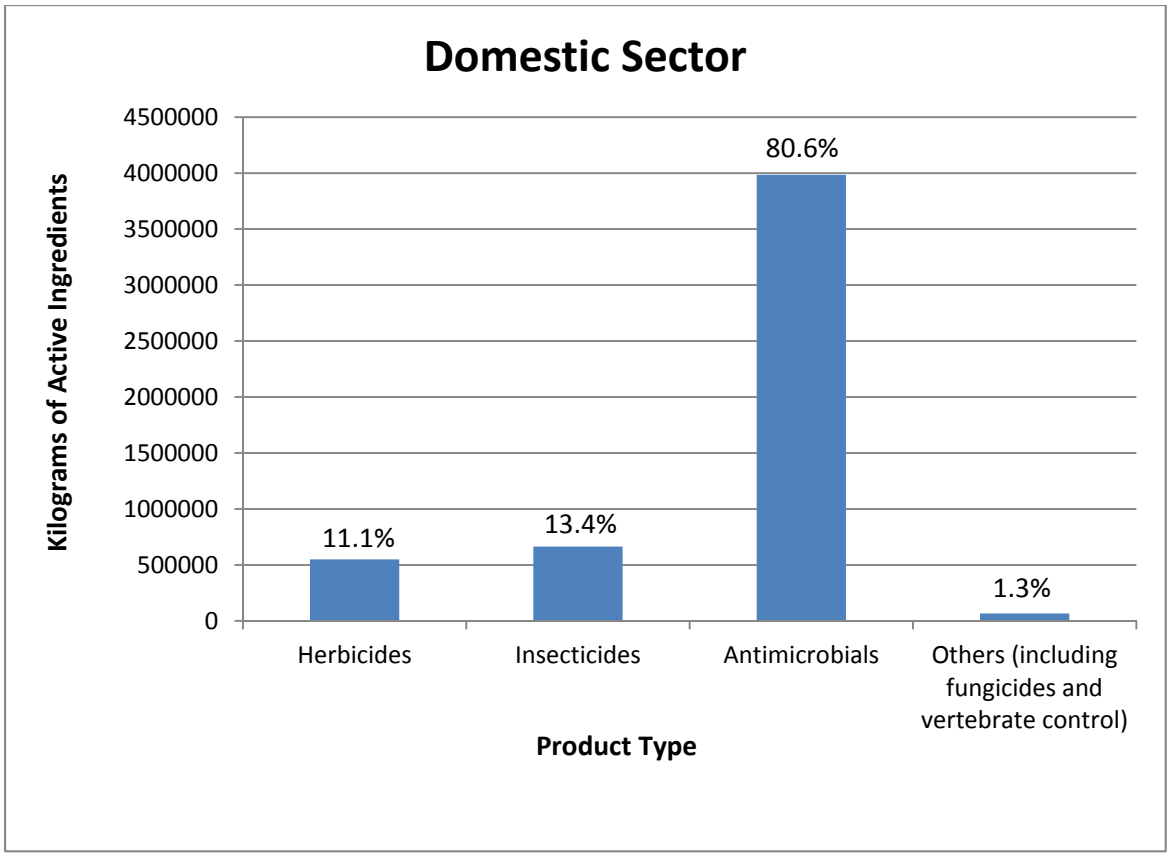

Figure 4 Kilograms of active ingredient sold in Canada in 2010 in the Domestic sector

The top 10 active ingredients sold for use in the Domestic sector are from two product type groups: antimicrobial and insecticide. They are presented in Table 6 in decreasing order. Of the top 10 products, 8 are used for swimming pools and spas and accounted for 91% 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 2010 in the Domestic Sector

Active Ingredient	Product Type
Trichloro-s-triazinetrione	Antimicrobial
Calcium hypochlorite	Antimicrobial
N-alkyl (40% C12, 50% C14, 10% C16) dimethyl benzyl ammonium chloride	Antimicrobial
Poly[oxyethylene(dimethyliminio)ethylene (dimethyliminio)ethylene dichloride]	Antimicrobial
Available bromine present as 1-bromo-3-chloro-5,5-dimethylhydantoin and related hydantoins	Antimicrobial
Halobrom	Antimicrobial
Naphtalene	Insecticide
Available chlorine present as 1-bromo-3-chloro-5,5-dimethylhydantoin and related hydantoins	Antimicrobial

Active Ingredient	Product Type
Sodium dichloro-s-triazinetrione	Antimicrobial
DEET*	Insecticide

*Since 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 2010, as an over-reporting could occur.

Herbicides

Herbicides accounted for 58% (51 172 853 kg a.i.) of all pesticides sold in Canada in 2010. This is mainly due to large amounts of herbicides used in agricultural settings. The top 10 herbicides sold in 2010, as listed in Table 7 in decreasing order, accounted for 88% of all herbicide sales in Canada and 51% of pesticide sales overall.

Table 7 Top 10 Herbicide Active Ingredients Sold in Canada in 2010

Active Ingredient
Glyphosate
MCPA
2,4-D
Tribenuron-methyl
Bromoxynil
Ethalfluralin
Atrazine (plus related active triazines)
S-Metholachlor and R-Enantiomer
Diquat
Dicamba (present as acid, amine salt, ester or sodium salt)

Insecticides

Insecticides accounted for 4.2% (3 796 725 kg a.i.) of all pesticides sold in Canada in 2010. Many of the insecticides are used in agricultural settings, though the fifth- and eighth-most sold insecticides (naphthalene and DEET) are used only in the Domestic sector. The top 10 insecticides sold in 2010, as listed in Table 8 in decreasing order, accounted for 77% of all insecticides sales in Canada and 3.3% of pesticide sales overall.

Table 8 Top 10 Insecticide Active Ingredients Sold in Canada in 2010

Active Ingredient
Mineral Oil
Hydrogen peroxide
Sulphur
Chlorpyrifos
Naphthalene
Silicon Dioxide
Thiamethoxam
DEET*
Clothianidin
Carbon dioxide gas

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

Fungicides

Fungicides accounted for 6.5% (5 784 829 kg a.i.) of all pesticides sold in Canada in 2010. The vast majority of fungicides are used in the Agricultural sector (96%). The top 10 fungicides sold in Canada in 2010, as listed in Table 9 in decreasing order, accounted for 75% of fungicide sales and 4.9% of pesticide sales overall.

Table 9 Top 10 Fungicide Active Ingredients Sold in Canada in 2010

Active Ingredient
Chlorothalonil
Mancozeb
Sulphur
Chloropicrin
Metiram
Captan
Metam-sodium
Copper as Elemental
Pyraclostrobin
Prothioconazole

Antimicrobials

Antimicrobials accounted for 26% (23 101 930 kg a.i.) of all pesticides sold in Canada in 2010. 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 sold in the Domestic sector. This is true of the active ingredient calcium hypochlorite and available bromine. The high volume is due to large quantities used in swimming pools and spas, which are mostly for domestic use. The top 10 antimicrobial active ingredients sold in 2010, as listed in Table 10 in decreasing order, accounted for 78% of all antimicrobial sales in Canada and 20% of pesticide sales overall.

Table 10 Top 10 Antimicrobial Active Ingredients Sold in Canada in 2010

Active Ingredient
Creosote
Sodium hypochlorite
Chromic acid
Trichloro-s-triazinetrione
Glutaraldehyde
Arsenic pentoxide
Available bromine present as 1-bromo-3-chloro-5,5-dimethylhydantoin and related hydantoins
Calcium hypochlorite
Cupric oxide
Copper as elemental

Vertebrate Control

Vertebrate controls accounted for less than 3% (2 617 239 kg a.i.) of all pesticides sold in Canada in 2010. Non-agricultural use accounted for 99% of the vertebrate controls in 2010. The top 10 vertebrate controls, as listed in Table 11 in decreasing order, accounted for 99.8% of all vertebrate control sales in 2010 and 2.9% of pesticide sales overall.

