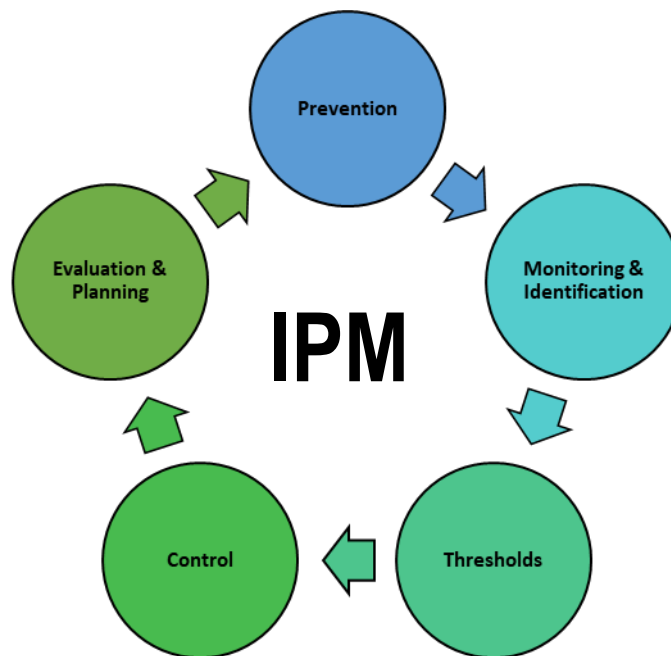


City of Calgary Pesticide Use in 2022

IPM

The City of Calgary has adopted an Integrated Pest Management (IPM) approach to pest control operations on City-owned horticultural assets and landscapes. IPM is a science-based method which uses a holistic approach to pest management decisions with an aim to protect the long-term health of citizens, ecosystems and the environment. The five key elements of an IPM approach are: prevention, identification & monitoring, thresholds, control, and evaluation & planning.



Prior to the start of any treatment, a site is evaluated to ensure the pest has been identified correctly and that it is present in an amount which warrants control action. The number of pests which must be found on a site to initiate control is called a threshold. Different sites will have varying tolerances for pest levels based on the type of site and its frequency of use, and each pest will have different considerations for control.

There are several different pest control approaches available and choosing the correct approach involves multiple considerations including: the pest and its lifecycle, the site and how it's used and the safety of its users, and the threat the pest may pose to surrounding ecosystems.

- Biological control is the use of beneficial insects or pathogens which may be used to manage unwanted weeds, insects or diseases. The City of Calgary has used biological control since 2006, and programs are in place to control leafy spurge and hound's-tongue at 125 sites citywide, with numerous other agents in the trial phase or with smaller roll-outs.
- Mechanical control involves the physical removal or manipulation of pests to reduce their populations. This includes mowing, hand pulling, digging out of roots or removal of seed heads. In 2022, the City mechanically controlled over 84 hectares and removed 30.8 metric tonnes of invasive weeds.
- Chemical control involves using pesticides to control invasive weeds and pests. Pesticides are used with careful consideration, and the goal is to choose a pesticide which will be most effective at controlling the pest while limiting their possible impacts on humans, non-target organisms and the ecosystem. The City of Calgary only uses pesticides which are approved by Health Canada and the Pest Management Regulatory Agency (PMRA). All pesticide applications are conducted under the supervision of licensed pesticide applicators.

Pesticide Legislation

The City of Calgary ensures that pesticide applications are conducted in accordance with all relevant municipal, provincial and federal regulations. Health Canada defines a pesticide 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”.

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:

- [Pesticide \(Ministerial\) Regulation](#)
- [Pesticide Sales, Handling, Use and Application Regulation](#)
- [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 decisions 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 in 2022

The table below outlines the City of Calgary's 2022 applications of regulated pesticides and herbicides on over 13,000 hectares of city owned land, including roadway medians, transit depots, LRT tracks, parks, and open green spaces. The city uses pesticides for:

Regulated Weed Management: Weeds legislated for control or eradication under the Alberta Weed Control Act

Public property and asset protection: Protecting the City's urban trees from insect and disease infection. Preventing pest damage to critical infrastructure such as storm water ponds and sports field turf

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 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. Refer to the 2022 edition of [Alberta Registered Pesticide Products](#) listing and their scheduling.
- Total product concentrate: Total amount of product used in its concentrated form, as sold in product containers; most of the products need dilution in water prior to application to make a less concentrated solution.
- Total active ingredient: Total amount of active ingredient applied in proportion to its product concentration.
- Total application area: Total area in hectares (or alternative unit of measurement) the product was applied to.
- Active ingredients use intensity: The total amount of active ingredient applied in kg per total application area (or alternate unit).
- Reason for use: Asset types and/or target pests that the product is used for. All permitted uses may be viewed on the product labels. Government approved labels can be accessed on [Health Canada-Search Product Label](#) webpage.

