Corporate Report

NO: R126

COUNCIL DATE: **July 13, 2009**

REGULAR COUNCIL

TO:	**Mayor & Council**	DATE:	**July 6, 2009**
FROM:	**General Manager, Parks, Recreation and Culture**	FILE:	**5280 - 23**
SUBJECT:	**Pesticide Control and Use in the City of Surrey**		

RECOMMENDATION

It is recommended that Council:

1. Receive this report as information;

2. Direct staff to undertake a public consultation process to receive feedback on options for pesticide control in the City of Surrey and to provide a further report to Council on the feedback received from the public along with recommendations as to the appropriate next steps in relation to pesticide control;

3. Direct staff to develop a significant public education program on pesticide use and alternatives to achieve similar results to the use of pesticides and provide a report complete with recommendations on this matter including budgetary requirements for Council consideration; and

4. Instruct staff to develop and implement, on an 8 month trial basis, a program for managing landscaping along sample sections of City street boulevards and medians without the use of herbicides and to provide a report to Council on the results of this trial along with recommendations related to adjusting the City's street landscape management practices.

INTENT

The purpose of this report is to provide Council with a summary of work carried out by three Committees of Council and staff related to the use and control of pesticides in Surrey and to seek Council direction with respect to next steps.

BACKGROUND

Council received several delegations during 2008 that requested that the City of Surrey implement a by-law to eliminate or reduce the use of pesticides in Surrey and adopt more sustainable horticulture and gardening practices. Staff was requested to work with the Environmental Advisory Committee (EAC) and other Committees of Council to review these issues and provide a report back to Council in due course with their recommendations.

The EAC has undertaken the following activities related to this matter:

- Received a report from City staff on the implementation of the City's *Integrated Pest Management Policy*;
- Received a presentation by H. Hermary (Principal of Gaia College) on the benefits of organic gardening and organic horticulture;
- Received an overview on Federal and Provincial legislation related to the sale and use of pesticides;
- Reviewed pesticide control by-laws from other cities and municipalities;
- Received a presentation by Dr. Kent Mullinex (Kwantlen Polytechnic University, Institute for Sustainable Horticulture) on a Province-wide accreditation program for environmentally responsible pest management; and
- Received a BC Centre for Disease Control presentation regarding the results of a recent review on the effectiveness of by-laws restricting the use of cosmetic pesticides in reducing exposure to pesticides.

The EAC determined that a draft Pesticide Control By-law be developed for consideration. Staff of Legal Services, the Parks, Recreation and Culture Department and the Engineering Department developed a draft by-law.

Regulatory Responsibility for Pesticides

Federal – Under the *Pest Control Products Act* the Federal government is responsible for the registration of pesticides. Pesticides may be registered for commercial or domestic use, or both. Once registered, the Federal government specifies the conditions of use of the product, and approves the label and enforcement of the label requirements. The key issues in registration are human health and impact on the environment.

Provincial – Under the *Integrated Pest Management Act* the Provincial government regulates the sale, application, transport, storage and disposal of registered pesticides.

The Province can prohibit the sale of particular products, require a license for use of and regulate how pesticides may be used on public and private lands.

Municipal – In British Columbia, the *Local Government Act* and the *Community Charter* provide authority to municipalities to regulate the use of pesticides on residential lands and on lands owned by a municipality. The Act and Charter provide for a number of specific exemptions that limit the extent to which municipalities can regulate the use of pesticides. (e.g., exemptions for managing pests that transmit diseases of humans and livestock; exemptions for controlling pests on or in buildings; on land used for forestry or agriculture; etc.)

Union of BC Municipalities Pesticide Resolutions and Provincial Response

The Union of BC Municipalities (UBCM) passed two resolutions in 2008 related to the regulation of pesticides for non-essential uses.

UBCM Resolution No. B81requested that the Province ban the sale and use of cosmetic pesticides province-wide. The Province's response is that the Federal government evaluates and registers pesticides based on the key issues of human health and the impact on the environment, and BC looks to the Federal government for determining what pesticide uses are acceptable. The Province also sees pesticides as a one of the tools for use in an Integrated Pest Management (IPM) Program, which the Province promotes. The Province recognizes that pesticides may be required for the control of noxious weeds, for the control of invasive species, for structures and for food crops, it is not prepared to ban the sale of pesticides at this time.