Table 11 Top 10 Vertebrate Control Active Ingredients Sold in Canada in 2010

Active Ingredient
4-nitro-3-(trifluoromethyl)phenol sodium salt
Carbon dioxide gas
Cellulose from powdered corn cobbs
Dried blood
Putrescent whole egg solids
Zinc phosphide
Thiram
Castor Oil
Brassica hirta White Mustard Seed Powder
Strychnine

Others

Products that fall into the “Others” type accounted for 3.8% (3 388 708 kg a.i) of pesticide sales in Canada in 2010. The majority of the label uses of these other active ingredients are in the Agricultural sector (88%). The top 10 active ingredients sold in Canada in 2010 that fall into this type are listed in Table 12 in decreasing order and accounted for 99.6% of “other” type sales and 3.8% of pesticide sales overall.

Table 12 Top 10 Other Active Ingredients Sold in Canada in 2010

Active Ingredient
Surfactant blend
1,3-dichloropropene
Nonylphenoxypolyethoxyethanol
Mineral Oil
Paraffin based petroleum oil
Petroleum hydrocarbon blend
Polyoxyalkylated alkyl phosphate ester
Octylphenoxypolyethoxyethanol
Siloxylated polyether
Methylated seed oil of soybean

Biopesticides

Biopesticides include 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 2010, there were 108 active ingredients identified as biopesticides, which accounted for 449 registered products (Table 13).

Table 13 Biopesticide Product Compliance Information

	Registered Biopesticides Products
Number of Registered Products	449
Number of Products for which a Report was Submitted	427 (95%)
Number of Products Reported as Sold	249
Number of Products Reported as Not Sold	178

A total of 55 products out of the 249 products reported as sold could not be converted into kg a.i. due to errors in reporting of the products or the use of units, such as colony forming units and international units, which have no conversion factor for kg a.i.. It is difficult to comment on the products with units that cannot be converted to kg a.i. Only the products that could be converted to kg a.i. are included in the following information on biopesticides. It is important to note that biopesticide sales are represented in this subsection in addition to being included in each individual product type section (e.g., herbicides, insecticides, etc.).

The 194 products that could be converted to kg a.i. accounted for 3 683 774 kg a.i. sold in 2010 which represented 4.2% of pesticide sales overall. Insecticides accounted for more than 56.3% of the biopesticide sales in 2010 (Figure 5). Herbicides accounted for the next largest portion of biopesticide sales in 2010 at 25.4%, followed by fungicides with 19.3% of sales. Vertebrate control and antimicrobials accounted for 2.8 and 0.2% respectively of the biopesticides sold in 2010 and were added to the “others” product type.

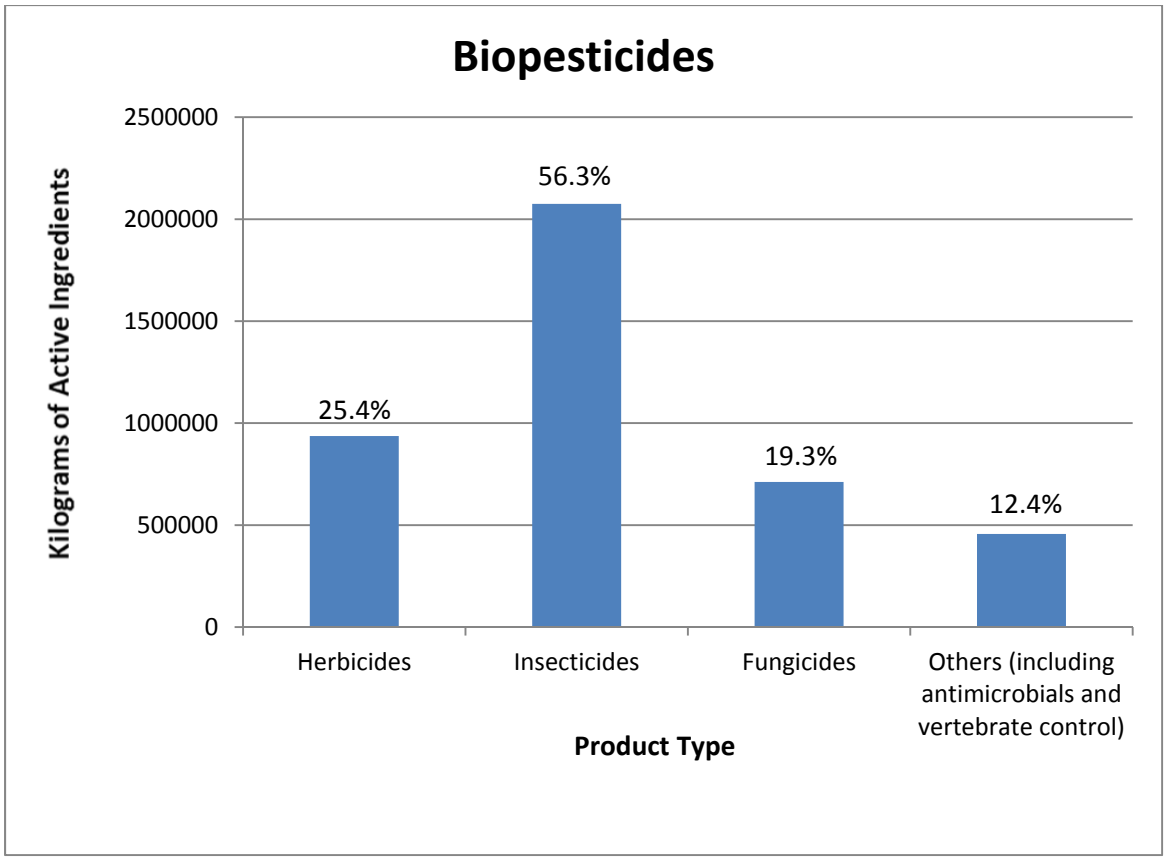

Figure 5 Kilograms of active ingredients of biopesticides sold in Canada in 2010.

The top 10 biopesticide active ingredients sold in Canada are listed in Table 14 in decreasing order. The top 10 active ingredients accounted for 93% of sales of biopesticides that could be converted to kg a.i. and 3.9% of pesticide sales overall.

Table 14 Top 10 Biopesticide Active Ingredient Sold in Canada in 2010

Active Ingredient	Product Type
Mineral Oil	Herbicide, Insecticide, Fungicide, Other
Sulphur	Fungicide, Insecticide
Corn Gluten Meal	Herbicide
Hydrogen Peroxide	Herbicide, Insecticide, Fungicide, Antimicrobial
N-decanol	Herbicide
Silicon Dioxide	Insecticide
Mono- and Dipotassium Phosphite	Fungicide
Carbon dioxide gas	Insecticide, Vertebrate Control
Acetic acid	Herbicide
Insecticidal Soaps	Insecticide

Sales Information by Chemical Group

Active ingredients have been grouped into chemical groups to present an alternate way of viewing Canadian pesticide sales information (Table 15). The chemical groups were aligned with the Quebec Ministry of Sustainable Development, Environment and Parks' listings (Dion 2007) and are outlined in Appendix II.