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)	Reason for use (example target pests and assets)
HERBICIDES: Controls weeds/plants								
2,4-D Amine 600 Liquid Herbicide	14726/5931	2,4-D (present as dimethylamine salt) 564 g a.e./L	2	1157.01 L	652.6 kg	780 Ha	0.84 kg/ha	To control legislated & invasive weed species in shrub beds, on LRT lines, along roads side ditches and hard surfaces to protect assets and comply with Alberta weed control act.
BioLink Herbicide EC	33590	Caprylic Acid 47.16% Capric Acid 31.6%	2	12.4 L	9.7 L	Spot spray	No data	Applied for non-selective control of herbaceous broadleaf and grass weeds in non-crop areas, right-of way and industrial land sites
ClearView Herbicide	29752	Aminopyralid 52.50% Metsulfuron – methyl 9.45%	2	0.8 L	0.52 L	3.5 Ha	0.15 kg/ha	To control prohibited noxious weed (purple loosestrife) on crown land along the Bow River
Credit Xtreme Herbicide	29888	Glyphosate (present as potassium salt) 540 g acid equivalent/L	2	2.4 L	1.3 kg	Spot spray	Spot spray	All vegetation control on Calgary Housing parking lots
Garlon™ RTU Herbicide	29334	Triclopyr 144 g acid equivalent/L (present as butoxyethyl ester)	2	214.6 L	30.9 kg	14.2 Ha+2864 trees	No data	To control common buckthorn (prohibited noxious), cotoneaster and caragana (invasive woody shrubs) in natural areas.
GF-871 Liquid Herbicide	28137	Aminopyralid, present as triisopropanolamine salt 240 g/L	2	8.9 L	2.1 Kg	13.2 Ha	0.2 kg/ha	For controlling broadleaf & invasive weeds on roadside 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	2	8.04 L	1.9 kg	1.7 Ha	1.11 kg/ha	To control prohibited noxious weed species; flowering rush in Shephard Wetlands, Calgary Zoo and University Research Pond
Lontrel 360 Liquid Herbicide	23545	Clopyralid (present as the monoethanolamine salt) 360g/L	2	35.6 L	12.8 kg	302.3 Ha	0.04 kg/ha	To control Canada thistle, common tansy (noxious); and other legislated species along the boulevards; noxious weeds in 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	2.3 Ha	0.09 kg/ha	To control Canada thistle, common tansy (noxious); and other legislated species along the boulevards; noxious weeds in 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	2710.6 L	834.9 kg	532.4 Ha	1.6 kg/ha	For controlling broadleaf weeds in maintained turf; parks and roads medians

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)	Reason for use (example target pests and assets)
Roundup Liquid Herbicide	27487 /33653	Glyphosate (present as potassium salt) 540 g acid equivalent/L	2	10.2 L	3.84 Kg	2.7 Ha	1.4 kg/ha	Non-selective weed control for annual and perennial grasses, broadleaf weeds, and woody brush and trees; turf grass renovation in the City golf courses
StartUp Herbicide	29498	Glyphosate (present as potassium salt) 540 g acid equivalent/L	2	700.4 L	378.2 kg	338.9 Ha	1.1 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	94.8 L	29.2 kg	24.4 Ha	1.2 kg/ha	For controlling broadleaf weeds in maintained turf in parks, roadsides and other green areas
VP 480 Herbicide	28840	Glyphosate (present as dimethylamine salt) 480 g/L	2	336.9 L	161.7 kg	159.8 Ha	1.01 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
INSECTICIDES: Control insect pests								
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)	2	6260.8kg	179.1 kg	417.4 Ha	0.43 kg/ha	Aerial application to mosquito habitat for an early stage (larval stage) control
Doktor Doom Wasp & Hornet Nest Annihilator	30777	Tetramethrin 0.200% d-phenothrin (Sumithrin™) 0.125%	4	4.05 kg	0.013 kg	No data	No data	To control wasps and yellow jackets 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	0.05 L	0.02 kg	0.01 Ha	0.8 kg/ha	For control of ants and wasps in parks and tree insect pests
Ortho Slug- B – Gone (Slug and snail bait)	28375	Iron (present as ferric phosphate) 0.28%	4	0.05 kg	0.00014 kg	0.001 Ha	0.14 kg/ha	To control snail infestation in Devonian Gardens
SAFER'S Insecticidal Soap Concentrate	14669	Potassium salts of fatty acids 50.50%	2	9.4 L	4.7 L	Spot spray	No data	To control mealybugs, spider mites, aphids and scale insect infestations in interior plants and ground cover in Devonian Gardens, and Calgary Zoo trees

