



City of Calgary Pesticides Active Ingredients Report-2018

December 19, 2018

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Background

Calgary Parks IPM keeps a track of pesticides applied by both internal and external stakeholders across the City in order to exhibit the corporate due diligence under the Alberta Environmental Protection and Enhancement Act.

Our pest control operation is based on integrated approach of decision making to choose a treatment option. Pesticides is one of the tools in our IPM tool box. In 2018, Calgary Parks applied mechanical control on area of 29.54 Ha. We also have an extensive biological pest control program in place for weeds control in Natural Areas and Insects control in the Devonian Gardens.

Parks IPM provides pest control services for The City of Calgary business units and assets managers. Calgary Housing, City Golf courses, Heritage Park and Calgary Zoo carry pesticides application on their own, and share the data with us for final report about Active Ingredients.

Treatment of Natural Areas is recorded in our ArcGIS online weeds mapping app. Any other treatments are recorded on paper biocides followed by entering into a spreadsheet by each IPM Operation Region.

Data QA Process

The data received is checked for quality to ensure the treatment is carried out through a certified applicator and all the required information is reported on the “Biocides Spreadsheet”. The following formula is used to calculate application rate/Ha for each individual biocide.

$$\text{Application Rate (L/Ha)}: \frac{\text{Concentrate sprayed (L)}}{\text{Area Calculated (m}^2\text{)}} \times 10000 \text{ m}^2/\text{Ha}$$

The rates calculated are compared with the label rates in order to identify individual biocides data deviating from the label range. Significantly deviated numbers are discussed with IPM Operations who re-check these with the paper biocides to omit errors and typos. A tolerance of $\pm 20\%$ is accepted in order to accommodate operation limitations such as overstating/understating of area measurement during spot spraying and/or tank mixing.

Note: IPM has no control over the quality of data from other business units of the City of Calgary, who carry pesticides application on their own, or through their contractors.

Table 1- Calgary-City Wide Pesticides Use 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L/Kg)	Total Active Ingredient Used (L/kg)	Size Treated
2, 4-D Amine 600/14726	H	544.84 L	307.29 kg	343.84 Ha
Garlon RTU/29334	H	778.21 L	112.06 kg	10.22 Ha
Lontrel 360/23545	H	78.315 L	28.195 kg	87.4 Ha
Milestone/28517	H	0.099 L	0.0238 kg	0.3 Ha
Trillion/27972	H	3366.03 L	1036.737 kg	808.97 Ha
Vantage XRT/29994	H	18.15 L	8.88 kg	0.432 Ha
VP 480/28840	H	1166.75 L	560.04 kg	368.25 Ha
Par III/27884	H	22 L	6.776 kg	3.99 Ha
Start-Up/29498	H	5.2 L	2.808 kg	1.2 Ha
Round Up/27487	H	0.804 L	0.286 kg	0.4 Ha
Aquabac 200 G/26863	L	5678.4 Kg	162.4 Kg	811.2 Ha
Doctor Doom Wasp Spray/30777	I	4.375 Kg	0.0142 Kg	11 Wn
Dormant Oil/10443	I	1.94 L	1.918 L	Trees
Dragnet FT/24175	I	0.07 L	0.027 L	Trees
Kontos/27061	I	0.04 L	0.0096 kg	Trees
Orthene 75 SP/14225	I	0.0064 Kg	0.0048 kg	6 Trees
Pro Atack Wasp Spray/24838	I	2 Kg	0.0163 kg	2 Wn
Safer Insecticidal Soap/14669	I	15.57 L	7.86 L	1.5 Ha+14 trees
TreeAzin/30559	I	17.46 L	0.873 L	173 Trees
Trounce/24363	I	10 L	0.02 L	
Giant Destroyer/12269*	R	444.52 Kg	151.13 Kg	9434 holes
Rozol RTU/29545	R	1.78 Kg	0.00009 Kg	124 holes
Heritage Maxx/28393	F	15.12 L	14.364 kg	1.44 Ha
Instrata/28861	F	69.3 L	30.041 kg	2.35 Ha
Intaglio/32765	F	79.2 L	34.2408 kg	2.4 Ha
Trilogy/29870	F	39 L	13.27 L	2.1 Ha
Super Spreader/17402	ADJ	3 L	1.5 L	3.99 Ha
Xiameter OFX-0309	SUR	4.08 L	4.08 L	6.9 Ha

