Pesticide Use Options for Private Properties in Vancouver

A report prepared by
Planning and Operations, Vancouver Park Board
and
the Vancouver Coastal Health Authority

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VANCOUVER PARKS & RECREATION

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Introduction

In 1991, City Council in Hudson, Quebec passed by-law 270. The first of its kind in Canada, this municipal by-law banned the cosmetic use of pesticides. Like many of the Quebec villages that have since introduced pesticide restriction by-laws, Hudson residents were reliant on well water for drinking, and were especially concerned about possible contaminants from spray drift and seepage. Following the introduction of this by-law, two lawn-care companies treated Hudson residential lawns and were charged by the municipality. The lawn care companies argued in court that since they held valid pesticide applicator's certificates from the Province of Quebec and used products that were approved by Agriculture Canada, the municipality did not have jurisdiction. The Quebec Superior Court upheld the Hudson pesticide by-law. The lawn care companies then appealed to the Supreme Court of Canada who also upheld the by-law in a ruling issued on June 28, 2001. The Supreme Court ruled that while the federal Pest Control Products Act regulates which pesticides can be registered for manufacture and/or use in Canada and the provincial Pesticide Control Act regulates how the pesticides could be sold and handled, municipalities can enact by-laws regulating specific pesticide application within their boundaries. They ruled that "...*these laws establish a tri-level regulatory regime*."

The elimination of pesticides has been steadily increasing in recent years. Many pesticides have been recently banned or voluntarily withdrawn from the market for household and commercial use, and with the introduction of the federal Healthy Lawns Strategy, Canada is re-evaluating certain groups of pesticides used in homes and gardens. Three weeks before the Supreme Court ruling, the Federation of Canadian Municipalities (FCM) unveiled a new web site to provide municipal governments information to maximize opportunities for pesticide reduction. The FCM noted that "*Municipal governments across Canada have recognized the growing public concern about possible side-effects on human health and the environment*."

Background

What is a pesticide?
A *pesticide* is any substance or mixture intended to prevent, destroy, repel, attract, or mitigate any pest. Target pests include any living organism that causes damage or economic loss, or transmits or produces disease. Pests can be insects, birds, rodents, unwanted plants (weeds), or microorganisms (bacteria, fungi, viruses).

The word *pesticide* is often misunderstood to mean only an insecticide (to kill insects). Actually, pesticide refers not only to insecticides but herbicides (to kill weeds), rodenticides (to kill rats and mice), and fungicides (to kill fungi). In Canada, a *pesticide* is any product having a *Pest Control Products Act* registration number and includes such familiar products as certain disinfectants, bleaches, mildew removers, and swimming pool chemicals (Appendix A, legal definition of a pesticide). In British Columbia, pesticides are divided into 5 categories derived from the federal "Restricted", "Commercial" and "Domestic" classification. These categories, or schedules, are Permit-Restricted, Restricted, Commercial, Domestic and Exempted. Domestic pesticides are intended for use by homeowners but must be sold by a certified seller while Exempted pesticides are specific types of pesticides that may be sold or applied by non-certified persons. These include some insect and animal repellents, disinfectants, insect bait stations, pressurized pesticides and swimming pool chemicals (Appendix B).

The cosmetic use of pesticides is the use of pesticides for non-essential use. Non-essential use of pesticides refers to their use in certain situations where the application is purely for an aesthetic pursuit (Supreme Court Ruling: Hudson vs. Spraytech, 2001).

Integrated Pest Management (IPM) is defined as the best combination of cultural, biological, genetic, and chemical methods for the most effective and economical control of pests. Inherent in the approach is an emphasis on "Integrated" – an approach whereby all aspects of the pest problem are included in determining treatment strategies that are focussed and have little or no side effects on non-pest species or predators of pests. The use of a variety of "tools" lessens the dependence on any one tool and also reduces its use. Increased control through non-chemical methods will naturally result in a decrease in chemical use. In 2000, the British Columbia government listed several pesticides as “preferred pesticides” to incorporate into IPM programs. “Preferred pesticides” have one or more of the following characteristics: present the least short- and long-term health risks to humans, have low impacts on non-target organisms, are most specific to target species and present the least risk to the environment (Gilkeson and Adams, 2000). These include insecticidal soaps, trapping glue, horticultural oils and *Bacillus thuringiensis*.

