

# 2021 City of Calgary Pesticide Use

## Introduction

The City of Calgary uses the Integrated Pest Management (IPM) principles to keep pest populations to a minimum and reduce the potential damage to City owned land, including parks and open spaces, natural areas as well as natural assets like trees.

IPM is a strategy which strives to avoid and prevent damage to assets by utilizing a combination of tactics that are coordinated and integrated, to minimize risks to the environment, human health, and non-target organisms (Bajwa, Kogan, & Leonard, 2003).

The City leverages a variety of pest control methods such as, biological control, cultural & mechanical control and the use of Pesticide. When applying pesticides, the City uses licensed pesticide applicators whether city staff or contracted.

Cultural and mechanical control are practices performed during the height of weed growth and seed production lifecycle of the plant used to contribute to the large scale of invasive weed management on City owned land. In 2021, the City mechanically controlled over 98.8 hectares and removed 2,815 large garbage bags of invasive weeds.

Goats have been used for the past several years for general vegetation control with a focus on target graze invasive and nuisance weed species in over 60 hectares of City land annually, where it is unsafe to manage the land with other methods.

Biological control is the releasing of beneficial insects that specially prey on weeds or other insect pests to reduce the population of unwanted pests, weeds and diseases. Since 2006, the City has released bio-agents into over 125 sites, the highly successful control method. As



example, Houndstongue and Leafy spurge are two of the targeted invasive weed species and the success has shown to be a 95% and 82% plant density reduction on target sites, respectively.

## **Pesticide legislation**

Pesticides in Canada are federally defined, categorized and regulated through Health Canada. Through the federal Pest Control Products Act, the Pest Management Regulatory Agency (PMRA) of Health Canada defines “pesticide/pest control product” as,

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. Control products include active ingredients used in the manufacture of end-use products and the end-use products themselves. Includes herbicides, insecticides, fungicides, antimicrobial agents, pool chemicals, microbials, material and wood preservatives, animal and insect repellents, and insect- and rodent-controlling devices.

Active ingredients are the components of a pest control product that act to control the pest. Each pesticide product has at least one active ingredient and may have additional ingredients that improve the effectiveness or shelf-life of the pesticide.

There are 3 tiers of government regulations that relate to pesticide use in Calgary.

Federal regulations: The principal body for evaluating and regulating pesticides and their toxicity in Canada is the [Pest Management Regulatory Agency](#) (PMRA), a division of Health Canada. Health Canada is responsible for defining, evaluating, categorizing, registering and regulating pesticides in Canada. Health Canada deems that reducing pesticide exposure is foundational to the safe and low-risk use of pesticides according to the label direction.

Provincial regulations: The provincial [Environmental Protection and Enhancement Act](#) and its regulations govern the sales, handling, use and application of pesticides in Alberta. These include the [Pesticide \(Ministerial\) Regulation](#), the [Pesticide Sales, Handling, Use and Application Regulation](#), and the [Environmental Code of Practice for Pesticides](#).

City policy and procedures: The City’s [Pest Management Policy](#) directs the City staff, contractors and other stakeholders to ensure the pest management activities comply with all applicable regulations. The City’s pest management policy endorses science based decision and actions for pest management in an integrated manner including all options like hand pulling, mowing, the use of insects, livestock (goats), and/or pesticides. When pesticide use is warranted, the least toxic, most effective pesticide product is selected.

## **Pesticide use 2021**

The table to follow provides the 2021 City of Calgary's application of regulated pesticides and herbicides on the over 13,000 hectares of city owned land, such as roadway medians, transit sites, LRT tracks, parks and open spaces. The City uses pesticides for:

**Invasive Weed Management:**

Weeds provincially legislated for control or eradication under the Alberta Weed Control Act

**Public property and asset protection:**

Protecting the City's public urban trees from insect and disease infection

Preventing plant damage to critical infrastructure such as storm water ponds

**Public health and safety:**

Rodent control on sport fields

Controlling nuisance mosquitoes which carry diseases (West Nile Virus)

The table headings are:

- Product name: The official pesticide trade name.
- PCP#: The registration number assigned to the product under the Federal Pest Control Products Act implemented by Health Canada.
- Active ingredient(s): The components of pesticides that control the target pest. There may be one or more active ingredients in any given product.
- Schedule: The Alberta Pesticide (Ministerial) Regulation Schedule that the product falls under. There are four schedules, which can be viewed on the [Government of Alberta webpage](#).
- Total product concentrate: Total use of product in its concentrated form, as sold in product containers; most of the products need dilution in water diluted prior to application to make a less concentrated solution.
- Total active ingredient: Total active ingredient applied in proportion to its product concentration.
- Total application area: Total area (or alternative unit of measurement) the product was applied to.
- Active ingredient use intensity: The total active ingredient applied in kg per total application area (or alternate unit).
- Active ingredient per hectare of City space: The total active ingredient applied in kg per total City owned land (13000 ha) area (or alternate unit).
- Reason for use: Example asset types and/or target pests that the product is used for. All permitted uses may be viewed on the [product labels](#)

Product name	PCP #	Active ingredient(s)	Schedule*	Total product concentrate in L (or alternate unit)	Total active ingredient in kg (or alternate unit)	Total application area in Ha (or alternate unit)	Active ingredient use intensity (kg/Ha or alternate unit)	Active ingredient per hectare of City space (kg/Ha or alternate unit)	Reason for use (example target pests and assets)
<b>HERBICIDES: Controls weeds/plants</b>									
2,4-D Amine 600 Liquid Herbicide	14726	2,4-D (present as dimethylamine salt) 564 g a.e./L	2	886.9 L	500.2 kg	546.8 ha	0.9 kg/ha	<b>0.04 kg/ha</b>	To control legislated & invasive weed species in Parks shrub beds, on LRT lines, along roads side ditches and hard surfaces to protect assets and comply with Alberta weeds control act.
Ecoclear Organic Acid Herbicide	25528	acetic acid 25% w/v. (250 g/L)	2	72 L	18 kg	Spot spray	No data	<b>ND</b>	Applied for non-selective control of herbaceous broadleaf and grass weeds in non-crop areas, right-of way and industrial land sites
Garlon™ RTU Herbicide	29334	Triclopyr 144 g acid equivalent/L (present as butoxyethyl ester)	2	478.3 L	68.9 kg	18.9 ha+1251 trees	No data	<b>ND</b>	To control Common Buckthorn (Prohibited Noxious), Cotoneaster and Caragana (invasive woody shrub) in Natural areas.
GF-871 Liquid Herbicide	28137	Aminopyralid, present as triisopropanolamine salt 240 g/L	2	5.7 L	1.4 Kg	86.8 ha	0.02 kg/ha	<b>1x10<sup>-5</sup> kg/ha</b>	For controlling broadleaf & invasive weeds on road side naturalization project and in solar park, Bus depots, NW LRT leg & clean the urban forestry canopy expansion site from weeds
Habitat Aqua Herbicide Solution	32374	Imazapyr, present as the isopropylamine salt -240 g/L	1	4.9 L	1.2 kg	1.5 ha	0.8 kg/ha	<b>9x10<sup>-5</sup> kg/ha</b>	To control prohibited noxious weed specie; the Flowering Rush in Shephard Wetlands
Lontrel 360 Liquid Herbicide	23545	Clopyralid (present as the monoethanolamine salt) 360g/L	2	32.7 L	11.8 kg	79.4 ha	0.15 kg/ha	<b>0.0009 kg/ha</b>	To control Canada thistle, common Tansy (noxious); and other legislated species along the boulevards; noxious weeds in Parks natural areas and Calgary Zoo
Lontrel XC Liquid Herbicide	32795	Clopyralid (present as the dimethylamine salt) 600g/L	2	0.3 L	0.2 kg	4.9 ha	0.04 kg/ha	<b>1.5x10<sup>-5</sup> kg/ha</b>	To control Canada thistle, common Tansy (noxious); and other legislated species along the boulevards; noxious weeds in Parks natural areas and Calgary Zoo
Par III Liquid Herbicide	27884	2,4-D 190 g a.e /L, Mecoprop P 100 g a.e /L, Dicamba 18 g a.e /L (All present as dimethylamine salt))	2	3629.1 L	1117.8 kg	673.5 ha	1.7 kg/ha	<b>0.09 kg/ha</b>	For controlling broadleaf weeds in maintained turf; parks and roads medians
Roundup Liquid Herbicide	27487 /28198	Glyphosate (present as potassium salt) 540 g acid equivalent/L	2	62.0 L	33.3 Kg	26.2 ha	1.3 kg/ha	<b>0.003 kg/ha</b>	Non-selective weed control for annual and perennial grasses, broadleaf weeds, and woody brush and trees; turf grass renovation in the City golf courses