In 2010, the chemical group with the largest proportion of sales was the Phosphonic and Phosphinic acids group at 39%, followed by the Inorganic (Others) group at 10%. The next groups were the Hydrocarbons and Phenoxy acids at 9 and 6% respectively. The remaining chemical groups were all under 4% and 32 out of 52 chemical groups were under 1% of total sales.

Table 15 Summary of Pesticide Sales by Chemical Group (all sectors) in 2010

Chemical Grouping	Kg a.i.	Ranking
Acylureas	643 845	20
Alcohols	431 279	26
Aldehydes	883 546	18
Amides	203 463	34
Ammoniums, Quaternary	1 302 246	14
Anilides and Anilines	1 024 182	17
Aryloxyphenoxyl Acids	394 050	27
Azoles, Oxazoles and Thiazoles	222 187	32
Benzamides	138 282	35
Benzoic Acids and Derivatives	496 029	23
Benzonitriles	2 069 400	8
Biscarbamates	1 317 683	13
Carbamates	489 140	24
Chromenones	12 087	43
Cyclohexanedione Oximes	234 632	31
Diazines	23 005	40
Dinitrobenzenes	1 233 848	16
Dithiocarbamates	545 860	21
Dithiophosphates	214 746	33
Fatty Acids and Surfactants	2 910 266	6
Guanidines	289 362	30
Halogenated Organic Acids	512 480	22
Hydrocarbons	8 116 077	3
Imidazolinones	XXX	XXX
Indanediones	17	48
Inorganic Coppers	1 409 548	12
Inorganic Zincs	6 646	45
Inorganic, Others	9 134 067	2

Chemical Grouping	Kg a.i.	Ranking
Methoxyacrylates	XXX	XXX
Microbials	NA	49
Morpholines and Oxathiines	XXX	XXX
Nitrobenzenes	123 678	36
Oils, Minerals and Vegetable	1 497 673	10
Organic Acids	88 736	37
Organochlorines	1 286 664	15
Organohalogens	49 469	39
Organometallics	10 205	44
Others	696 694	19
Phenols and Chorophenols	3 002 986	5
Phenoxy Acids	5 530 111	4
Pheromones	664	47
Phosphates	16 729	41
Phosphonic and Phosphinic Acids	34 818 697	1
Phosphoramidothioates	14 087	42
Phtalic Acids	357 403	28
Pyrethroids and Pyrethrins	52 856	38
Pyridines	6 127	46
Sulfonylureas	1 493 132	11
Thiophosphates	354 813	29
Triazines and Tetrazines	2 407 037	7
Triazoles	476 151	25
Urea Derivatives	1 545 718	9

XXX indicates confidential business information. The chemical group did not contain a minimum of 4 registrants in the calculation of the total.

Future Years

The PMRA is working on analyzing the sales data for the 2011 calendar year and is receiving data for the 2012 calendar year. The PMRA will publish the 2011 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, between products with different risk profiles.

References

Dion, S. 2007. Guide de classement des ingrédients actifs par groupes chimiques. Ministère du développement durable, de l'environnement et des parcs. Québec. 35 pp. http://www.mddefp.gouv.qc.ca/pesticides/bilan/bilan2009.pdf

Appendix I Ranking of all active ingredients sold in Canada in 2010

Active Ingredient	Kilograms of Active Ingredient Sold
Glyphosate	>25 000 000
Creosote	>5 000 000
Sodium Hypochlorite	>1 000 000
2,4-D	
4-Nitro-3-(Trifluoromethyl) Phenol Sodium Salt	
MCPA	
Mineral Oil	
Surfactant Blend	
Chromic Acid	
Trichloro-S-Triazinetrione	
Tribenuron-Methyl	
Chlorothalonil	
Bromoxynil	
Glutaraldehyde	>500 000
Arsenic Pentoxide	
Mancozeb	
1,3-Dichloropropene	
Ethalfluralin	
Copper As Elemental	
Atrazine (Plus Related Active Triazines)	
S-Metolachlor And R-Enantiomer	
Available Bromine Present As 1-Bromo-3-Chloro-5,5-Dimethylhydantoin And Related Hydantoins	
Calcium Hypochlorite	
Cupric Oxide	
N-Alkyl (40% C12, 50% C14, 10% C16) Dimethyl Benzyl Ammonium Chloride	
Sulphur	
Poly[Oxyethylene(Dimethyliminio)Ethylene(Dimethyliminio)Ethylene Dichloride]	
Pentachlorophenol	
Nonylphenoxypolyethoxyethanol	>100 000
Diquat	
Dicamba	
Bentazon	
Chloropicrin	
Corn Gluten Meal	
Metiram	
Sodium Bromide	
Triallate	

Active Ingredient	Kilograms of Active Ingredient Sold
Hydrogen Peroxide	
Captan	
Fluroxypyr	
Ammonium Bromide	
Halobrom	
N-Decanol	
Metam-Sodium	
Trifluralin	
Chlorpyrifos	
Available Chlorine Present As 1-Bromo-3-Chloro-5,5-Dimethylhydantoin And Related Hydantoins	
Hexahydro-1,3,5-Tris(2-Hydroxyethyl)-S-Triazine	
Naphthalene	
Paraffin Base Petroleum Oil	
Clodinafop-Propargyl	
Dimethenamid-p	
Sodium Dichloro-S-Triazinetrione	
1-Alkyl (C8-C18)-1,3-Propanediamine Acetate	
Petroleum Hydrocarbon Blend	
Thifensulfuron-Methyl	
Flucarbazone (Present As Flucarbazone-Sodium)	
Dichlorprop	
Fenoxaprop-P-Ethyl	
Linuron	
Silicon Dioxide	
Potassium Dimethyldithiocarbamate	
Zinc Borate	
Thiamethoxam	
Pyraclostrobin	
Clopyralid	
Pendimethalin	
DEET	
Prothioconazole	
Clethodim	
2,2-Dibromo-3-Nitrilopropionamide	
Tebuconazole	
Iprodione	
Mono- And Dipotassium Phosphite	
Mecoprop	
Acrolein	
Imazamethabenz-Methyl	
Propiconazole	

Active Ingredient	Kilograms of Active Ingredient Sold
Boscalid	
Sodium Chlorite	>50 000
Clothianidin	
Metribuzin	
Carbon Dioxide Gas	
Metsulfuron-Methyl	
Malathion	
N-Alkyl (67% C12, 25% C14, 7% C16, 1% C18) Dimethyl Benzyl Ammonium Chloride	
2,4-DB	
Insecticidal Soap	
Bronopol	
Diuron	
Acetic Acid	
Diazinon	
Tralkoxydim	
Disodium Octaborate Tetrahydrate	
Polyoxyalkylated Alkyl Phosphate Ester	
Imazethapyr	
Sodium Chloride	
Octylphenoxypolyethoxyethanol	
Fosetyl-Al	
Dazomet	
Quintozene	
Pyrasulfotole	
Lime Sulphur	
Dimethoate	
Triclopyr-Butotyl	<50 000
Available Chlorine Present As 1-Bromo-3-Chloro-5,5-Dimethylhydantoin, 1,3-Dichloro-5,5-Dimethylhydantoin, 1,3-Dichloro-5-Ethyl-5-Methylhydantoin And Related Hydantoins	
Didecyldimethylammonium Present As Carbonate And Bicarbonate Salts	
Simazine Plus Related Active Triazines	
Saflufenacil	
Borax	
Picloram	
Propamocarb Hydrochloride	
Quizalofop p-Ethyl	
Glufosinate Ammonium	
Didecyl Dimethyl Ammonium Chloride	
Hexazinone	