During the 1960s, Western society changed its view of pesticides. People became aware that pesticide use had social and environmental costs. Some products, such as the infamous DDT, were banned. Presently there is a greater use of reduced-risk practices that combine biological, cultural, and physical controls with judicious pesticide application to minimize economic, health, and environmental risks.

This report focuses on the cosmetic use of herbicides, insecticides and fungicides for the embellishment of lawns and gardens. It presents findings on pesticide use, health and environmental risks, regulatory framework, and policy options for reduction of pesticides on public and private lands.

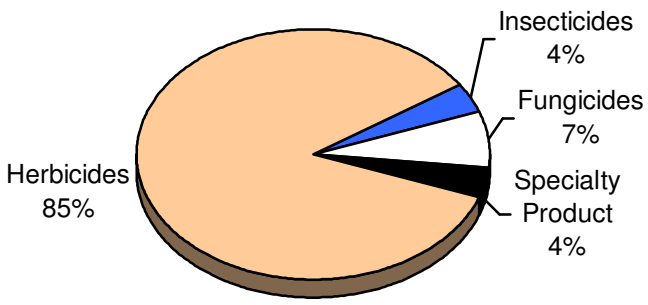
Why is There Concern?
Where does the concern arise in the general public and for policy-makers and what is driving the move to decreased use of pesticides?

- Potential adverse impacts of pesticides on human health (particularly for children);
- Involuntary exposure to pesticides associated with herbicide applications on neighbouring lawns, insecticide use in multi-unit buildings such as apartments and condominiums, and pesticide use on rights-of-way;
- Notification of pesticide applications (e.g., difficulties in understanding the symbols on pesticide warning signs);
- Incomplete testing of pesticides, toxic impurities in some pesticides, the toxicity of inert ingredients in pesticides;
- Potential adverse impacts of pesticides on non-target organisms such as birds and wildlife;
- Potential for environmental contamination;
- Reliance on chemical pesticide use in urban environments, particularly cosmetic use of pesticides to control dandelions and other weeds on residential properties; and
- Increasing resistance of some pests to pesticides.

Pesticide Use

Pesticide sales figures are sometimes used as an estimate of pesticide use. According to the Crop Protection Institute (1998), an industry trade group that represents the manufacturers, formulators and distributors of crop protection products in Canada, of total sales at the manufacturers' level across Canada, herbicides accounted for 85%, insecticides 4%, fungicides 7% and specialty products at 4% (figure 1). While most pesticides sold in Canada are used for agricultural purposes (91% of sales in 1997), the remainder are purchased for use in high-density urban areas.

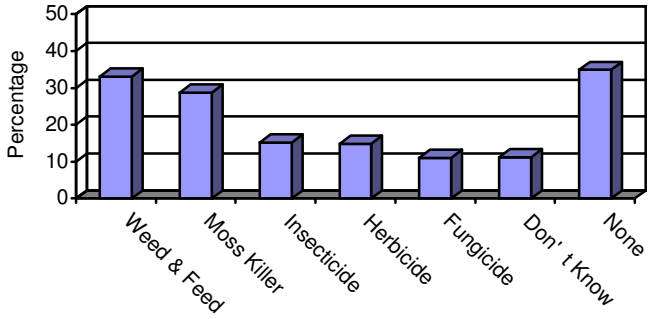
Figure 1: Pesticide sales in Canada by type in 1997
(Crop Protection Institute, 1998)



Private Use
Homeowners purchase about 5-10% of all pesticides sold in Canada. Due to difficulties in understanding pesticide labels and the lack of training in pesticide application, homeowners are more likely to use pesticides inappropriately than commercial or agricultural users (Environment Canada website, 2001).

A February 2002 Omnibus survey in the Greater Vancouver Regional District showed that 19.4% of households with gardens hired a maintenance company to take care of the lawn and garden maintenance. The remaining 80.6 % of respondents did the work themselves. Up to two-thirds of households reported pesticide use in lawn and garden maintenance. The most common type of pesticide used was Weed & Feed-type products (33.1 %), followed by moss killers (28.8 %), insecticides (15.2 %), herbicides (14.8 %) and fungicides (11 %). One-third of residents (34.9%) reported using none of these products in their gardens (Figure 2). Residential lawns and gardens represent 20 to 25 % of the total land area of Vancouver.