In Resolution No. B82, the UBCM requested the Province to restrict sales and retail displays of pesticides, and to provide greater legislative authority for municipalities to restrict the use of pesticides on private lands. The Province responded similarly to its response to B81 (above) with respect to Federal jurisdiction and suggested that the benefits to be gained was questionable when dealing with domestic pesticide products that have been assessed and judged safe for human health and the environment. They again referred to IPM, and suggested that commercial applicators are sufficiently well regulated by the Province so as to avoid exposing the public to pesticides. The Province does not appear to be prepared at this time to amend the Community Charter to provide additional restrictive powers to municipalities.

BC Centre for Disease Control Review

The BC Centre for Disease Control (BCCDC) has been reviewing the effectiveness of cosmetic use pesticide by-laws in Canadian municipalities. Senior staff from the Environmental Health Section presented some of their preliminary findings to the EAC in early 2009. The BCCDC staff was careful to stress to the EAC that the information presented was not considered to be an official position of the BCCDC, nor has the review been completed. Some of the points raised in their presentation were:

- Linking health outcomes to pesticides is difficult, as a risk of negative health effects is a function of several factors.
- Negative health outcomes have been associated with exposure to pesticides, primarily in agricultural or occupational settings.
- Exposure can occur from residues in foods, indoor pest control, work place exposure and agricultural drift; therefore, it is difficult to evaluate pesticide by-laws in terms of health outcomes. However, the issue can be reviewed more easily from the perspective of exposure reduction.
- There are two main approaches to reducing exposure to cosmetic-use pesticides: 1) eliminate use, or 2) minimize use by using alternatives whenever practical. Both of these approaches are reflected in Canadian legislation governing pesticides used for cosmetic purposes.
- Actions with respect to regulating cosmetic use pesticides by Canadian municipalities range from: a) doing nothing; to b) implementation of education programs; to c) passing pesticide control by laws.
- Existing by-laws in Canada have considerable range, including: a) notification requirements only; b) ban on specific products only; c) selectively specifying where, when and how pesticides may be used; and d) full prohibition on any non-essential (cosmetic) use.
- Some municipal pesticide control by-laws apply only to residential lands, and do not apply to lands held by the municipality for public purposes.
- Enforcement activities have a considerable range, including: a) no enforcement; b) enforcement only if a complaint is made; c) active seasonal patrols by enforcement officers.
- Prosecution of by-law violations requires that evidence be obtained and processed.
- Enforcement activities may be phased in over time (e.g. Toronto- 4 years)
- Very few municipalities have conducted impact evaluations of the effectiveness of their pesticide by-laws.
- The most comprehensive study was carried out in Toronto. Results suggested that there was a reduction in the use of pesticides for cosmetic purposes attributable to the introduction of a municipal pesticide control by-law. In this study, an initial survey indicated that approximately 37% of households used pesticides. Two years later, after implementation of a pesticide control by-law, a second survey indicated an approximate 30% reduction in the use of pesticides by homeowners.
- Results of survey may not correlate absolutely with actual pesticide use. Study results arising from objective measures of reduction in pesticide use after implementation of a pesticide control by-law are not available.
- Provincial restrictions on the sale of pesticide have a greater potential to reduce exposure to pesticides than individual municipalities enacting pesticide control by-laws.

<u>Use of Pesticides in the City of Surrey</u>

There are four main categories of pesticide use within the City of Surrey. These are:

Agricultural use – Approximately 30% of Surrey's land area is within the Agriculture Land Reserve, and many farmers use some pesticides in growing crops. However, data is not available regarding the total volumes of pesticides used on Surrey farms, as farmers do not need to be licensed to purchase pesticides used for farming. The Ministry of Agriculture has advised that dominant crops in Surrey such as blueberries are often targeted with 4 to 7 applications of pesticides per year. These include herbicides for weed control between rows, fungicides for control of anthracnose, and insecticides for treatments of foliar pests.

