CITY OF KELOWNA

MEMORANDUM

Date: January 9, 2006
File No.: 6130-13

To: City Manager

From: Parks Manager

Subject: Integrated Pest Management Program

Prepared by: Ian Wilson, Urban Forestry Supervisor

RECOMMENDATION

THAT Council receive for information the January 9, 2006 report from the Parks Division on the Integrated Pest Management (IPM) Program.

BACKGROUND

This report provides an update on the status of IPM initiatives by the City of Kelowna Parks Division for 2005.

The City of Kelowna Parks Division was one of the first municipalities in Canada to institute an Integrated Pest Management (IPM)[1] program in the early 1980's, and the program has continued to evolve since then. IPM was recently elevated to law under the British Columbia IPM Act which came into force in 2005.

Current pesticide use in parks remains at a low level compared to average usage over the last 10 years (Fig. 1, Tables 1-3), and the application of pesticides regulated by the IPM Act decreased again in 2005 (Table 1). However, the total quantity applied in 2005 increased, due to a number of factors:

- Use of newer more eco-friendly alternatives such as vinegar (which are exempted under the IPM Act) requires a larger quantity to be used;
- Increasing park inventory;
- Seasonal fluctuations in pest populations; and
- A 2004 pilot project at Kelowna Memorial Park Cemetery which attempted to replace weed sprays with mechanical treatments, actually led to increased weed infestations this season.

[1] IPM is "a process for managing pest populations that includes the following elements:
a) Planning and managing ecosystems to prevent organisms from becoming pests;
b) Identifying pest problems and potential pest problems;
c) Monitoring populations of pests and beneficial organisms, damage caused by pests and environmental conditions;
d) Using injury thresholds in making treatment decisions;
e) Suppressing pest populations to acceptable levels using strategies based on considerations of:
   - Biological, physical, cultural, mechanical, behavioural and chemical controls in appropriate combinations,
   - Environmental and human health protection; and
f) Evaluating the effectiveness of pest management treatments" (IPM Act)

Parks has aggressively reduced pesticide use over the last several years, to the point where we do not expect usage to go much lower. Newer products are coming into the marketplace, but these eco-friendly alternatives generally require a larger quantity and increased costs to do the job.

Some highlights from 2005 include:

- After a re-review of the data for the turf herbicide 2,4-D, the Canadian Pest Management Regulatory Agency and U.S. Environmental Protection Agency have recently concluded that "2,4-D can be used safely on lawn and turf when label directions are followed". However, Parks use of turf herbicide products has declined significantly in recent years (Fig. 1), as these products are generally only being used for spot treatment where weed problems are beyond tolerance thresholds.
- Among the pesticides used in parks, **92%** were exempted from the BC Integrated Pest Management Act as they are considered to be environmentally friendly alternatives such as soap, dormant oil, or acetic acid (vinegar). A vinegar product (containing acetic acid at a slightly higher concentration than that found in pickling vinegar), has proven to be fairly effective for broad spectrum weed control in certain situations, although more applications are required.
- IPM educational programs are continuing, e.g. in conjunction with the Mayor's Environmental Expo and through the City's web page where we are compiling fact sheets on various pests for public information.
- Aphids were a major nuisance on maple and ash street trees this year due to unusual spring weather which delayed the emergence of aphid predators. However, spraying was negligible as Parks conducted a public information campaign to encourage homeowners to wait out the infestation cycle for a few weeks until predators and parasites could catch up again. Some residents were unhappy that their trees were not sprayed, but the problem did clear up within a few weeks as predicted.
- Fall webworm infestations were also heavy on many trees and shrubs throughout the city. While this pest constructs unsightly tents, it rarely causes any long-term damage and periodic outbreaks are brought under control by many natural enemies. Parks staff avoided pesticide application by educating residents about this insect and physically removing tents where possible.
- Monitoring indicated pest such as elm leaf beetle, Douglas-fir tussock moth and western spruce budworm remain at a low level.
- Manufacturers have voluntarily stopped the treatment of wood with Copper Chromated Arsenate (CCA). All treated wood decking in playgrounds has been replaced and treated wood is not being used in new playground construction.
- Biological control programs continue against tree and shrub pests, and biological control agents were released at sites on Knox Mountain and Dilworth Mountain against knapweed.
- Parks employs a few summer students who manually pull noxious weeds (primarily knapweed) in natural parks.
- Parks has continued to assist researchers from Olds College (Olds, AB) in the second phase of a trial involving corn gluten and other natural products which have activity similar to a pre-emergence herbicide. Trials are on-going in Kelowna, Penticton, Calgary and Regina.
- A research partnership with a local researcher, the City of Kelowna and the City of Penticton, is still underway to test the use of beneficial "mycorrhizae" to improve the health of street and park trees. Mycorrhizae are naturally occurring fungi that form a beneficial association with tree roots. They enable trees to better tolerate stress, take up nutrients and avoid harmful substances such as salts, but are sometimes absent in urban soils.