Figure 2: Pesticide use pattern by type in Lower Mainland
(Omnibus Survey, February 2002)



Risks of Pesticide Use

Since many chemical pesticides are toxic compounds, human exposure to particular pesticides and/or some of their breakdown products can cause adverse health effects. Two very important points must be considered with any pesticide application: *toxicity* and *exposure*. *Toxicity* is defined as the capacity of a substance to poison. *Exposure* is the contact of a pesticide with humans, non-target organisms or the environment. The likelihood of exposure depends on a number of factors such as the amount of pesticide used, the concentration of the pesticide and the application method. Human exposure can occur by

inhalation, ingestion or absorption through the skin, with the latter being the most common method. The extent to which people can be harmed by pesticides depends as much upon the level of exposure as the toxicity of the pesticide used.

Another concern raised by opponents to pesticide use is that toxicity tests are primarily completed on the active ingredient, or the chemical that is toxic to the pest species, but tend to ignore the inert ingredients added, such as solvents, carriers, stickers and spreading agents. In addition, the additive or synergistic effects of combining a pesticide with another pesticide are often not completely known. Many of the pesticides used today were registered before the rigorous present day toxicological studies were developed. Recently both the US Environmental Protection Agency and the Canadian Pest Management Regulatory Agency have reviewed the safety of commonly used pesticides, resulting in either the de-registration of a number of products or severe restrictions on their use.

Health Effects of Pesticides

Each pesticide is different in its effects and has very different concerns. Most commonly, pesticide use is associated with two things: toxicity in the environment and human health problems. Generally speaking, human health effects can be subdivided in to acute (i.e. immediate or short-term effects) and chronic (i.e. longer term, cumulative or delayed effects). For the purpose of this document, the review of the health effects will focus on those pesticides commonly used outdoors.

Acute Health Effects
In general, the effects of acute poisoning develop rapidly after a single contact, usually at higher doses, and the symptoms of acute poisoning are well recognized. Symptoms can include everything from headaches, sleep disturbance, and eye irritation, through allergic reactions, diarrhoea, vomiting, and nausea, to muscle spasms, loss of consciousness and death. Acute health effects occur most frequently among workers in occupational settings involving the production, mixing or application of pesticides. Most cases of acute poisoning in the general public are usually a result of: ingestion of improperly stored pesticides, ingestion of pesticide-contaminated foods, and inhalation of pesticide drift.

Chronic Health Effects
Chronic health effects are those which develop over longer periods of time or which persist many years after the initial exposure. Some examples of chronic health effects identified in health risk studies are: liver and kidney damage, negative reproductive effects, and some types of cancer, in particular non-Hodgkin's lymphoma. With advances in testing, some pesticides are now suspected of having the potential to cause cancer, birth defects and reproductive problems. Fortunately, very few current pesticides used outdoors are known to cause chronic effects when used properly.

Health Risks to Children
Regulatory and health agencies now acknowledge that pesticide risk assessments based upon the adult test subject ignore the special circumstances of the child. Overall, children are more susceptible than adults to the toxic effects of chemicals because their bodies are still developing. A child's metabolism works harder per kilogram of body mass, and their immune and defence systems are more vulnerable to chemical hazards. For example, human newborns are significantly more sensitive to chlorpyrifos, an insecticide once commonly used on lawns and in homes, because they have very low concentrations of the enzyme needed to detoxify it in their bodies (Grossman, 1995). In Vancouver, children under the age of 10 represent 9.2% of the population.

Furthermore, the behaviour of children may expose them to greater quantities of pesticides than adults in the general population. Children spend more time on the ground than adults, so they may have greater dermal contact with pesticides applied to lawns. In addition, young children may experience greater exposure via ingestion because they put their hands and other items in their mouths more often than adults (Lowenherz, 1997).

Linkages have also been identified between home and garden pesticide use and leukemia and brain cancer in children. A recent review of pesticides and the risk of childhood cancer have concluded that the studies "suggest an association between certain exposures (pesticides) and certain cancers" (Daniel, Olshan and Savits, 1997). They further stated however, "The relationship between pesticide exposure and childhood cancer is far from proven". A second review concluded, "although research is underway to characterize the risks of childhood cancer associated with pesticides … it is prudent to reduce, or where possible, eliminate pesticide exposure to children" (Zalm and Ward, 1998).