Active Ingredient	Kilograms of Active Ingredient Sold
Iron HEDTA	
Phorate	
Imazamox	
Difenoconazole	
Quinclorac	
Mesotrione	
Thiram	
Tepraloxydim	
Sodium Fluoride	
Available Chlorine, Present As Sodium Hypochlorite	
Mineral Spirits	
Trifloxystrobin	
Paradichlorobenzene	
Ferrous Sulfate	
Fluazinam	
1-(3-Chloroallyl)-3,5,7-Triaza-1-Azoniaadamantane Chloride	
Chlorpropham	
Cyprodinil Technical	
Aluminum Phosphide	
Metalaxyl-M And S-Isomer	
Fomesafen	
Metam-Potassium	
Permethrin	
1,2-Benzisothiazolin-3-One	
Fludioxonil	
Phosmet	
N-Alkyl (5% C12, 60% C14, 30% C16, 5% C18) Dimethyl Benzyl Ammonium Chloride	
Isoxaflutole	
Tetrakis (Hydroxymethyl) Phosphonium Sulfate (THPS)	
Boracic Acid	
Thiophanate-Methyl	
EPTC	
Paraquat	
1,2-Dibromo-2,4-Dicyanobutane	
Oxirane Derivatives (50% Minimum)	
5-Chloro-2-Methyl-4-Isothiazolin-3-One	
Sodium Dimethyldithiocarbamate	
Sulfuryl Fluoride	
Maleic Hydrazide	
Available Chlorine Present As 1,3-Dichloro-5,5-Dimethylhydantoin And 1,3- Dichloro-5-Ethyl-5-Methylhydantoin	

Active Ingredient	Kilograms of Active Ingredient Sold
Carbaryl	
Amitrole	
2-(Thiocyanomethylthio)Benzothiazole	
Difenzoquat Metilsulfate	
Nabam	
Methyl Bromide	
Napropamide	
Methylene Bis(Thiocyanate)	
Folpet	
Metconazole	
Mandipropamid	
Aluminum Silicate	
Carbathiin	
Oxydiethylene Bis(Alkyl Dimethyl Ammonium Chloride)	
Thiabendazole	
Formaldehyde	
Siloxylated Polyether	
Pyroxsulam	
Azoxystrobin	
Azinphos-Methyl	
Aminopyralid	
Imazapyr	
Acephate	
Florasulam	
Imidacloprid	
Cymoxanil	
Fluazifop-P-Butyl	
Pyrimethanil	
Piperonyl Butoxide	
Barium Metaborate Monohydrate	
Difethialone	
Lambda-Cyhalothrin	
Silica Gel (Amorphous)	
Ziram	
N-Coco-Alkyltrimethylene Diamines Present As Monobenzoate Salt	
Sulfentrazone	
Ethyl Alcohol	
MCPB (Present As Sodium Salt)	
Fenamidone	
Ethephon	
Sethoxydim	

Active Ingredient	Kilograms of Active Ingredient Sold
Bromacil (Present In Free Form, As Dimethylamine Salt, Or As Lithium Salt)	
Prometryne Plus Related Active Triazines	
Naled	
Diodofon	
Cellulose (From Powdered Corn Cobs)	
Dried Blood	
Dodecylguanidine Hydrochloride	
2-Methyl-4-Isothiazolin-3-One	
Flumioxazin	
Octhilinone	
Endosulfan	
1,3-Dimethylol-5,5-Dimethlydantoin	
Dichlobenil	
Triticonazole	
Pinoxaden	
Ferbam	
Methylated Seed Oil Of Soybean	
Myclobutanil	
Terbacil	
Pottassium Bicarbonate	
Dichlorvos	
Oxamyl	
Zoxamide	
Tri-N-Butyltin Maleate	
Ferric Sodium EDTA	
Halane	
Surfactant Mixture	
Chlorantraniliprole	
Zinc	
N-Alkyl (68% C12, 32% C14) Dimethyl Ethylbenzyl Ammonium Chloride	
Fenhexamid	
10,10'-Oxybis(Phenoxarsine)	
2-Phenylphenol	
Clomazone	
Metallic Copper Powder	
Daminozide	
Formetanate	
Carfentrazone-Ethyl	
Tetrachlorvinphos	
Metalaxyl	

Active Ingredient	Kilograms of Active Ingredient Sold
Propyzamide	
Thiencarbazone-Methyl	
Cyfluthrin	
Spinosad	
Acetamiprid	
Flumetsulam	
Deltamethrin	
Cypermethrin	
Iodocarb	
N-octylbicyclo heptene dicarboximide	
Chlormequat Chloride	
4-Chloro-3-Methylphenol (Sodium Salt)	
Chlorimuron-Ethyl	
Methomyl	
Pyrethrins	
Dimethomorph	
Ethylene Oxide	
Putrescent Whole Egg Solids	
P-Menthane-3,8-Diol	
Peracetic Acid	
Zinc Phosphide	
2,2'-(1-Methyltrimethylenedioxy)Bis-(4-Methyl-1,3,2-Dioxaborinane)	
Thiacloprid	
Chlorthal-Dimethyl	
1,3-Dichloro-5-Ethyl-5 Methylhydantoin	
Spirotetramat	
Oxyfluorfen	
Cyazofamid	
Ethofumesate	
D-Cis, Trans Allethrin	
Rimsulfuron	
Acifluorfen	
Propoxur	
Formic Acid	
Diflufenzopyr	
3-methyl-4-chlorophenol	
Kresoxim-Methyl	
1- or 3- Monomethylol-5,5-Dimethylhydantoin	
Terbufos	
Diphenylamine	
Castor Oil	

Active Ingredient	Kilograms of Active Ingredient Sold
1,4-Bis(Bromoacetoxy)-2-Butene	
Metaldehyde	
Butoxypolypropylene Glycol	
Triforine	
Tebufenozide	
Magnesium Phosphide	
Brassica hirta White Mustard Seed Powder	
Tetramethrin	
Fatty Acids	
Strychnine	
Famoxadone	
Spinetoram	
Cloransulam-Methyl	
Rotenone	
Disodium Cyanodithioimidocarbonate	
Trinexapac-Ethyl	
Spirodiclofen	
4,5-Dichloro-2-N-Octyl-3(2h)Isothiazolone	
2,2-Oxybis(4,4,6-Trimethyl-1,3,2-Dioxaborinane)	
Oil Of Black Pepper	
Sodium 2-Phenylphenate	
Quinoxyfen	
Sodium Alpha-Olefin Sulfonate	
Foramsulfuron	
Spiromesifen	
Sodium Omadine	
D-Trans Allethrin	
Streptomycin Present As Sulphate	
Ferric Phosphate	
Tefluthrin	
Propetamphos	
Ipconazole	
5-Chloro-2(2,4-Dichlorophenoxyl)Phenol	
Azamethiphos	
Fenbutatin Oxide	
Novaluron	
Triethanolamine Salts Of Fatty Acids	
Fenbuconazole	
Methoxyfenozide	
Bifenazate	
Acequinocyl	
Methyl Nonyl Ketone	