*The Giant Destroyer Concentrate calculation: 7840 cartridges X $\frac{1 \text{ kg}}{1000 \text{ g}}$ X $\frac{56.7 \text{ gm}}{\text{cartridge}}$

Acronym Key

H= Herbicide

F= Fungicide

R= Rodenticide

ADJ= Adjuvant

I= Insecticide

AI=Active Ingredient

Sur= Surfactant

WN= Wasp Nests

L= Larvicide

Ha= Hactare

Table 2- Calgary-City Wide Pesticides Summary of Totals-2018

Product Category	Total Concentrate Used		Total Active Ingredient Used		Size Treated	
	L	Kg	L	Kg	Ha	# Trees/Holes/WN
Herbicides	5980.398	-	-	2063.096	1625.002	-
Insecticides	45.08	6.381	10.7	0.072	1.5	193 Trees & 13 WN
Rodenticides	-	446.3	-	151.13	-	9558 Holes
Mosquito Larvicides	-	5678.4	-	162.4	811.2	-
Fungicides	202.62	N/A	13.27	78.65	8.29	-
Total	6225.54	6131.1	24.12	2455.31	2445.99	9558 Holes+13 Wn+193 Trees

Collectively, The City of Calgary used 6225.54 L and 6131.1 kg of pesticides concentrate equivalent to 24.12 L and 2455.31 kg of Active Ingredients. The treatments targeted various weeds, insect pests, mosquito larvae, exterior rodents and fungal diseases over an area of 2445.99 Ha. In addition, 193 trees, 9558 burrows/holes, and 13 wasp nests were also treated with during 2018.

Notes:

- Additives/Adjuvants and Surfactants are not included in pesticides total
- Mosquito Larvicide (Aquabac 200 G) is a bacterial treatment that has got a “reduced –risk” designation from Health Canada
- Fungicides used reported by Golf Courses only

Table 3- Pesticides Use by the City of Calgary Parks 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L/Kg)	Total Active Ingredient Used (L/kg)	Size Treated
2, 4-D Amine 600/14726	H	205.01 L	115.62 kg	132.47 Ha
Garlon RTU/29334	H	777.76 L	111.997 kg	10.22 Ha
Lontrel 360/23545	H	33.7 L	12.132 kg	32.04 Ha
Milestone/28517	H	0.099 L	0.0238 kg	0.3 Ha
Trillion/27972	H	1660.35 L	511.39 kg	282.9 Ha
Vantage XRT/29994	H	18.15 L	8.88 kg	0.432 Ha
VP 480/28840	H	477.88 L	229.382 kg	129.66 Ha
Aquabac 200 G/26863	L	5678.4 kg	162.4 kg	811.2 Ha
Doctor Doom Wasp Spray/30777	I	4.375 kg	0.0142 kg	11Wn
Dormant Oil/10443	I	1.94 L	1.918 L	Trees
Dragnet FT/24175	I	0.07 L	0.027 kg	-
Kontos/27061	I	0.04 L	0.0096 kg	-
Pro Attack Wasp Spray/24838	I	2 kg	0.0163 kg	2 Wn
Safer Insecticidal Soap/14669	I	13.01 L	6.57 L	1.5 Ha
TreeAzin/30559	I	17.46 L	0.873 L	173 Trees
Trounce/24363	I	10 L	0.02 L	
Giant Destroyer/12269	R	318.82 Kg (5623 Cartridges)	108.4 kg	6664 Holes
Rozol RTU/29545	R	1.78 Kg	0.00009 kg	124 Holes