Health Effects Conclusions

There is evidence to warrant concern about the potential health impacts of pesticide use by the general public. Gaps in our knowledge about the issue, the range and nature of the health effects that have been suggested for pesticides, and the size of the population potentially exposed to the products, indicate that a measured response by the City is warranted. Risks have already been reduced on public property through the early adoption of IPM programs and the decision by the school board to refrain from using pesticides in schoolyards. However, the health risks can be further reduced where pesticides are used on private property, with a particular focus on reducing exposure for children.

Environmental Risks

The widespread use and improper disposal of pesticides provide many possible sources of pesticide contamination in the environment. Following release into the environment, pesticides may have many different fates. Pesticide sprays can move through the air and may eventually end up in other parts of the environment, such as in soil or water. Pesticides directly applied to the soil may be washed off the soil into nearby bodies of surface water or may percolate through the soil to lower soil layers and groundwater.

While many possibilities exist, this does not mean that all pesticides travel long distances or that all compounds are threats to groundwater. In order to understand which ones are of most concern, it is necessary to understand how individual pesticides move in the environment and what characteristics must be considered in evaluating contamination potential. Two things may happen to pesticides once they are released into the environment. They may be broken down, or degraded, by the action of sunlight, water or other chemicals, or microorganisms, such as bacteria, or they may remain unchanged in the environment for long periods of time.

Regulatory Framework

There is a considerable amount of legislation in Canada that deals with pesticides. It has been developed to protect human health, non-target plants and animals and environmental quality. As mentioned earlier, pesticide use is governed by a tri-level regime with the federal legislation overseeing the registration of the products, the provincial legislation determining how pesticides must be handled and the municipal regulations controlling where pesticides may be used and under what conditions within the municipality's territory.

Federal Legislation

The overseeing legislation governing pesticides in Canada is the *Pesticide Control Products Act*. Through this act, the federal government requires that all pesticide products be registered by Agriculture Canada before they may be sold or used in Canada. Manufacturers must show that their product is effective for the uses on the label and is safe to use as directed. As part of this regulation, pesticide manufacturers must provide physical and chemical properties, and toxicological, residual, and environmental data. Specialists from Agriculture Canada, Health Canada, Environment Canada, and Fisheries and Oceans Canada review these data. Pesticide registrations are reviewed every five years.

There are a number of other laws that also affect pesticide use. These include:

- *Plant Protection Act*, whose purpose is to prevent the introduction or spread of insects, nematodes (plant parasitic roundworms), plant diseases or other pests that may be destructive to Canadian agricultural or forestry crops. Agriculture Canada can require the treatment of a serious pest outbreak with a specific pesticide.
- *Fisheries Act*, which allows prosecution for improper pesticide use resulting in damage to fish or fish habitat.
- *Migratory Birds Convention Act*, which allows prosecution for improper pesticide use resulting in harm to migratory birds.
- *Food and Drugs Act*, in which Health Canada establishes maximum pesticide residue allowable on food, and Agriculture Canada specifies the minimum days between pesticide use and harvest.
- *Transportation of Dangerous Goods Act*, which regulates the transport of potentially hazardous goods, including pesticides and is adopted and administered by the British Columbia government.

British Columbia Legislation

The *Pesticide Control Act* applies to the sale, transportation, storage, preparation, application and disposal of pesticides in British Columbia. This Act is the responsibility of the Pesticide Management Program of the BC Ministry of Environment. Staff in six regional offices, examine and issue permits to pesticide vendors and applicators, inspect premises of vendors and applicators, and investigate complaints of pesticide misuse. In British Columbia, pesticides are divided into five categories, called schedules, according to their use, toxicity and persistence, each with different provincial requirements for selling, storing and applying. This classification is based on the federal classification system. The provincial pesticide schedules are described in Appendix B.

The *Pesticide Control Act* is enabling rather than prohibitive legislation. It does not require that pesticides be used in the first place. However, in the case of an emergency, such as an outbreak of exotic insects or disease, the Lieutenant Governor would have the authority to authorize the application of pesticides to contain a significant provincial threat, especially to forestry and agriculture, regardless of municipal by-laws.