Commercial use – There are a number of Surrey companies with Provincially licensed applicators who use pesticides for control of invasive species, weeds, insects and fungal pathogens that affect landscaped areas on commercial properties, multi-family residential areas and on the lots of single family homes. Utility companies such as BC Hydro carry out vegetation control in its right-of-ways, and railways use pesticides for control of vegetation along railway tracks to preserve the integrity of the rail beds. The BC Ministry of Environment, who collects pesticide use data for Licensed Applicators does not break Surrey out from other lower mainland municipalities, and so is unable to provide data regarding the total amounts of pesticides applied in Surrey by Licensed Applicators.

Residential use – Residents use a broad spectrum of pesticides for care of lawns, shrub beds and other home landscaping. There is no reliable data on the amount of pesticides used by homeowners in Surrey, as Licensed Vendors are not required to collect information from purchasers on where the pesticide is intended to be used. BC Ministry of Environment officials do not track sales of domestically labelled pesticides, and so are unable to report on use levels by residents in Surrey. Anecdotal information provided by several retailers indicates that a considerable percentage of sales are for lawn care products such as herbicides and fertilizer-herbicide mixes, with insecticides and fungicides sold in lower quantities.

Use of Pesticides by the City of Surrey

Engineering Operations – The City uses some herbicides on hard paved areas to control weeds and to treat weedy lawn areas on a periodic basis as required. Hard surface weed control could continue under the draft by-law as prepared by the EAC, as there is an exemption for treating pests on hard surfaces. There would be an aesthetic impact on lawn areas in street landscaping if the use of herbicides were curtailed, or alternatively an increase in costs for replacement practices to minimize weed infestation in lawns on medians and boulevards.

Facilities Management – Pesticides are currently used for structural pests (e.g., ants and termites) and for rodent control in and around buildings. Controlling pests on structures and indoors is permitted, as is rodent control.

Park Operations – Currently, pesticides are used by the Parks Division in several parts of its operations as follows:

- Application of herbicides for weed control in flower beds within City medians and around the base of trees;
- Limited spot application of herbicides on sport fields during the off-season for control of slippery weeds such as clover or plantain, where cultural methods have failed to eliminate the weeds;
- Limited spot application of herbicides on gravel all-weather fields to supplement drag-floating operations for weed control;
- Application of fungicides to the lawn bowling green, where the harsh conditions of the short-cut bent grass turf results in infection by snow mould and other fungi; and
- Application of herbicides to control invasive plants in sensitive forest ecosystems where cultural mechanisms have failed to restore the natural habitat.

DISCUSSION

It is clear that the Federal government could reduce pesticide use by homeowners and reduce the use of pesticides for non-essential (cosmetic) purposes by strengthening the requirements for categorizing a pesticide under the "Domestic Product" label. This could have the result of making fewer pesticides available for use by homeowners. While reassessment of existing pesticides by the Federal Pest Management Regulatory Agency (PMRA) has resulted in the withdrawal of registration of several pesticides, there is presently no indication of a major move by the PMRA to make dramatic changes to its current domestic label criteria, and therefore there is unlikely to be a significant reduction in the pesticides available to home-owners under the domestic label.

Beginning in 2003, the Province of Quebec began restricting the types of products available for domestic use and use on public lands. This resulted in a reduction in the sale and use of lawn herbicides. While similar legislation could be adopted in British Columbia, the Province's recent response to a UBCM resolution indicates that this type of additional legislative control is not imminent.

As the senior governments do not appear to be poised to enact additional legislation and regulations to reduce the registration, sale and use of pesticides for non-essential purposes, it is left to the City to determine whether it would like to take actions within its jurisdiction to reduce pesticide use for non-essential purposes. The three main areas of emphasis for the City in this regard could be:

1. Further reduction in the use of pesticides by City staff and contractors, consistent with the direction currently being taken under the City's *Integrated Pest Management Policy*; (see Appendix 1)
2. Development of additional City education programs to promote alternatives to pesticide use by residents;
3. Adoption of a City pesticide control by-law that restricts the use of pesticides.