Table 4- Calgary Parks Pesticides Use-Summary of Totals-2018

Product Category	Total Concentrate Used		Total Active Ingredient Used		Size Treated	
	L	Kg	L	Kg	Ha	# Trees/Holes/WN
Herbicides	3172.949			989.4248	588.022	
Insecticides	42.52	6.38	9.41	0.067	1.5	13 wn+173 trees
Rodenticides	-	320.6	-	108.4	-	6788 Holes
Mosquito Larvicides	-	5678.4	-	162.4	811.2	
Total	3215.5	6005.4	9.41	1260.29	1400.72	6788 Holes+13 wn+173 trees

Table 5- Pesticides Use by the City of Calgary Roads 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L/Kg)	Total Active Ingredient Used (L/kg)	Size Treated
2, 4-D Amine 600/14726	H	110.04 L	62.06 kg	84.98 Ha
Lontrel 360/23545	H	1.71 L	0.616 kg	2.06 Ha
Trillion/27972	H	1388.61 L	427.69 kg	239.17 Ha
VP 480/28840	H	214.21 L	102.8 kg	87.97 Ha
Herbicides Total		1714.57 L	593.17	414.2 Ha
Giant Destroyer/12269*	R	108.58 Kg	36.91 kg	2369 Holes

*Calgary Roads used 1915 Cartridges of Giant Destroyer

**Calgary Transit used 150 Cartridges of Giant Destroyer

The Giant Destroyer Concentrate calculation: $No\ of\ cartridges \times \frac{1\ kg}{1000\ g} \times \frac{56.7\ gm}{cartridge}$

Table 6- Pesticides Use by Calgary Transit 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L/Kg)	Total Active Ingredient Used (L/kg)	Size Treated
2, 4-D Amine 600/14726	H	39.98 L	22.55 kg	18.69 Ha
Garlon RTU/29334	H	0.45	0.065 kg	0.0005 Ha+8 trees
Trillion/27972	H	0.756 L	0.233 kg	0.14 Ha
VP 480/28840	H	63.62 L	30.54 kg	18.69 Ha
Herbicides Total		104.86 L	53.4 Kg	37.52 Ha+8 trees
Giant Destroyer/12269**	R	8.5Kg	2.89 kg	183 Holes

Table 7- Pesticides Use by Calgary LRT 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L)	Total Active Ingredient Used (kg)	Area Treated (Ha)
2, 4-D Amine 600/14726	H	34.78	19.62	27.8
VP 480/28840	H	71.8	34.5	28.7
Herbicides Total		106.58	54.1	56.5

Table 8- Pesticides Use by Calgary Housing 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L/Kg)	Total Active Ingredient Used (L/kg)	Area Treated
Trillion/27972	H	71.96 L	22.16 kg	242.05 Ha

Table 9- Pesticides Use by Calgary Recreation 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L)	Total Active Ingredient Used (kg)	Area Treated (Ha)
2, 4-D Amine 600/14726	H	3.9 L	2.2	3.1
Trillion/27972	H	56.07 L	17.27	10.2
VP 480/28840	H	7.8 L	3.74	3.1
Total	H	67.77	23.21	16.4

Table 10- Pesticides Use by Calgary Capital Projects 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L)	Total Active Ingredient Used (kg)	Area Treated (Ha)
Lontrel 360/23545	H	42.7	15.37	52.18
VP 480/28840	H	120	57.6	30
Total		162.7	72.97	82.18

Table 11- Pesticides Use by Calgary Pathways 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L)	Total Active Ingredient Used (kg)	Area Treated (Ha)
2, 4-D Amine 600/14726	H	2.7	2.2	2.1
VP 480/28840	H	5.4	3.74	2
Total		8.1	5.94	4.1

Table 12- Pesticides Use Calgary Heritage Park 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L)	Total Active Ingredient Used (kg)	Area Treated (Ha)
2, 4-D Amine 600/14726	H	0.36	0.203	0.4
Lontrel 360/23545	H	0.07	0.03	1.0
Trillion/ 27972	H	36.6	11.27	13.3
VP 480/ 28840	H	2	0.96	2.8
Total		39.03	12.5	17.5