As is the case with the federal legislation, there are also a number of other provincial laws regulating pesticide use:

- *Workers Compensation Act*, which enforces health and safety regulations for pesticide applicators.
- *Wildlife Act*, which regulates that there is no harm to wildlife or habitat through improper pesticide use.
- *Waste Management Act*, which regulates the disposal of pesticides and empty pesticide containers.

Vancouver By-Law and Policy

The City of Vancouver, through its *Health by-law no. 6580*, requires the posting of information notices prior to pesticide applications in buildings and outdoors. The Vancouver Coastal Health Authority (VCHA) administers this by-law.

The Vancouver Board of Parks and Recreation has had an IPM policy in place since 1987. The policy aims to decrease the use of chemical pesticides by the implementation of an IPM Program.

Regulatory Framework Conclusion

Vancouver City Council does have the authority to introduce a pesticide reduction by-law under section 330 of the *Vancouver Charter*, which states in the Health section (Part XV):

> *330. The Council may make by-laws*
> *Health by-laws*
> *a) for providing for the care, promotion and protection of the health of the inhabitants of the city ..... and, for that purpose, for regulating, controlling and restricting persons and their activities;*

Public Perceptions

In determining the appropriate public policy direction with respect to pesticide use and proposed restrictions on pesticide use, it is important to acknowledge and address the public's perceptions on this issue. A recent survey in Waterloo reported by the FCM (web-site pestinfo.org), provides some insights into public perceptions regarding pesticides. Highlights of that survey of 300 Waterloo residents include:

- 60% defined pesticides as poisons/chemicals
- 57% considered them sprays for killing insects/bugs
- only 25% included the fact that they are used for killing weeds
- 41% of those who used lawn fertilizers used combination products, which included weed or insect control products.
- 61% felt that pesticide use on lawns was either very necessary (20%) or somewhat necessary (41%)
- 71% were either very (27%) or somewhat (44%) concerned about pesticide use
- 34% cited health related concerns, while 27% stated they were harmful to children/adults and 23% were concerned about impacts on pets/wildlife
- 42% of the somewhat/very concerned felt that the use of organic/natural products was a good way to reduce/eliminate pesticide use, while 22% felt that public education would help.

Current Practices

Other Municipalities
Following the 1991 Hudson by-law, many municipalities in Quebec adopted pesticide control by-laws to regulate or eliminate the use of pesticides for cosmetic and nuisance purposes. Some of the by-laws simply require the purchase of a municipal pesticide application permit, while others ban all but exempted pesticides. However, these by-laws allow the use of pesticides for building interiors, for agriculture and for controlling dangerous plants, insects and animals. They also provide exemptions for golf courses, although the villages of Chelsea and Senneville plan to eliminate pesticide use on golf courses after five years. In Halifax, the pesticide by-law allows the use of "Permitted Pesticides" and regulates the use of other pesticides by permit, subject to the terms and conditions of a regional inspector. Most of the by-laws begin by banning pesticides and then add so many exceptions that the by-laws would be far simpler if they simply banned what is primarily perceived as the problem, the broadcast spraying of pesticides on residential lawns and gardens.

Like the City of Vancouver, many North American cities, including Toronto, Windsor, Ottawa, Calgary, Victoria, Portland, Seattle and San Francisco, have IPM programs for their municipal and parks operations. However, none of these larger cities currently have pesticide restriction by-laws, though Ottawa and Toronto city councils are considering the concept. On July 16, 2001, the Board of Health in Toronto voted to endorse a by-law that would end the cosmetic use of pesticides on lawns and gardens within two years.

All of the North American cities with IPM programs report dramatic reduction in the use of chemical pesticides on municipal land over the past few years. However, many maintenance supervisors, especially in the US, are of the opinion that faced with shrinking maintenance budgets and enormous park systems to maintain, there is no practical advantage to totally eliminating the selective use of low toxicity products. There is exhaustive and often contradictory research on both sides of the question concerning potential health and environmental risks of federally registered pesticide products. This point seems to be noted by the portion of the Supreme Court of Canada ruling on by-law 270, which reads... "*Based on the distinction between essential and non-essential use of pesticides, it is reasonable to conclude that the Town by-law's purpose is to minimize the use of allegedly harmful pesticides in order to promote the health of its inhabitants*."

Although none of the local municipalities, with the exception of Vancouver and Surrey, have actual IPM policies, most of the municipal park managers adhere to the principles of IPM leading to dramatic chemical pesticide use reductions.