Active Ingredient	Kilograms of Active Ingredient Sold
Polybutene	
Methoprene	
Phenmedipham	
Desmedipham	
Etridiazole	
1-Alkyl (C6-C18) 1,3-Propane Diamine	
Verbenone	
3-(Trimethoxysilyl)-Propyldimethyloctadecyl Ammonium Chloride	
Phosphine	
Dimethenamid	
Bensulide	
Dioctyl Dimethyl Ammonium Chloride	
Topramezone	
Fish Meal Mixture	
Nicosulfuron	
Copper 8-Quinolinolate	
Bis(Trichloromethyl)Sulfone	
Sodium Salt Of 2-Mercaptobenzothiazole	
Octyl Decyl Dimethyl Ammonium Chloride	
D-Phenothrin	
Capsaicin	
Prohexadione Calcium	
Aviglycine Hydrocloride	
Octenol	
Diallyl Disulfide And Related Sulfides	
Ethametsulfuron-Methyl	
Amitraz	
Chlorsulfuron	
Tributyltin Oxide	
Pyridaben	
Resmethrin	
Abamectin	
Whole Egg Solids	
Citronella Oil	
6-Benzylaminopurine (Or: 6-Benzyladenine)	
Citric Acid	
Pyriproxyfen	
Dialkyl (5% C12, 60% C14, 30% C16, 5% C18) Methyl Benzyl Ammonium Chloride	
Oxadiazon	
Fluvalinate-Tau	

Active Ingredient	Kilograms of Active Ingredient Sold
S-Kinoprene	
Lactic Acid	
Triglyceride Ethoxylate 10 POE	
Denatonium Benzoate	
Artificial Grape Extract	
Di-N-Propyl Isocinchomeronate	
Flusilazole	
Meat Meal Mixture	
Azadirachtin	
Bispyribac-Sodium (KIH-2023)	
Garlic	
Warfarin	
Piperine	
Naphthylacetic Acid	
Wintergreen Oil	
Bromadiolone	
Paclobutrazol	
Muscalure	
Gibberellic A4A7	
4-Aminopyridine	
Liquid Carbon Dioxide	
Chlorophacinone	
Fish Oil Mixture	
3-Methyl-2-Cyclohexen-1-One	
Mixture Of Citronella Oil, Citrus Oil, Eucalyptus Oil, Pine Oil, Geranium Oil, Camphor Oil	
Clofentezine	
Diphacinone	
Naphthaleneacetamide	
Coumaphos	
Brodifacoum	
Pymetrozine	
Uniconazole-P	
Citronella Terpene	
1-methylcyclopropene	
Cyromazine	
Prosulfuron	
Ancymidol	
Bromethalin	
4-CPA	
Natamycin	
D-Limonene	

Active Ingredient	Kilograms of Active Ingredient Sold
Lithium Hypochlorite	
Saponins Of Chenopodium Quinoa	
3,13-Octadecadienyl Acetate	
1-Tetradecanol	
Oxycarboxin	
(Z)-8-Dodecenyl Acetate + (E)-8-Dodecenyl Acetate + (Z)-8-Dodecen-1-Ol	
Herbicidal Soap	
Available Chlorine, Present As Trichloro-S-Triazinetrione	
3,13 Octadecadienyl Acetate	
Available Chlorine, Present As Sodium Dichloro-S-Triazinetrione	
(Z)-11-Tetradecenal	
(Z)-8-Dodecen-1-Ol	
Thymol	
(Z)-11-Tetradecenyl Acetate	
Metrafenone	
R-(-)-1-Octen-3-Ol	
(E,E)-8,10-Dodecadien-1-Ol + 1-Dodecanol + 1-Tetradecanol	
2-(Hydroxymethyl)-2-Nitro-1,3-Propanediol	
Sodium Cyanide	
Tembotrione	
Methamidophos	
Sodium Monofluoroacetate	
(Z)-9-Tetradecen-1-Yl Acetate	
Chloridazon	
(E,E)-8,10-Dodecadien-1-Ol	
(Z)-4-Tridecenyl Acetate	
N-Alkyl (25% C12, 60% C14, 15% C16) Dimethyl Benzyl Ammonium Chloride	
Prallethrin	
Paraformaldehyde	
Nicotine (Present As Alkaloid Or As Sulphate)	
N-Alkyl (50% C12, 30% C14, 17% C16, 3% C18) Dimethyl Ethylbenzyl Ammonium Chloride	
Triethylene Glycol	
[[[1-Methyl-2-(5-Methyl-3-Oxazolidinyl)Ethoxy]Methoxy]Methoxy]Methanol	
Fosamine Ammonium	
Picolinafen	
(Z)-9-Dodecenyl Acetate + (Z)-11-Tetradecenyl Acetate	
Irgarol 1051	
Soybean Oil	

Active Ingredient	Kilograms of Active Ingredient Sold
Diisobutylphenoxyethoxyethyl Dimethyl Benzyl Ammonium Chloride	
N-Alkyl (5% C5-18, 61% C12, 23% C14, 11% C16) Dimethyl Benzyl Ammonium Chloride	
Sodium Chlorate	
Decyl Isononyl Dimethyl Ammonium Chloride	
Oxalic Acid	
Octadec-9-Onoic Acid, Methyl Ester	
Sulfometuron Methyl	
Phosalone	
Flonicamid	
Octadec-9-Enoic Acid, Ethyl Ester	
(Z)-11-Tetradecen-1-Ol	
Triadimenol	
(E,E)-8,10-Dodecadien-1-Ol + 1-Dodecanol + 1-Tetradecanol + (Z)-8-Dodecen-1-Yl Acetate + (E)-8-Dodecen-1-Yl Acetate + (Z)-8-Dodecen-1-Ol	
Tralomethrin	
1-Dodecanol	
N-Alkyl (3% C12, 95% C14, 2% C16) Dimethyl Benzyl Ammonium Chloride (Or: Myristyl Dimethyl Benzyl Ammonium Chloride Dihydrate)	
Propylene Glycol	
(Z)-8-Dodecen-1-Yl Acetate	
P-Tert Amyl Phenol	
Primisulfuron-Methyl	
Triclopyr Triethylamine Salt	
(E,Z)-11-Tetradecenal	
(E)-4-Tridecenyl Acetate + (Z)-4-Tridecenyl Acetate	
Sulfosulfuron	
Potassium Peroxymonosulfate	
(E)-11-Tetradecenol Acetate; Trans-11-Tetradecenyl Acetate	
Carbendazim	
1-(Alkyl-Amino)-3-Aminopropane Hydrochloride (Component Of Ampho 443-31)	
Aromatics	
Dithiopyr	
Cyphenothrin	
Etofenprox	
Benzyl Benzoate	
Niclosamide	
Dinocap (Plus Related Active Compounds)	

Active Ingredient	Kilograms of Active Ingredient Sold
Available Chlorine, Present As Calcium Hypochlorite	
Flufenacet	
Isopropyl Alcohol	
Dimethoxane	
Fenpropimorph	
Diflubenzuron	
Hydramethylnon	
Isoxaben	
Diflufenzopyr-Sodium	
Imiprothrin	
Dodine	
Dodemorph-Acetate	
1-(Alkyl-Amino)-3-Carboxymethylaminopropane (Component Of Ampho 443-31)	
Bifenthrin	
Garlic Powder	
Asphalt Solids	
Garlic Oil	
Borax or Sodium Borate	
Copper (Present As Picro Cupric Ammonium Formate And Tannate Complex)	
Alkanolamine Salts Of Fatty Acids	
N-Octanol	
Borax Pentahydrate	
Iodosulfuron-Methyl-Sodium	
2-Bromo-4'-Hydroxyacetophenone	
Cyprosulfamide	
Endothal	
Ethylene	
(E)-8-Dodecen-1-Yl Acetate	
Dichloran	
(E)-4-Tridecenyl Acetate	
German Cockroach Extract	
Mesosulfuron-Methyl	
Anhydrous Ammonia	
Gibberellic Acid	
Carbofuran	
Diclofop-Methyl	
Triflusulfuron-Methyl	