- We recently applied for grant money to test an improved method of watering new street trees; this involves the placement of a "watering pipe" in the hole at the time of planting, to assist in deep watering during the first two years of establishment.

BARK BEETLES

Bark beetle populations have been on the rise in the Central Okanagan, particularly in the Mission Creek Regional Park (Hall road) area, Glenmore landfiill / Roberts Lake areas, and in the Mission. This issue will be dealt with in a separate January 9, 2006 report by the Urban Forestry Supervisor.

RODENTS AND GEESE

Rodent populations were extremely high in 2005, not only within fire-burned areas of the Mission but also in other areas of BC, causing the loss of trees and shrubs and creating a severe nuisance for residents. Populations were some of the highest ever seen in recent history[2], likely due to the prolonged wet weather in 2005 and an abundance of seeds and food. Parks received a significant number of calls on this issue, from concerned residents, many of whom were reportedly trapping and/or poisoning rodents. One concern with poisoning is that these products may enter into the food chain and affect raptors and other predators of rodents. Populations are unlikely to be as high in 2006[2] but Parks is planning a public information campaign to get more information out to residents.

A consultant is just finishing off a regional goose management plan, which was commissioned in 2005 on behalf of Kelowna, Penticton, Vernon and other Okanagan municipalities. A separate report on this plan will be coming to Council soon.

KELOWNA MEMORIAL PARK CEMETERY

In 2004, Parks hired a summer student who was able to keep weeds down at the cemetery at a slightly higher cost than the previous spray program. However, the results were not as good, and this was only intended as a short term solution as it does not deal with the underlying design problem of the bare soils which constantly become colonized with weeds and turn into a muddy mess when it rains. As well, the cultivation of these soils appeared to bring more weed seeds to the surface, where they readily germinated during the wet spring in 2005, causing a major weed outbreak. After numerous public complaints, several applications of glyphosate (roundup) were required to bring weed populations back under control.

A capital program initiated in 2005 is looking at improving the underlying cause of the weed problems (the bare soils). In the mean time, we anticipate that the cemetery will require some on-going use of pre- and post-emergent herbicides. However, these areas receive only minimal public recreational use compared to other Kelowna parks and treated areas will be posted to notify visitors, as with any of our pesticide applications.

[2] Dr. Tom Sullivan, Wildlife Biologist, University of British Columbia, personal communication.

CONCLUSIONS

New innovations and products continue to be developed in the pest management industry to help alleviate public concerns around the use of pesticides. Kelowna's Parks Division is endeavouring to stay at the forefront of this industry and our IPM program continues to be an extremely effective, and cost-effective tool for environmentally friendly pest management. Parks will continue to keep Council updated on progress in this rapidly changing area.

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Joe Creron, Parks Manager

c.c. Director of Recreation, Parks and Cultural Services
Urban Forestry Supervisor
Parks Maintenance Supervisor
Cemetery Manager
Environment and Solid Waste Manager

Enclosure.

Figure 1. Use of four herbicides (under PMRA review) since 1998, by weight of active ingredient. Note: use of MCPA is zero across the board.

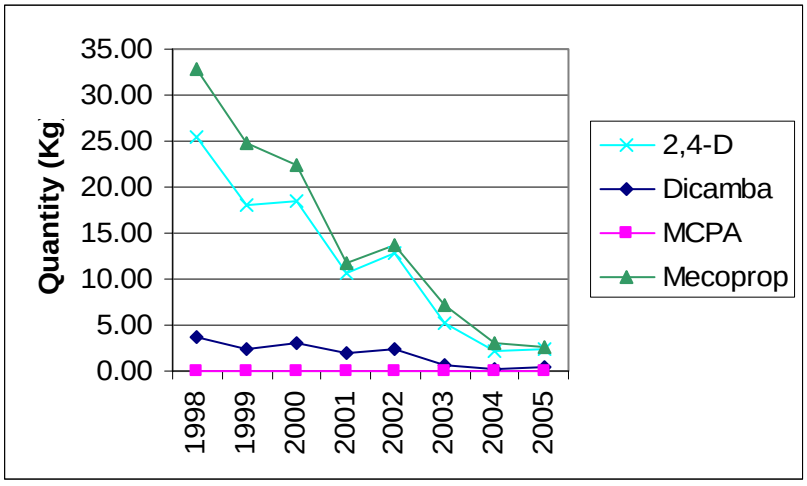

Table 1. Regulated Pesticide Use in Parks: 2005, 2004 and 10 year average.