Table 13- Pesticides Use by Calgary Waste and Recycling 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L)	Total Active Ingredient Used (kg)	Area Treated (Ha)
2, 4-D Amine 600/ 14726	H	7.6	4.2	3.6
VP 480/ 28840	H	15.2	7.29	3.6
Total		22.8	11.49	7.2

Table 14- Pesticides Use Calgary Facilities Management 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L)	Total Active Ingredient Used (kg)	Area Treated (Ha)
2, 4-D Amine 600/ 14726	H	104.69	59.05	56.1
Lontrel360/ 23545	H	0.124	0.045	0.11
Trillion/ 27972	H	123.1	37.91	16.02
VP 480/ 28840	H	182.48	87.59	59.34
Total		410.4	184.6	131.57

Table 15- Pesticides Use Calgary Fire Department (CFD) 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L)	Total Active Ingredient Used (kg)	Area Treated (Ha)
2, 4-D Amine 600/ 14726	H	0.53	0.29	0.42
Trillion/ 27972	H	1.08	0.33	0.19
VP 480/ 28840	H	1.06	0.51	0.42
Total		2.67	1.13	1.03

Table 16- Pesticides Use by Calgary Police Services (CPS) 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L)	Total Active Ingredient Used (kg)	Area Treated (Ha)
2, 4-D Amine 600/ 14726	H	2.65	1.49	2.12
Trillion/ 27972	H	7.51	2.31	1.36
VP 480/ 28840	H	5.3	2.54	2.12
Total		15.46	6.34	5.6

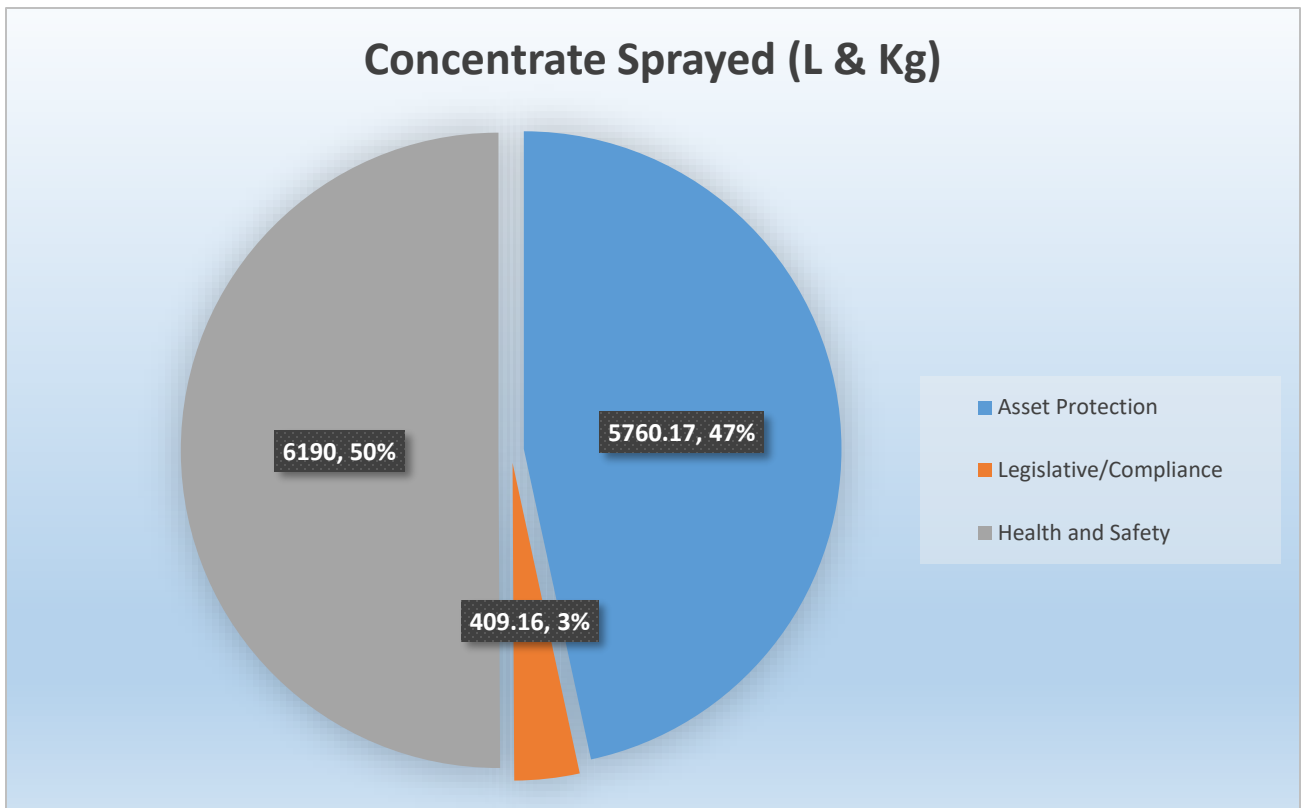
Table 17- Pesticides Use by Calgary Zoo 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L/Kg)	Total Active Ingredient Used (kg/L)	Size Treated
Lontrel360/ 23545	H	0.012	0.0043	0.015
Start-Up/ 29498	H	4	2.16	1.2
Herbicides Total		4.012 L	2.164 Kg	1.22 Ha
Orthene 75 SP/ 14225	I	0.0064 kg	0.0048 kg	6 trees
Safer Insecticidal Soap/ 14669	I	0.36 L	0.19 L	14 trees
Insecticides Total		0.01 kg+0.4 L	0.005 kg+0.2 L	20 trees