Reduction in Pesticide Use in City Operations Under Integrated Pest Management (IPM) Policy

Since the adoption of the City IPM Policy several years ago, City operations have systematically reduced the use of chemical pesticides in favour of non-chemical means of pest control. (Appendix 2 provides some examples of the types of pest management practices used by the City under the IPM Policy) The City uses less chemical pesticide now than it did a decade ago, even though the park system and the amount of street landscaping has significantly increased. For instance, City Operations no longer carry out blanket spraying of turf for weed control. Instead, weeds are generally tolerated in passive grass areas, and other approaches are used to allow grass to outgrow weeds in most sport field situations. Staff continues to introduce predatory insects (e.g., lady bugs) to combat insect pests, and use soaps and dormant oils for the control of most insect pests on street trees. Good cultural practices on playing fields and in gardens reduce the incidents of pest outbreaks, thereby avoiding the use of chemical pesticides.

The City has recently become a partner with the Institute for Sustainable Horticulture, operated by Kwantlen Polytechnic University. The focus of the partnership is PlantHealth BC, a Province-wide pest management accreditation program that promotes environmentally sound and sustainable landscape management. The PlantHealth BC Program is intended to:

- Facilitate and support environmentally sound pest management practices through IPM;
- Identify companies with the knowledge and skills to use integrated and environmentally sound pest management practices for reference by the public;
- Reduce the risk to the environment and to public health and safety related to the use of restricted pesticides in urban and suburban landscapes; and
- To support British Columbia's Integrated Pest Management Act and Regulations.

In support of accreditation, Parks staff is attending advanced training in organic gardening and in using alternatives to pesticides for landscape management operations. Consideration is being given to establishing an IPM Coordinator for City Operations, as no such position currently exists. It is anticipated that additional training and a City-wide focus on IPM, coupled with an increased awareness of public concerns about pesticide use, will result in accessible public spaces that are increasingly pesticide free.

Draft Pesticide Control By-law

A draft pesticide control by-law was developed by staff, and was reviewed extensively by the Environmental Advisory Committee (EAC). The draft was also reviewed by the Agriculture Advisory Committee (AAC) and by the Parks and Community Services Committee (PCSC).

The draft by-law attached as Appendix 3 was crafted after reviewing a considerable number of by-laws from other communities in BC, and included review of a model by-law developed by the West Coast Environmental Law Society. The draft by-law has four major components:

1. Definitions of terms used in the by-law;
2. Prohibition on using pesticides on trees, shrubs, lawns and all other landscaped areas of residential properties and on lands owned by the City;
3. Exemptions to the prohibition; and
4. Penalties.

Environmental Advisory Committee Comments on the draft by-law

The EAC, at its April 16th 2009 meeting, recommended the adoption of a by-law that has few exemptions in relation to the use of pesticides. The by-law is contained in Appendix 3. The exemptions in this version of the draft by-law are only those already exempted under senior government legislation. This type of pesticide control by-law should be considered as having the most severe restrictions that are permitted under Provincial enabling legislation. In addition to curtailing the use of most pesticides on residential lands, it would also curtail the use of most pesticides by the City in support of park operations. The impacts to City operations are outlined later in this report.

Agricultural Advisory Committee Comments

The AAC, at its March 5th 2009 meeting, supported a draft by-law that is similar to the one in Appendix 3. However, the AAC recommended that the by-law allow the application of pesticides under a broader range of circumstances. The additional AAC-supported permitted applications are:

i. *"controlling a Pest which has caused an Infestation, where such Infestation of a Pest in numbers or under conditions which involve an immediate risk of substantial loss or damage."*
ii. *"ensuring the safety of pedestrian surfaces or sport surfaces." and*
iii. *"managing landscape maintenance operations on Public Lands where there is in place an Integrated Pest Management program governing the application."*

The AAC also supported an expansion of the definition of Sensitive Ecosystems to include "*City of Surrey parks and other protected areas designated or managed for the conservation of ecological features and functions.*"

Parks and Community Services Committee Comments

The PCSC supported the AAC recommendations and voiced concerns with curtailing the use of pesticides in City parks in relation to the budget impacts that this could have.

Impact to Homeowners of implementing a Pesticide Control By-law

If Council adopted a pesticide control by-law that prohibited the use by homeowners of all non-exempted pesticides, residential properties would likely see an increase in lawn and garden weeds and the proliferation of some common diseases such as powdery mildew and leaf spots. There would also be an increase in damage from insects such as aphids, shield bugs, loopers and scale. The image of the City could be negatively affected.

Such a by-law would not restrict the use of lawn fertilizers, tangle-foot, insecticidal soaps, lime sulphur or dormant oil.