Appendix II Chemical Groups and Active Ingredients- 2010

Chemical Group	Active Ingredient Name
Acylureas	Bromacil (Present In Free Form As Dimethylamine Salt Or As Lithium Salt) Bentazon Cymoxanil Diflubenzuron Iprodione Novaluron Terbacil Hexazinone
Alcohols	Aminoethoxyvinylglycine Bronopol Butoxypolypropylene Glycol Ethyl Alcohol Ethylene Oxide N-Decanol N-Octanol Tetrakis (hydroxymethyl) Phosphonium Sulphate Isopropyl Alcohol P-Menthane-3,8-Diol Propylene Glycol Siloxylated Polyether Triethylene Gylcol 2-Hydroxymethyl-2-Nitro-1,3-Propanediol
Aldehydes	Formaldehyde Glutaraldehyde Methaldehyde Paraformaldehyde
Amides	2,2-Dibromo-3-Nitrilopropionamide Capsaicin Piperine Chloroacetamide Daminozide Mandipropamid Naphtalene Acetamide Napropamide Saflufenacil

Chemical Group	Active Ingredient Name
Ammoniums, Quaternary	Difenzoquat Metilsulfate Chlormequat Chloride 1-(3-Chloroallyl)-3,5,7-Triaza-1-Azoniaadamantane Chloride Denatonium Benzoate Diquat Paraquat N-Alkyl (40% C12, 50% C14, 10% C16) Dimethyl Benzyl Ammonium Chloride N-Alkyl (50% C12, 30% C14, 17% C16, 3% C18) Dimethyl Ethylbenzyl Ammonium Chloride N-Alkyl (68% C12, 32% C14) Dimethyl Ethylbenzyl Ammonium Chloride Didecyl Dimethyl Ammonium Chloride N-Alkyl (5% C12, 60% C14, 30% C16, 5% C18) Dimethyl Benzyl Ammonium Chloride N-Alkyl (67% C12, 25% C14, 7% C16, 1% C18) Dimethyl Benzyl Ammonium Chloride Diisobutylphenoxyethoxyethyl Dimethyl Benzyl Ammonium Chloride N-Alkyl (5% C5-C18, 61% C12, 23% C14, 11% C16) Dimethyl Benzyl Ammonium Chloride Didecyldimethylammonium Present As Carbonate And Bicarbonate Salts Decyl Isononyl Dimethyl Ammonium Chloride Dioctyl Dimethyl Ammonium Chloride Octyl Decyl Dimethyl Ammonium Chloride Dialkyl (5% C12, 60% C14, 30% C16, 5% C18) Methyl Benzyl Ammonium Chloride Oxydiethylene Bis(Alkyl Dimethyl Ammonium Chloride) N-Alkyl (3% C12, 95% C14, 2% C16) Dimethyl Benzyl Ammonium Chloride (Or: Myristyl Dimethyl Benzyl Ammonium Chloride Dihydrate) 3-(Trimethoxysilyl)-Propyldimethyloctadecyl Ammonium Chloride
Anilides/Anilines	S-Metholachlor And R-Enantiomer Amitraz Niclosamide Boscalid Dimethenamid-P Diphenylamine Fenhexamid Flufenacet Flumioxazin Methyl Anthranilate (Artificial Grape Extract) Dimethenamid Metalaxyl-M And S-Isomer

Chemical Group	Active Ingredient Name
	Metalaxyl Picolinafen
Aryloxyphenoxyl Acids	Clodinafop-Propargyl Diclofop-Methyl Fenoxaprop-P-Ethyl Fluazifop-P-Butyl Quizalofop-P-Ethyl
Azoles, Oxazoles, Thiazoles	1,2-Benzisothiazolin-3-One Carbendazim Clomazone Fludioxonil 2-Methyl-4-Isothiazolin-3-One 5-Chloro-2-Methyl-4-Isothiazolin-3-One 4,5-Dichloro-2-N-Octyl-3(2h)Isothiazolone Isoxaflutole Sodium Salt Of 2-Mercatobenzothiazole Topramezone Octhilinone Pinoxaden Pyrasulfotole Spirotetramat Strychnine 2-(Thiocyanomethylthio)Benzothiazole Etridiazole Thiabendazole
Benzamides	DEET Isoxaben Chlorantraniliprole Propyzamide Methoxyfenozide Tebufenozide Zoxamide
Benzoic Acid And Derivatives	Bispyribac-Sodium Benzyl Benzoate Dicamba (Present As Acid, Amine Salt, Ester Or Sodium Salt) Quinclorac
Benzonitriles	Bromoxynil Dichlobenil Chlorothalonil

Chemical Group	Active Ingredient Name
Biscarbamates	Desmedipham Ferbam Maneb Mancozeb Metiram Nabam Phenmedipham Thiram Thiophanate-Methyl Zineb
Carbamates	Propoxur Bendiocarb Bifenazate Carbaryl Carbofuran Chlorpropham EPTC Famoxadone Formetanate 3-Iodo-2-Propynyl N-Butylcarbamate (Iodocarb) Methomyl Oxadiazon Oxamyl Propamocarb Hydrochloride Triallate
Chromenones	Brodifacoum Bromadiolone Difethialone Rotenone Warfarin
Cyclohexanedione Oximes	Clethodim Sethoxydim Tepraloxydim Tralkoxydim
Diazines	Ancymidol 6-Benzylaminopurine Maleic Hydrazide Pyridaben Pyrazon Triforine
Dinitrobenzenes	Bromethalin Dinocap (Plus Related Active Compounds) Ethalfluralin Fluazinam Pendimethalin

Chemical Group	Active Ingredient Name
	Trifluralin
Dithiocarbamates	Disodium Cyanodithioimidocarbonate Dazomet Potassium Dimethyldithiocarbamate Metam-Potassium Metam-Sodium Sodium Dimethyldithiocarbamate Ziram
Dithiophosphates	Bensulide Terbufos Dimethoate Azinphos-Methyl Malathion Phorate Phosalone Phosmet
Fatty Acids & Surfactants	Alkanolamine Salts Of Fatty Acids N-Coco-alkytrimethylene diamines present as monobenzoate salt 1-Alkyl (C8-C18)-1,3-Propanediamine Acetate 1-Alkyl (C6-C18) 1,3-Propanediamine Ammonium Salt Of Fatty Acid Fatty Acids Nonylphenoxypolyethoxyethanol Octadec-9-Enoic Acid, Methyl Ester Octadec-9-Enoic Acid, Ethyl Ester Octylphenoxypolyethoxyethanol Paraffin Based Petroleum Oil Polyoxyalkylated Alkyl Phosphate Ester Poly[Oxyethylene(Dimethyliminio)Ethylene(Dimethyliminio)Ethylene Dichloride] Potassium Salts Of Fatty Acids Soap (Non-Specific) Herbicidal Soap Triethanolamine Salts Of Fatty Acids Triglyceride Ethoxylate 10 POE Surfactant Blend Surfactant Mixture
Guanidines	Hydramethylnon Clothianidin Cyprodinil Dodine Dodecylguanidine Hydrochloride Imidacloprid Pyrimethanil