Table 18- Pesticides Use by Calgary Golf Courses 2018

Product Name/Registration No	Category	Sum of Concentrate Sprayed (L/Kg)	Total Active Ingredient Used (kg/L)	Size Treated
2, 4-D Amine 600/ 14726	H	32.6	18.4	12.1
Trillion/27972	H	20	6.2	3.6
Par III/ 27884	H	22	6.8	3.99
Start-Up/ 29498	H	1.2	0.65	-
Round Up/ 27487	H	0.804	0.3	0.4
Herbicides Total		76.604 L	32.35 Kg	20.1
Heritage Maxx/ 28393	F	15.12 L	14.36 kg	1.44
Instrata/ 28861	F	69.3 L	30.04 kg	2.35
Intaglio/ 32765	F	79.2 L	34.24 kg	2.4
Trilogy/29870	F	39 L	13.3 L	2.1
Fungicides Total		202.62 L	34.2 kg+13.3 L	8.29

Application Justification



Cumulatively, 12359.33 L & kg of concentrate used across the City of Calgary by Parks and other business units.

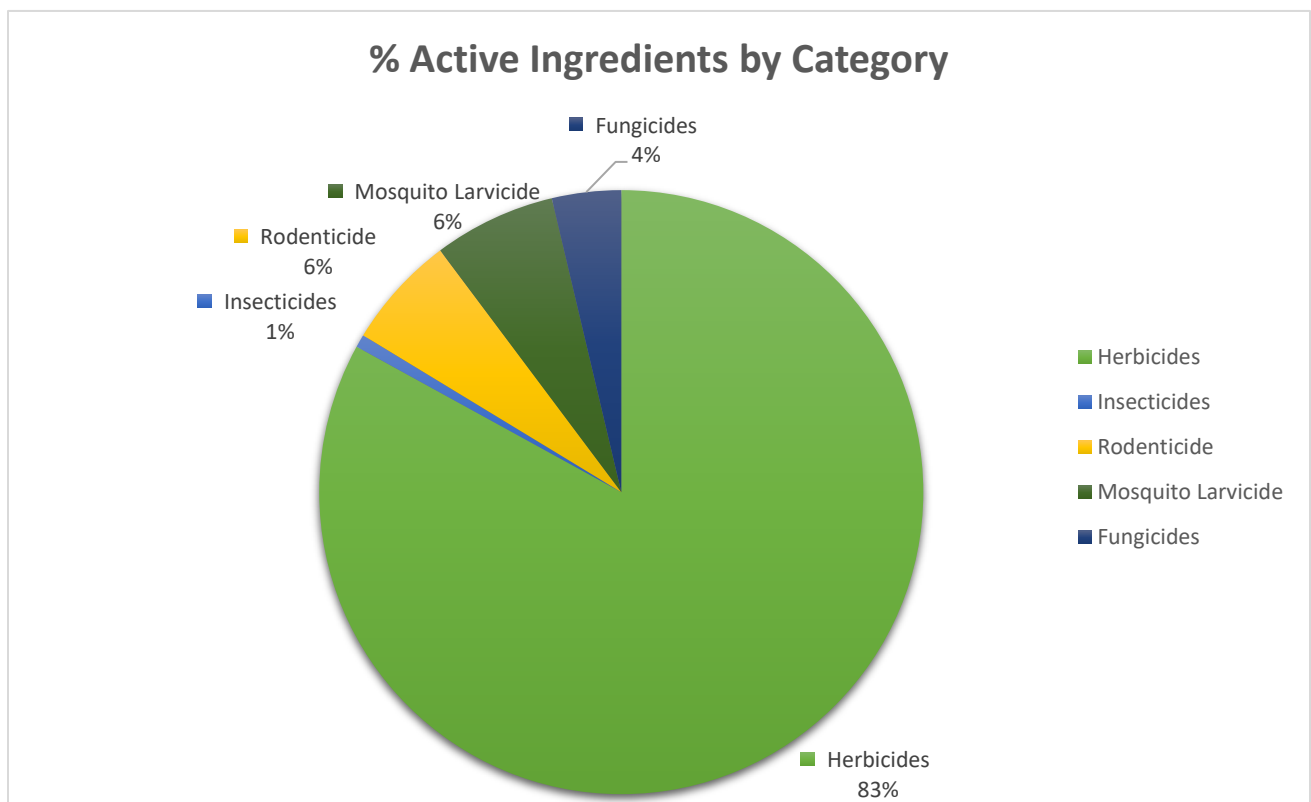
The data reveals that Health and Safety was the main justification (50 %) for pesticides application that includes application of Aquabc (5678.4 kg) for controlling mosquitoes at the larval stage. In addition, half of the total use of Giant Destroyer (222.3 kg) was also counted for the safety of parks/play field users. This also includes spray of 6.6 kg of pesticides for wasp control. A significant amount of Garlon RTU (282.7 L) used to clean the homeless camps in Calgary Natural areas.