Integrated Pest Management Policy in Vancouver
In 1987, the Vancouver Park Board adopted an IPM policy to reduce the use of chemical pesticides and develop a holistic approach to plant care. This approach gives priority to cultural, physical and biological controls over the use of chemicals. When chemical use is required, the least toxic, effective chemical control is used. Since the adoption of the IPM program, conventional pesticide use has steadily diminished. Exempted and "preferred" pesticides are favoured over conventional pesticides. For the past decade, no cosmetic pesticides have been used on any Vancouver Park Board playground, sports field or turf area. Weeds are controlled entirely through mechanical means and water management. No loss of playability or decrease in the quality of the sports fields has been observed over that period of time. Biological control and improved cultural practices have greatly reduced the need for chemical pesticides at the Sunset greenhouses, Bloedel Conservatory, and VanDusen Gardens. However, very small amounts of low and medium toxicity pesticides have occasionally been required to protect propagation stock and high value exotic specimens. Exempted pesticides such as insecticidal soap and trapping glue, and biological control agents such as lady bird beetles, are used on street trees to control high public nuisance problems such as aphids and oak leaf skeletonizers.

Through careful IPM practices, Vancouver municipal golf courses have reduced the need for chemical pesticides. Proactive pesticide spray programs are no longer used. However, the highly managed turf found on the greens and tees is quite susceptible to diseases. Therefore, golf course greens and occasionally tees require small amounts of fungicides and herbicides to maintain playability. All pesticide applications on the course are clearly posted at the entrance of the course to notify the public of the type of pesticide used and the time of application. Staff is investigating alternative methods, including incorporating amendment materials into sand greens and tees to further reduce the necessity for fungicide use. At the present time however, the elimination of chemical pesticides entirely would result in the eventual loss of playability of municipal and private golf courses.

Pesticide applications anywhere within the Vancouver park system are only made after consultation regarding control options with the Board's IPM Coordinator. The IPM coordinator will investigate the problem and if non-chemical control measures have proven ineffective, may authorize the use of chemicals. In addition to controlling the use of chemicals, IPM staff provides training in IPM to horticulture staff throughout the year. They also develop non-chemical approaches to control pest problems in the parks system. These include:

- Tree banding programs with neighbourhood volunteers to control the spread of winter moth;
- Experiments with organic amendments to sports fields and golf courses to reduce disease incidence and weed infestation;
- Hand weeding of purple loosestrife in park ponds by volunteers;
- Tree base flower planting initiatives by residents to reduce aphids and increase street tree health;
- Development of monitoring protocols for key urban insect pests;
- Release of nematodes to control leatherjacket infestation in turf; and
- Release of predatory insects to control aphid infestation.

Despite of these initiatives, the careful use of some pesticides continues to be necessary to preserve the assets of the Park Board and the City.

Options for Responsible Pest Management and Impacts

Advances are being made in the reduction of risk to the general public related to pesticide use, misuse and exposure. These advances include broad adoption of IPM approaches, de-registration of some of the more toxic pesticides (Healthy Lawns strategy, amendments to the Pest Control Products Act), increased availability of less toxic, safer options (e.g. Loblaws decision to only stock safer pesticides), industry initiatives and educational approaches by non-government organizations. Recognizing that actions at other regulatory levels and in the private sector are beginning to address many of the concerns related to pesticide use and exposure, this position paper focuses its options for action on further minimizing the risk to residents, with an emphasis on children.

As with any other decision within a sustainable community framework, there are a number of options available to address responsible pest management, each with its own set of costs, benefits and trade-offs. The ultimate action plan needs to be a well-considered balancing of the social, economic and environmental considerations.

- OPTION 1: Public Education
  An enhanced public awareness/education program about alternatives to pesticides could be launched or sponsored by the City, in cooperation with the Board of Parks and Recreation, VCHA, landscape industry, private sector and non-government organizations. A partnership approach would be critical, with a cooperative funding and resourcing approach. Possible seed funding could be provided through the City's Environmental Grants program, to a not-for-profit organization to deliver an educational program. This program could build on other existing programs, such as the GVRD's Natural Lawn Care booklet featured in the City's Fit City web pages.