Chemical Group	Active Ingredient Name
	Streptomycin Thiamethoxam
Halogenated Organic Acids	Aminopyralid 1,4-Bis(Bromoacetoxy)-2-Butene Chlopyralid Fluroxypyr Picloram (Present As Potassium Salts) Picloram (Present As Acid) Picloram (Present As Amine Salts) Spirodiclofen Triclopyr Triethylamine Salt
Hydrocarbons	Asphalt Solids Citronella Terpene Creosote Ethylene Mineral Spirits Naphtalene Petroleum Hydrocarbon Blend Polybutene
Imidazolinones	Imazapyr Imazamethabenz-Methyl Fenamidone Imazethapyr Imazamox
Indanediones	Chlorophacinone Diphacinone (Present In Free Form Or As Sodium Salt)
Inorganic Coppers	Copper As Elemental (Present As Tribasic Copper Sulphate) Copper As Elemental (Present As Copper Thiocyanate) Metallic Copper Powder Copper As Elemental (Present As Copper Naphtenate) Cupric Oxide Copper As Elemental (Present As Cuprous Oxide) Copper-8-Quinolinolate Copper As Elemental (Present As Mixed Copper Ethanolamine Complexes) Copper As Elemental (Present As Copper Sulphate) Copper Present As Picro Cupric Ammonium Formate And Tannate Complexe Copper As Elemental (Present As Copper Oxychloride) Copper As Elemental (Present As Copper Hydroxide)
Inorganic Zincs	Zinc As Elemental (Present As Zinc Naphtenate) Zinc As Elemental (Present As Zinc Oxide) Zinc Phosphide

Chemical Group	Active Ingredient Name
Inorganic, Others	Anhydrous Ammonia Aluminum Phosphide Ammonium Bromide Arsenic Pentoxide Barium Metaborate Monohydrate Borax Pentahydrate Borax Boric Acid Disodium Octaborate Tetrahydrate Borax Or Sodium Borate Available Chlorine, Present As Calcium Hypochlorite Calcium Hypochlorite Liquid Carbon Dioxide Chromic Acid Fosetyl-Al Ferrous Sulfate Ferric Phosphate Hydrogen Peroxide Iron (Present as FeHEDTA) Aluminum silicate Potassium Peroxymonosulfate Present As Potassium Peroxymonosulfate Sulfate Lithium Hypochlorite Mono- And Dipotassium Phosphite Magnesium Phosphide Sodium Chloride Phosphine Potassium Bicarbonate Sodium Bromide Sodium Chlorite Sodium Chlorate Sodium Cyanide Sodium Fluoride Sulfuryl Fluoride Sodium Hypochlorite Available Chlorine, Present As Sodium Hypochlorite Silicon Dioxide (Fresh Water Fossils) Silica Gel Silicon Dioxide (Salt Water Fossils) Sulphur Lime Sulphur Zinc Borate

Chemical Group	Active Ingredient Name
Methoxyacrylates	Azoxystrobin Kresoxim-Methyl Pyraclostrobin Trifloxystrobin
Microbials	*Agrobacterium radiobacter* *Beauveria bassiana* Strain GHA *Beauveria bassiana* Strain HF23 *Pseudomonas fluorenscens* A506 *Pseudomonas syringae* - Strain ESC-10 *Bacillus subtilis* QST 713 *Bacillus subtilis* MB1600 *Bacillus thuringiensis* Berliner spp. *kurstaki* *Bacillus thuringiensis* Serotype H-14 *Bacillus thuringiensis* sp. *israelensis* *Bacillus sphaericus* *Bacillus thuringiensis* sp. *tenebrionis* *Coniothyrium minitans* Strain Con/M/91-08 *Cydia pomonella* Granulosis Virus (Strain Cmgv4) *Chondrostereum purpureum* *Beauvaria bassiana* *Gliocladium catenulatum* *Sclerotina minor* Imi 3144141 *Trichoderma harzianum* Strain Krl-Ag2 *Lactobacillus casei* Strain Lpt-111 *Lactobacillus rhamnosus* Strain Lpt-21 *Lactococcus lactis* ssp. *lactis* Strain Ll64/Csl *Lactococcus lactis* ssp. *cremoris* Strain M11/Csl *Lactococcus lactis* ssp. *lactis* Strain Ll102/Csl *Metarhizium anisopliae* Strain F52 *Neodiprion abietis* Nucleopolyhedrovirus *Nosema locustae* Canning (Spore Of) Nucleopolyhedrovirus For Gypsy Moth Larvae Nuclear Polyhedrosis Virus Of Red-Headed Pine Sawfly Nucleopolyhedrovirus For Douglas-Fir Tussock Moth *Ophiostoma piliferum* Fungus *Pantoea agglomerans* C9-1 *Pantoea agglomerans* Strain E325 (Nrrl B-21856) *Pseudozyma flocculosa* *Steptomyces griseoviridis* K61 *Streptomyces lydicuswyec* 108 *Verticillium albo-atrum* Isolate Wcs850

Chemical Group	Active Ingredient Name
Morpholines & Oxathiines	Dimethomorph Dodemorph-Acetate Fenpropimorph Oxycarboxin Carbathiin
Nitrobenzenes	Acifluorfen Dichloran Fomesafen Tembotrione Mesotrione Oxyfluorfen Quintozene
Oils, Minerals And Vegetable	Oil Of Black Pepper Mixture Of Citronella Oil, Citrus Oil, Eucalyptus Oil, Pine Oil, Geranium Oil And Camphor Oil Citronella Oil Castor Oil Garlic Oil D-Limonene Mineral Oil- Paraffin Base (Adjuvants) Mineral Oil (Insecticidal) Methylated Seed Oil Of Soybean Verbenone Thymol Soybean Oil Wintergreen Oil

Chemical Group	Active Ingredient Name
Organic Acids	Abamectin Acetic Acid Acequinocyl Azadirachtin Citric Acid Formic Acid Gibberellic Acid Gibberellic A4A7 Lactic Acid Naphthylacetic Acid Oxalic Acid Dihydrate Oxalic Acid Peracetic Acid Prohexadione Calcium Natamycin Spinosad Spiromesifen Spinetoram Sodium Monofluoroacetate Trinexapac-Ethyl Ferric Sodium EDTA
Organochlorines	5-Chloro-2(2,4-Dichlorophenoxyl)Phenol Chloropicrin 1,3-Dichloropropene Endosulfan Paradichlorobenzene Trichlorfon
Organohalogens	1,2-Dibromo-2,4-Dicyanobutane Diodofon Methyl Bromide Metrafenone
Organometallics	Tributyltin Oxide Fenbutatin Oxyde 10,10'-Oxybis(Phenoxarsine) Tri-N-Butyltin Maleate

Chemical Group	Active Ingredient Name
Others	Acrolein 1-(Alkyl-Amino)-3-Aminopropane Hydrochloride (Component Of Ampho 443-31) 1-(Alkyl-Amino)-3-Carboxymethylaminopropane (Component Of Ampho 443-31) Aromatics 2,2-Oxybis(4,4,6-Trimethyl-1,3,2-Dioxaborinane) Dried Blood *Brassica hirta* White Mustard Seed Powder Bis(Trichloromethyl)Sulfone Cellulose From Powdered Corn Cobbs Corn Gluten Meal Carbon Dioxide Gas 3-Methyl-2-Cyclohexen-1-One Diallyl Disulfide And Related Sulfides Dimethoxane Putrescent Whole Egg Solids Whole Egg Solids Endothall Ethofumesate Fish Meal Mixture Fish Oil Mixture Garlic Powder Garlic Natural Gum Resins Oxirane Derivatives Methylene (Bis)Thiocyanate 1-Methylcyclopropene 2,2'-(1-Methyltrimethylenedioxy)Bis-(4-Methyl-1,3,2-Dioxaborinane) Methyl Nonyl Ketone Meat Meal Mixture [[[1-Methyl-2-(5-Methyl-3-Oxazolidinyl)Ethoxy]Methoxy]Methoxy]Methanol Piperonyl Butoxide Sodium Alpha-Olefin Sulfonate Saponins Of *Chenopodium quinoa*