The main components of “Asset Protection” category include spray of Trillion, Par III (3387.2 L) for broad leaf weeds control in Turf as well as 2, 4-D (543.4 L), VP 480, and Vantage XRT (1070.89 L) for maintenance of shrub beds and total vegetation control on hard surfaces across the City. Other significant treatments under this category include fungicides (202.62 L) used by the City Golf Courses, Giant Destroyer (222.3 kg), and Garlon RTU (282.7 L). Insecticides like Treezin, Safers insecticidal soap, Trounce etc (49.52 L) applied for protection of trees on the City streets and Devonian Gardens.

Legislative/Compliance category of pesticides application refer to the use of herbicides in Calgary Natural areas to control legislated weeds. This include treatment of invasive weeds using Lontrel 360 (75.98 L), Garlon RTU (210.9 L) for control of buckthorn and barberry species, and VP 480 (122.31 L) to control Yellow toadflax.

Table 19-The City of Calgary Pesticides Use by Category

Product Category	Total Concentrate Used		Sum of Active Ingredient Used	
	L	Kg	L	Kg
Herbicides	5980.398	-	-	2063.096
Insecticides	45.08	6.381	10.7	0.072
Rodenticides	-	446.3	-	151.13
Mosquito Larvicides	-	5678.4	-	162.4
Fungicides	202.62	N/A	13.27	78.65
Total	6225.54	6131.1	24.12	2455.31



Comparison of Herbicides (AI) Used by the City of Calgary (2008 to 2018)