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)	Reason for use (example target pests and assets)
SAFER™S TROUNCE Insecticide Concentrate	24363	Potassium salts of fatty acids 20.0%, Pyrethrins 0.2%	2	5.05 L	1.02 L	Spot spray	No data	To control insects on shrubs, landscape trees, greenhouse and interior plantings
TreeAzin® Systemic Insecticide	30559	Azadirachtin 5%	2	240.4 L	12.02 L	2862 trees	4.2 ml/tree	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	2.2 L	2.1 L	Spot spray	No data	A greener insecticide for control of insect pests in Devonian Gardens
RODENTICIDES: Control rodents								
The Giant Destroyer	12269	Sulfur 34.8%	4	497.0 kg	173.0 kg	8778 holes	19.7 g/hole	Richardson's ground squirrel and gopher control in cemeteries, roads sides, and high-use sport fields
Rozol RTU-Granular Bait	29545	Chlorophacinone 0.005 %	2	96.0 kg	0.005 kg	6396 holes/bait stations	0.8 mg/hole or bait station	Richardson's ground squirrel and gopher control in cemeteries, trees nursery, landfills and other fenced areas as well as non- residential roadways
‡FUNGICIDES: for control and protection against fungal diseases in turf								
BANNER MAXX® Fungicide	27003	Propiconazole 14.3%	2	41.6 L	5.9 L	2.0 ha	2.9 L/ha	Contact preventative turf spray in golf courses against dollar spot, brown patch, Waitea patch, mould, etc. on golf course turf
DACONIL 2787® FLOWABLE FUNGICIDE	15724	Chlorothalonil (tetrachloroisophthalonitrile) 40.4%	2	35.7 L	14.4 L	1.5 ha	9.6 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	1.7 L	0.8 Kg	1.5 ha	0.55 kg/ha	Preventative spray against anthracnose – foliar blight, basal rot, summer patch and dollar spot diseases.
HONOR™ Fungicide	32329	Pyraclostrobin 16.8%, Boscalid 11.2%	2	4.3 kg	1.2 kg	1.3 ha	0.92 kg/ha	Broad spectrum fungicide for disease (anthracnose, brown patch, dollar spot, fusarium patch etc.) control on golf course turf
INSTRATA® Fungicide	28861	Chlorothalonil 362 g/L, Propiconazole 57 g/L, Fludioxonil 14.5 g/L	2	198.8 L	86.2 kg	6.6 ha	12.9 kg/ha	For control of gray snow mould and pink snow mould disease on golf courses turf
INSTRATA® II A Fungicide	32712	Fludioxonil 125 g/L	2	8.9 L	1.1 Kg	1.5 ha	0.74 kg/ha	For control of pink snow mould in turf

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)	Reason for use (example target pests and assets)
INSTRATA® II B Fungicide	32711	Benzovindiflupyr 100 g/L	2	1.1 L	0.1 Kg	1.5 ha	0.07 kg/ha	For control of snow mould in turf
MEDALLION® Fungicide	31528	Fludioxonil 125 g/L	2	19.7 L	2.5 Kg	3.3 ha	0.75 kg/ha	For control of fungal diseases (brown patch, leaf spot, anthracnose) in turf on golf courses
Prophecy on DGPro Fungicide	29951	Propiconazole 0.72%	2	26.9 kg	0.2 Kg	0.1 ha	3.2 kg/ha	Broad spectrum and systemic disease control or suppression for golf course turf
SECURE® Fungicide Suspension	32991	Fluazinam 40.0%	2	2.2 L	1.1 Kg	1.4 ha	0.80 kg/ha	For control of fungal diseases including dollar spot, anthracnose, Microdochium patch and brown patch in turf
SEGWAY® 400SC FUNGICIDE	32642	Cyazofamid 34.5 %	2	3.0 L	1.2 kg	1.4 ha	0.90 kg/ha	For control of Pythium diseases affecting turf in golf courses
T-NEX 11.3 ME-Micro Emulsion	30683	Trinexapac-ethyl 11.3%	2	2.5 L	0.3 Kg	3.1 ha	0.1kg/ha	Micro-emulsion concentrate for managing growth of turfgrass on golf courses and commercial sod farms only

‡Used only by City golf courses; *Of the 36 pesticide products that The City used in 2022: 79% are Schedule 2; 11% are Schedule 4 and none from the restricted class that is Schedule 1.