Chemical Group	Active Ingredient Name
Phenols/Chlorophenols	2-Bromo-4 Hydroxyacetophenone 2-Phenylphenol Pentachlorophenol Plus Related Actives Chlorophenols 3-Methyl-4-Chlorophenol 4-Chloro-3-Methylphenol (Sodium Salt) Sodium 2-Phenylphenate 4-Nitro-3-(Trifluoromethyl)Phenol Sodium Salt P-Tert Amyl Phenol
Phenoxy Acids	4-CPA Dichlorprop (Present As Dimethylamine Salt) Dichlorprop 2,4-DB Dichlorprop-p (Present As Dimethylamine Salt) Dichlorprop - p Dichlorprop p-Isomer (Present As 2-Ethyhexyl Ester) 2,4-D (Present As Acid) 2,4-D (Present As Amine Salts) 2,4-D (Present As Low Volatile Esters) MCPA (Present As Acid) MCPA (Present As Amine Salts: Diethanolamine, Dimethylamine Or Mixed Amines) MCPA (Present As Esters) MCPA (Present As Potassium Salt Or Sodium Salt) MCPB (Present As Sodium Salt) MCPB (Present As Isomer Specific) Mecoprop (Present As Potassium Salt) Mecoprop (Present As Dimethylamine Salt) Mecoprop (Present As Diethanolamine Salt) Mecoprop-p (Present As Diglycolamine Salt) Mecoprop p-Isomer (Present As Acid) Mecoprop-p (Present As Dimethylamine Salt) Mecoprop-p (Present As Potassium Salt) Mecoprop-p (Present As Amine Salt) Triclopyr-Butotyl

Chemical Group	Active Ingredient Name
Pheromones	(E)-8-Dodecen-1-Yl Acetate (E)-4-Tridecenyl-Acetate German Cockroach Extract S-Kinoprene Methoprene Octenol (Z)-8-Dodecenyl Acetate + (E)-8-Dodecenyl Acetate + (Z)-8-Dodecen-1-Ol (E,E)-8,10-Dodecadien-1-Ol + 1-Dodecanol + 1-Tetradecanol (Z)-9-Dodecenyl Acetate + (Z)-11-Tetradecenyl Acetate (E,Z)-3,13-Octadecadienyl Acetate (Z,Z)-3,13-Octadecanienyl Acetate R-(-)-1-Octen-3-Ol (E)-11-Tetradecenyl Acetate Muscalure (Z)-11-Tetradecenal (Z)-11-Tetradecen-1-Ol (Z)-9-Tetradecen-1-Yl Acetate (E,E)-8,10-Dodecadien + 1-Dodecanol + 1-Tetradecanol + (Z)-8-Dodecen-1-Yl Acetate + (E)-8-Dodecen-1-Yl Acetate + (Z)-8-Dodecen-1-Ol 1-Tetradecanol 1-Dodecanol (E,E)-8,10-Dodecadien-1-Ol (Z)-8-Dodecen-1-Ol (Z)-8-Dodecen-1-Yl Acetate (Z)-4-Tridecenyl Acetate (Z)-11-Tetradecenyl Acetate (E,Z)-11-Tetradecenal (E)-4-Tridecenyl Acetate + (Z)-4-Tridecenyl Acetate
Phosphates	Dichlorvos Plus Related Compounds Tetrachlorvinphos Naled
Phosphonic Acids, Phosphinic Acids	Ethephon Glufosinate Ammonium Glyphosate Present As Isopropylamine And Ethanolamine Salt Glyphosate Present As Monoammonium Or Diammonium Salt Glyphosate Present As Isopropylamine And Potassium Salt Glyphosate Present As Potassium Salt Glyphosate Glyphosate Present As Trimethylsulfonium Salt Glyphosate Present As Dimethylamine Salt Fosamine Ammonium

Chemical Group	Active Ingredient Name
Phosphoramidothioates	Acephate Methamidophos Propetamphos
Phtalic Acids	Captan Chlorthal-Dimethyl Folpet N-Octyl Bicycloheptene Dicarboximide Naptalam Present As Acid Or Sodium Salt
Pyrethroids, Pyrethrins	D-Cis, Trans Allethrin D-Trans Allethrin Bifenthrin Cyfluthrin Lambda-Cyhalothrin Cypermethrin Cyphenothrin Deltamethrin Imiprothrin Etofenprox Fluvalinate-Tau Tetramethrin Prallethrin Permethrin D-Phenothrin Pyrethrins Resmethrin Tefluthrin Tralomethrin
Pyridines	4-Aminopyridine Dithiopyr Di-N-Propyl Isocinchomeronate Nicotine Acetamiprid Sodium Omadine Pyriproxyfen Quinoxyfen Thiacloprid Flonicamid

Chemical Group	Active Ingredient Name
Sulfonylureas	Chlorimuron-Ethyl Chlorsulfuron Rimsulfuron Ethametsulfuron-Methyl Flucarbazone Present As Flucarbazone Sodium Foramsulfuron Iodosulfuron-Methyl-Sodium Mesosulfuron-Methyl Metsulfuron-Methyl Tribenuron-Methyl Thifensulfuron-Methyl Nicolsulfuron Primisulfuron-Methyl Prosulfuron Sulfometuron Methyl Sulfosulfuron Triflusulfuron-Methyl
Thiophosphates	Azamethiphos Coumaphos Diazinon Chlorpyrifos
Triazines, Tetrazines	Atrazine (Plus Related Active Triazines) Metribuzin Clofentezine Cyromazine Hexahydro-1,3,5-Tris(2-Hydroxyethyl)-S-Triazine Prometryne Plus Related Active Triazines Pymetrozine Thiencarbazone-Methyl Available Chlorine, Present As Sodium Dichloro-S-Triazinetrione Sodium Dichloro-S-Triazinetrione Simazine (Plus Related Active Triazines) Irgarol 1051 Available Chlorine, Present As Trichloro-S-Triazinetrione Trichloro-S-Triazinetrione

Chemical Group	Active Ingredient Name
Triazoles	Pyroxsulam Amitrole Flusilazole Carfentrazone-Ethyl Cloransulam-Methyl Difenoconazole Fenbuconazole Flumetsulam Florasulam Metconazole Ipconazole Pyroxsulam Myclobutanil Paclobutrazol Propiconazole Prothioconazole Sulfentrazone Tebuconazole Triadimenol Triticonazole Uniconazole-p
Urea Derivatives	Available Chlorine Present As 1-Bromo-3-Chloro-5,5-Dimethylhydantoin And Related Hydantoins Hydantoins Halobrom Available Bromine Present As 1-Bromo-3-Chloro-5,5-Dimethylhydantoin And Related Hydantoins Cyazofamid Halane Available Chlorine Present As 1-Bromo-3-Chloro-5,5-Dimethylhydantoin, 1,3-Dichloro-5,5-Dimethylhydantoin, 1,3-Dichloro-5-Ethyl-5-Methylhydantoin And Related Hydantoins Available Chlorine Present As 1,3-Dichloro-5,5-Dimethylhydantoin And 1,3-Dichloro-5-Ethyl-5-Methylhydantoin 1,3-Dichloro-5-Ethyl-5-Methylhydantoin Diflufenzopyr Diflufenzopyr-Sodium 1,3-Dimethylol-5,5-Dimethylhydantoin Diuron Linuron 1- or 3-Monomethylol-5,5-Dimethylhydantoin

Appendix III: 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 and other industrial processes.
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 (e.g. 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.