- OPTION 2: Expand Pesticide Notification Provisions to Private Property
  Council could amend the current provisions of the *Health by-law* to require posting of private property whenever a landscape maintenance company treats lawns and gardens with pesticides. This would apply to less than 1/3 of the pesticide applications on private property, with the other 2/3 carried out by homeowners themselves. Staff are not recommending expansion of notification to include applications by homeowners to their own property. However, the VCHA could provide Pesticide Free Lawns posters to the general public to promote pro-active posting of those areas frequented by children.

- OPTION 3: Broaden the application of an IPM approach to all municipal lands within the City.
  Council could adopt a universal IPM policy that would apply to all departments within the City, including any contractors working on pest control.

- OPTION 4: Advocacy through FCM to Federal Government for tighter restrictions
  Council could advocate through FCM to the Federal Government for tighter restrictions on the registration, de-registration of the most toxic pesticides and separation of herbicide registrations from fertilizers.

- OPTION 5: Prohibit the cosmetic use of pesticides within the city.
  Council could amend the *Health by-law* to mirror the provisions of the City of Hudson (or similar) by-law, limiting the use of pesticides to essential rather than cosmetic uses. Exceptions to address emergencies, issues of destruction of property or reduction of safety, could be addressed through a permit system. Costs of administration are difficult to estimate, but the expectation would be that the majority of commercial landscape maintenance companies would comply and the general public would comply provided they were made aware of the alternatives available to them. It is anticipated that the Environmental Health division of VCHA would enforce this provision as they do the pesticide notification provisions of the *Health by-law* (i.e. on a complaint response basis). One source of funding (for the enforcement piece as well as the education piece) might be through some form of City tax or business license fee on garden shops/pesticide vendors (with the exception of those who sell only low toxicity products).

Two others options were considered but rejected as impractical:

- Ban the sale of pesticide products in Vancouver.
  The sale of pesticides is regulated by both the federal and provincial governments, and lies beyond the scope of regulatory powers allotted to municipal government as stated by the Supreme Court in the Hudson case.

- Total ban on landscape pesticides in Vancouver.

  A total ban on landscape pesticides could have severe negative consequences.

  Quality of Public Landscapes
  The careful use of some pesticides is currently necessary to preserve the assets of the Park Board and the City. A total ban on all pesticides, including soaps, dormant oils and glue would result in an increase of nuisance pests such as aphids. This would be difficult for many residents living near infested street trees to tolerate.

  Aside from these considerations, there may be future situations where an outbreak of some pest poses a significant threat to the environment, the economy or human health that would warrant government intervention to use pesticides.

  Golf courses
  Golfers demand a very high standard of quality from the golf courses that they play on. The maintenance required (turf kept at 5/32-3/16" in height) and the weather patterns in the Lower Mainland make conditions optimal for turf disease propagation. This makes reliance on fungicides difficult to overcome. Should the high standard demanded by golfers not be maintained, the city courses could become unplayable.

  Private Lawns and Gardens
  Without alternatives to pesticides, home gardeners may be at a loss when dealing with lawn and garden pests. This may lead to non-compliance with the pesticide ban. For people with allergies to specific pests, alternative control options may be unavailable. Also, residential gardens may become infestation source for public landscapes and golf courses if resident are unable to control certain destructive pests. There may also be some costs to the municipality to gather and dispose of residents' pesticide supplies.

Recommendation

Staff recommends a graduated approach to addressing the remaining efforts toward responsible pest management. This approach would envision a 2-year educational/awareness strategy, preferably delivered by a non-government organization funded, at least partially, through an Environmental Grant. At the end of two years staff would report back on the results of the educational strategy, any new research findings on health effects and any other advances in the regulation and use of pesticides in lawns and gardens. This report would provide Council with some recommendations on the adoption of by-law restrictions on the cosmetic use of pesticides in the City.

Conclusion

The use of pesticides on lawns and in gardens around the City does present a possible health risk, especially to children. These health risks have been better understood, better managed and further minimized in recent years through regulatory, educational and IPM approaches. This report has highlighted some further areas of improvement, especially as they relate to the cosmetic uses of pesticides in the lawn and yard environment with special emphasis on potential exposures to children. A measured approach to addressing these remaining risks has been recommended graduating from education and, if necessary, to prohibition of cosmetic uses of pesticides in the outdoor environment.