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StartUp Herbicide	29498	Glyphosate (present as potassium salt) 540 g acid equivalent/L	2	242.46 L	130.9 kg	100.3 ha	1.3 kg/ha	0.01 kg/ha	Non-selective weed control for annual and perennial grasses, broadleaf weeds, and woody brush and trees; turf grass renovation in Golf Courses
Nufarm Trillion Turf Herbicide	27972	2,4-D 190 g a.e./L, Mecoprop-P 100 g a.e./L, Dicamba 18 g a.e./L (All present as dimethylamine salt)	2	0.4 L	0.13 kg	0.08 ha	1.6 kg/ha	1x10 <sup>-5</sup> kg/ha	For controlling broadleaf weeds in maintained turf in parks, roadsides and other green areas
VP 480	28840	Glyphosate (present as dimethylamine salt) 480 g/L	2	1010.4 L	485 kg	516.9 ha	0.94 kg/ha	0.04 kg/ha	Used for all vegetation control on hard surfaces in Depots, LRT lines, fire stations etc, along rights-of-ways; and to control legislated weeds in Natural areas
<b>INSECTICIDES: Control insect pests</b>									
AQUABAC 200 G-Biological Larvicide to control mosquito (Granules)	26863	<i>Bacillus thuringiensis</i> subspecies <i>israelensis</i> (serotype H-14, strain BMP-144) 200 International Toxic Units (ITU) per milligram (0.20 billion ITU/kg)	1	1747.2 kg	49.9 kg	249.6 ha	0.20 kg/ha	0.004 kg/ha	Aerial application to hit Mosquito habitat for an early stage (larval stage) control
Doktor Doom Wasp & Hornet Nest Annihilator II	32170	Tetramethrin 0.200% d-phenothrin (Sumithrin™) 0.125%	4	9.6 kg	0.03 kg	23 Nests	1.3 g/nest	ND	To control Wasps, Yellow jackets, and Hornets in parks and public areas
Dragnet FT Emulsifiable Concentrate Insecticide	24175	Permethrin 384 g/L (55% Maximum <i>cis</i> ; 45% Minimum <i>trans</i> )	2	1.6 L	0.6 L	0.06 ha + 12 Ants nests	No Data	ND	For control of ants and Wasps in parks and trees' insect pests
Ortho Slug- B – Gone (Slug and snail bait)	28375	Iron (present as ferric phosphate) 0.28%	3	0.15 kg	0.0004 kg	0.002 ha	0.21 kg/ha	ND	To control snail infestation in Devonian Gardens
SAFER'S Insecticidal Soap Concentrate	14669	Potassium salts of fatty acids 50.50%	2	7.62 L	3.8 L	0.5 ha+20 trees	No data	ND	To control Mealy bugs, spider mites, aphids and scale insects infestation in interior plants, and ground cover in Devonian gardens and Calgary Zoo trees