Trade Name	Active Ingredients	Active Ingredient of Pesticide Used by weight (kg), by year			Explanation (2005)
		Average Use, 1995-2005	2004	2005	
AMITROL	Amitrol	0.07	0.00	0.00	
BENLATE	Benomyl	0.01	0.00	0.00	
DEVRINOL	Napropamide	0.98	0.00	0.00	
DIAZINON 500EC	Diazinon	0.82	0.00	0.00	
DIMETHOATE	Dimethoate	1.56	0.00	0.00	
DIPHENOPROP	Dichlorprop	0.01	0.00	0.00	
	2,4-D	0.01	0.00	0.00	
DURSBAN	Chlorpyrifos	0.00	0.00	0.00	
DURSBAN 480EC	Chlorpyrifos	0.05	0.00	0.00	
EXPEDITE 24D (dry formula)	2,4-D	1.46	0.67	0.09	Clean up weeds in buffalo grass downtown
	Mecoprop	3.07	1.40	0.19	
EXPEDITE 24D (liquid formula)	2,4-D	0.58	0.00	0.00	
	Mecoprop	1.21	0.00	0.00	
EXPEDITE GLYPHOSATE (dry)	Glyphosate	3.80	3.82	0.00	
EXPEDITE GLYPHOSATE (liquid)	Glyphosate	1.83	0.00	0.00	
GRAMOXONE	Paraquat	0.00	0.00	0.00	
IMIDAN	Phosmet	1.36	0.00	0.00	
KILLEX	Mecoprop	13.86	1.55	2.52	New Quarry park was seeded and extremely weedy; various spot tmts.
	2,4-D	13.21	1.48	2.40	
	Dicamba	2.49	0.28	0.45	
MALATHION	Malathion	0.02	0.00	0.00	
ORTHENE	Acephate	0.07	0.00	0.00	
ROUNDUP	Glyphosate	2.60	3.14	0.83	Warning tracks, infields, pathways, augmented with vinegar use
ROUNDUP transorb	Glyphosate	5.73	3.23	8.23	
SEVIN EC	Carbaryl	0.06	0.00	0.00	
SEVIN WP	Carbaryl	0.08	0.00	0.00	
THIODAN	Endosulfan	0.00	0.00	0.00	
FLORITECT	Carbaryl	0.01	0.00	0.00	
	Folpet	0.01	0.00	0.00	
	Pirimicarb	0.00	0.00	0.00	
EZJECT	Glyphosate	0.08	0.07	0.08	Treatment of stumps to stop sprouting
	TOTAL	**55.74**	**15.65**	**14.79**	

Table 2. Exempted Pesticide Use in Parks: 2005, 2004 and 10 year average.

Trade Name	Active Ingredient	Active Ingredient of Pesticide Used by weight (kg), by year			Explanation (2005)
		Average Use, 1995-2005	2004	2005	
DIPEL	B.t.	0.23	0.00	0.00	
DORMANT OIL	Mineral oil	624.49	94.61	115.86	Dormant tree sprays
ECO CLEAR vinegar	acetic acid	42.56	40.13	45.00	General control of weeds
FIXED COPPER	Copper	0.00	0.00	0.00	
LIME SULPHUR	Sulphide sulphur	0.37	0.00	0.00	
SAFERS SOAP	Soap	0.76	0.00	0.00	
SAFERS (Greenhouse)	Soap	0.27	0.63	0.00	
SAFERS TOPGUN	Fatty acids	0.13	0.00	0.00	
	TOTAL	**668.81**	**135.36**	**160.86**	

Table 3: Pesticide in the City greenhouse and at the cemetery for 2005, 2004 and 10 year average.

Trade Name	Active Ingredient	Active Ingredient of Pesticide Used by weight (kg), by year			Explanation (2005)
		Average Use, 1995-2005	2004	2005	
GREENHOUSE USE ONLY					
LANATE	Methomyl	0.00	0.00	0.00	
AMBUSH	Permethrin	0.01	0.02	0.01	
SAFERS SOAP	Soap	0.27	0.63	0.25	
TRUBAN	Etridiazole	0.01	0.02	0.04	
VENDEX	Fenbutatin oxide	0.01	0.00	0.00	
PEN TAC	Dienochlor	0.01	0.03	0.00	
TRUMPET	Bendiocarb	0.02	0.00	0.00	
SULPHUR	Sulphur	0.00	0.00	0.00	
BENLATE	Benomyl	0.00	0.00	0.00	
INTERCEPT	Imidacloprid	0.01	0.04	0.09	
DECIS	Deltamethrin	0.00	0.00185	0.00	
	TOTAL	**0.34**	**0.74**	**0.39**	
CEMETERY USE ONLY					
DEVRINOL	Napropamide	2.05	0.00	0.00	
QUINTOZENE	Quintozene	0.70	0.00	4.59	Severe fungal infestation on turf by Promontory
ROUNDUP	Glyphosate	1.29	0.00	6.18	Severe weed infestations in dry sections
SIMIZINE	Simizine	1.10	0.00	0.00	
	TOTAL	**4.43**	**0.00**	**10.77**	