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APPENDIX A - LEGAL DEFINITION OF A PESTICIDE AND A PEST

Pest Control Products Act
CHAPTER P-9

An Act to regulate products used for the control of pests and the organic functions of plants and animals

SHORT TITLE
1. This Act may be cited as the Pest Control Products Act.

R.S., c. P-10, s. 1.

INTERPRETATION
Definitions
2. In this Act,

"Control product" means 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, and includes

(a) any compound or substance that enhances or modifies or is intended to enhance or modify the physical or chemical characteristics of a control product to which it is added, and

(b) any active ingredient used for the manufacture of a control product.

"Pest" means any injurious, noxious or troublesome insect, fungus, bacterial organism, virus, weed, rodent or other plant or animal pest, and includes any injurious, noxious or troublesome organic function of a plant or animal.

APPENDIX B – ANNEX 1 OF THE BRITISH COLUMBIA PESTICIDE CONTROL ACT

PESTICIDE CONTROL REGULATION
B.C. Reg. 319/81 - O.C. 1728/81 Filed: July 31, 1981
[includes amendments up to B.C. Reg. 131/97 and S.B.C. 1997-18]

ANNEX 1
[Section 1 (3)]
[en. B.C. Reg. 420/89, s. 8; am. B.C. Reg. 61/92, ss. 10, 11.]

SCHEDULES

PERMIT-RESTRICTED Pesticides

Purchase and use require an applicator certificate and a restricted permit
Sale requires a vendor licence and a dispenser certificate
Reportable pesticides: sales to be recorded
Pose special concerns regarding human safety or environmental quality
Include the following pesticides:

- aldicarb
- aldrin
- allidochlor
- 4-aminopyridine
- calcium cyanide (hydrogen cyanide)
- chlorbromuron
- chlordane
- DDT
- 1, 2-dibromo-3-chloropropane
- dieldrin
- endrin
- heptachlor
- lead arsenate
- mercury compounds
- sodium monofluroacetate
- 2,4,5-T
- thallium sulfate
- toxaphene

RESTRICTED Pesticides

Include all federally-labelled RESTRICTED pesticides that are not PERMIT-RESTRICTED as listed above
Sale requires a vendor licence and a dispenser certificate
Reportable pesticides: sales to be recorded
Purchase and use of the following pesticides require an applicator certificate: (Purchase and use of all other federally-labelled RESTRICTED pesticides will require an applicator certificate starting January 1, 1992.)

- aluminum phosphide
- ethylene dibromide
- fumigant mixtures
- methyl bromide
- oxyfluorfen
- sulfotep
- triadimefon

COMMERCIAL Pesticides

Include all federally-labelled COMMERCIAL pesticides not appearing elsewhere ("COMMERCIAL" includes "AGRICULTURAL", "INDUSTRIAL", "FORESTRY", and related terms)
Sale requires a vendor licence and a dispenser certificate
Reportable pesticides: sales to be recorded

DOMESTIC Pesticides

Include all federally-labelled DOMESTIC pesticides not appearing elsewhere
Include all pump DOMESTIC pesticides
Include all fertilizers containing pesticides
Sale requires a vendor licence and a dispenser certificate

EXEMPTED Pesticides

Include the following federally-labelled COMMERCIAL and DOMESTIC (or DOMESTIC only, as indicated) pesticides:

- allethrin – DOMESTIC
- d-trans-allethrin – DOMESTIC
- animal repellents - DOMESTIC
- asphalt solids (pruning paints)
- bactericides (used in petroleum products)
- beta-butoxy-beta'-thiocyano diethyl ether
- boron compounds – DOMESTIC
- cleansers
- deodorizers
- disinfectants
- ferrous sulfate
- insect bait stations
- insect repellents – DOMESTIC
- isobornyl thiocyanoacetate
- naphthalene – DOMESTIC
- paradichlorobenzene – DOMESTIC
- pet pesticides – DOMESTIC
- plant growth regulators - DOMESTIC
- polybutene
- pressurized pesticides – DOMESTIC
- pyrethrins
- resmethrin - DOMESTIC
- rotenone
- silicon dioxide
- soaps
- surfactants
- swimming pool chemicals
- tetramethrin – DOMESTIC
- wood preservatives, not including polychlorophenols (or their salts) and creosote - DOMESTIC