Impact to City Operations of Draft By-laws

By-law Enforcement – There could be significant additional costs to the City in the training of by-law enforcement officers for handling complaints and for investigating and prosecuting infractions. By virtue of the nature of the offences under the by-law, investigations would be difficult and expensive to undertake. It is likely that public education would be a more effective means of changing the public's habits with respect to the use of pesticides in comparison to enforcement efforts associated with a by-law.

Engineering Operations – The City uses some herbicides on hard paving areas to control weeds and to treat weedy lawn areas on a periodic basis as required. Hard surface weed control could continue under the draft by-law, as there is an exemption for treating pests on hard surfaces. There would be an aesthetic impact on lawn areas in street landscaping if the use of herbicides were curtailed, or alternatively an increase in costs for enhanced cultural practices to minimize weed infestation in lawns on medians and boulevards. The Engineering Department advises that, should herbicides not be permitted for the control of weeds, that the increased cost to maintain lawns on medians to the same standards of weed control as at present would be approximately $150,000 annually.

Facilities Management – controlling pests on structures and indoors would continue to be permitted, as is rodent control, so there is no operational impact to the City's facilities.

Park Operations – As noted in the Background, pesticides are currently used by the Parks Division in several parts of its operations.

Under the by-law being recommended by the Environmental Advisory Committee, City operations would not be permitted to apply pesticides in many areas of its operations. The greatest visible impact will be on flowerbeds in street landscaping, where weeds would proliferate. There would be a less visible, but very important impact to trees, where tree wells would become overgrown with weeds. This can have several effects: one effect is from damage to the trunks of trees from mowers and weed whippers when grass and weeds grow right up to the base of trees, especially amongst younger trees with thinner bark. Another effect is on the nutrition of trees, because weeds and grass can compete more favourably for soil nutrients than can tree roots. Mulch beds beneath trees that are free of weeds and grass allow trees to grow better in the first few years of their lives while becoming established.

Staff reviewed the costs associated with increasing hand weeding and other cultural practices to maintain the current level of weed control. Based on current contractor unit rate costs, additional costs in the order of $800,000 would be incurred in relation to the maintenance of flower beds and tree-wells. Without additional general revenue funding, this amount would have to be diverted from other park maintenance responsibilities, which would result in a general decrease in maintenance service levels in the parks system.

Potential for Plant Loss in City Operated Gardens - The City is very fortunate to have some fine collections of rare plants at both ***Darts Hill Garden Park*** and at ***The Glades***, both of which were estate gardens donated to the City of Surrey some years ago. From time to time, there are outbreaks of common pests, which can cause significant damage to some of the rare plant materials in these gardens. Under the by-law proposed by the EAC, staff would not be able to apply certain specific pesticides to reduce or eliminate damage to some of the rare plant materials in these gardens, and loss of some plant specimens would eventually result.

Sensitive Ecosystems in Parks - It should be noted that the City's natural areas would not be significantly impacted in the longer term by adoption of EAC recommended by-law, as exemptions are provided for pesticide control for invasive exotic pests and pests that threaten sensitive ecosystems.

Possible Next Steps:

1. Proposed Process for Public Consultation on a Pesticide Control By-law

   As the general public has not been engaged to date in the discussion regarding pesticide use and control in Surrey it is considered appropriate that a public consultation process be developed to seek input from the public on this important matter. Subject to Council approval of the recommendations of this report, staff will develop a public consultation program that will include the development of optional approaches for consideration, a statistically significant survey of the public along with web information and other means to engage the public in discussion regarding the use

and control of pesticides in Surrey. This program will provide, among other things, information about current use levels and the public views and interests in reducing the use of pesticides in different areas of the City and its operations. This information will assist in ensuring that the City's approach to pesticide control is directed with a reasonable knowledge of the views of the broader public.