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SAFER® S TROUNCE Insecticide Concentrate	24363	Potassium salts of fatty acids 20.0%, Pyrethrins 0.2%	2	13.7 L	2.8 L	0.14 ha+ spot spray on trees	No data	ND	To control Insects on shrubs, landscape trees, greenhouse and interior plantations
†Superior 70 Oil EC Insecticide	14981	Mineral Oil 99 %	2	0.28 L	0.27 L	5 trees	54 ml/tree	ND	To protect ornamental trees from scale and spider mite insect pests
TreeAzin® Systemic Insecticide	30559	Azadirachtin 5%	2	14.53 L	0.73 L	223 Trees	3.2 ml/tree	ND	To protect mature Elm trees from Scale insects along City streets using the trunk injection method
Vegol Crop Oil EC Insecticide	32408	CANOLA OIL 96%	2	1.94 L	1.86 L	0.05 ha+ trees spot spray	No data	ND	A greener insecticide for control of insect pests in Devonian Gardens
<b>RODENTICIDES: Control rodents</b>									
The Giant Destroyer-Gas Cartridges	12269	Sulfur 34.8%	3	492.8 kg	171.5 kg	9302 holes	18.4 g/hole	ND	Richardson's ground squirrel and gophers control in cemeteries, roads sides, and high-use sport fields
Rozol RTU-Granular Bait	29545	Chlorophacinone 0.005 %	1	3101.15 kg	0.005 kg	6881 holes/bait stations	0.7 mg/hole or bait station	ND	Richardson's ground squirrel and gophers control in cemeteries, trees nursery, landfills and other fenced areas as well as non- residential roadways
<b>‡FUNGICIDES: for control and protection against fungal diseases in turf</b>									
DACONIL 2787® FLOWABLE FUNGICIDE	15724	Chlorothalonil (tetrachloroisophthalonitrile) 40.4%	2	130.4 L	52.7 L	5.3 ha	9.9 L/ha	0.004 L/ha	Contact preventative turf spray in golf courses against Sclerotinia dollar spot, Helminthosporium leafspot, and Rhizoctonia brown patch
DISARM™ TURF FUNGICIDE SUSPENSION	31857	Fluoxastrobin: 480 g/L	2	4.8 L	2.3 Kg	4.1 ha	0.6 kg/ha	0.0002 kg/ha	Preventative spray against Anthracnose – Foliar Blight, basal rot, summer patch and dollar spot diseases.
HERITAGE MAXX™ EC Fungicide	28393	Azoxystrobin 95 g/L	2	36.1 L	3.4 kg	2.9 ha	1.2 kg/ha	0.0003 kg/ha	For controlling blight, brown patch etc fungal diseases in turf on golf courses
INSIGNIA® SC Fungicide	32247	Pyraclostrobin 250 g/L	2	6.1 L	1.5 kg	3.0 ha	0.5 kg/ha	0.0001 kg/ha	Broad spectrum fungicide for control of Gray snow mold, leaf spot, dollar spot etc fungal disease on golf courses turf
INSTRATA® II A Fungicide	32712	Fludioxonil 125 g/L	2	14.4 L	1.8 Kg	2.4 ha	0.75 kg/ha	0.0001 kg/ha	For control of pink snow mould in turf

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INSTRATA® II B Fungicide	32711	Benzovindiflupyr 100 g/L	2	1.8 L	0.2 Kg	2.4 ha	0.08 kg/ha	<b>1x10<sup>-5</sup> kg/ha</b>	For control of snow mould in turf
MIRAGE STRESSGARD Fungicide	32405	Tebuconazole 240 g/L	2	18.0 L	4.3 Kg	2.9 ha	1.5 kg/ha	<b>0.0003 kg/ha</b>	For control of fungal diseases (basal root, and folian anthracnose) in turf on golf courses
PENDANT™ 50 WDG Fungicide	32728	Fludioxonil 50%	2	4.6 L	2.3 Kg	3.0 ha	0.8 kg/ha	<b>0.0001 kg/ha</b>	For control of brown patch and snow moulds in turfgrass on golf courses
PREMIS® 200 F FUNGICIDE	28387	Triticonazole 200 g/L	2	9.8 L	1.9 kg	3.0 ha	0.6 kg/ha	<b>0.0001 kg/ha</b>	For the control or suppression of anthracnose, brown patch, dollar spot, gray snow mold, pink snow mold, fusarium patch, red thread, rust, and algae on established golf course turf only
SECURE® Fungicide Suspension	32991	Fluazinam 40.0%	2	2.6 L	1.04 Kg	1.6 ha	0.7 kg/ha	<b>8x10<sup>-5</sup> kg/ha</b>	For control of fungal diseases including Dollar spot, Anthracnose, microdochium patch and brown patch in Turf
SUBDUE MAXX® EC Fungicide	27055	Metalaxyl-M and S-isomer 240 g/L	2	4.9 L	1.2 Kg	1.5 ha	0.8 kg/ha	<b>9x10<sup>-5</sup> kg/ha</b>	For control of Pythium root rot disease in turf on golf courses

†Used only by Calgary Zoo; ‡Used only by City golf courses; \*Of the 34 pesticide products that The City used in 2021: 82% are Schedule 2; 6 % each are Schedule 3, 4 % Schedule 4, and 8% fall in Schedule 1.