2. Public Education Programs Focussed on Alternatives to Pesticides

As is mentioned earlier this report, by-law enforcement will not be the most effective means for changing the public habits related to the use of pesticides. Broadly based public education will have more impactful effects. Currently, the City offers public education about the alternatives to the use of pesticides in landscape management through the new *Surrey Nature Centre*, through programs carried out in the *Environmental Extravaganza*, and through the *Nature Matters* Programs. Although these initiatives are effective in reaching segments of the population there is more that can be done to educate the public about the proper use of pesticides and alternatives to pesticides that will yield similar or better results. Subject to Council approval, staff will proceed to develop for Council's consideration a public education program that builds on current initiatives but reaches to a greater majority of the City's population. The program will include use of the City's website; the development of pamphlets and brochures for distribution; public workshop sessions; demonstration gardens; regular bulletins on City Page; and partnerships with other organizations that can carry out education and training in appropriate areas. Subject to Council approval of the program, the budgetary requirements for such a program will be included in the 2010 operating budget for consideration by Council.

3. Pilot Program for Pesticide Elimination in City Operations

To determine the effectiveness and costs of alternative approaches to the use of pesticides for weed and pest management in relation to street landscaping, staff are proposing that the City introduce an eight (8) month trial period during which identified medians and boulevards along City streets will be managed without the use of pesticides. This will help to gauge with respect to alternative approaches to weed and pest management the degree of aesthetic impact on the lawns, gardens and tree wells along City streets. The results of the trial project will be tabulated and reported to Council in relation to determining whether on-going changes to City practices should be considered.

CONCLUSION

Based on the above discussion, it is recommended that Council:

- Direct staff to undertake a public consultation process to receive feedback on options for pesticide use and control in the City of Surrey and to provide a further report to Council on the feedback received from the public along with recommendations as to appropriate next steps in relation to pesticide control;

- Direct staff to develop a significant public education program on pesticide use and alternatives to achieve similar results to the use of pesticides and provide a report complete with recommendations on this matter including budgetary requirements for Council consideration; and

- Instruct staff to develop and implement on an eight (8) month trial basis a program for managing landscaping along sample sections of City street boulevards and medians without the use of herbicides and to provide a report to Council on the results of this trial along with recommendations related to adjusting the City's street landscape management practices.

Laurie Cavan
General Manager
Parks, Recreation and Culture

OC:dlg

Attachments

Appendix 1
Integrated Pest Management Policy

INTENT

This Policy provides guidelines that will help to maintain and enhance the functionality, safe use, enjoyment and aesthetic beauty of the City's natural and developed parks. Integrated pest management (IPM) prevents and suppresses pests to acceptable levels effectively, economically and in an environmentally sound manner.

The Parks, Recreation and Culture Department is committed to managing vegetation and pest problems using IPM principles that will:

- use an ecological approach;
- minimize risk to human health and the environment;
- minimize the use of pesticides;
- consider community values in establishing maintenance standards for City lands; and
- include long-term benefits when determining cost-effectiveness.

The City is also committed to reviewing the implementation and ongoing success of its Integrated Pest Management Policy with City stakeholders on an annual basis.

IPM PRINCIPLES

The following principles are the basis of an IPM Program:

- prevention is the foundation of an IPM Program
- healthy ecosystems are less likely to have pest problems
- choose the right plant for the right place
- growing healthy plants is the best method of prevention
- do not plant monocultures; plant diversity results in fewer pest outbreaks
- when problems occur treat the cause, not the symptoms
- accurate problem diagnosis is essential
- it is not desirable to eliminate the pests; it is only necessary to keep pest numbers down to non-damaging levels
- pests are suppressed using a combination of techniques (biological, physical, cultural, mechanical, behavioural and chemical)
- chemical pesticides are used only when other options are not feasible or effective
- if it becomes necessary to use pesticides only the least toxic pesticides effective against the pest are chosen for use

POLICY GUIDELINES

This Policy provide guidelines for the Parks, Recreation and Culture Department to manage pest problems in natural and developed parks and other City landscapes safely and effectively in ways which minimize pesticide use while maintaining pests at acceptable levels.

I. Integrated Pest Management

a. IPM principles will be used when maintaining parks and other public lands.

b. IPM principles will be used in the design and construction of new landscapes and recreational areas.

c. Pests will be controlled only when they exceed acceptable levels. Community values will be considered when establishing these levels. Tolerance levels for common pests will be developed in consultation with stakeholders.

d. Safeguarding human health, the environment and non-target organisms will be the primary considerations when developing pest management strategies and pest tolerance levels.

e. Pest problems will be controlled using a combination of cultural, physical, mechanical, biological, legal and chemical treatments in order to suppress pests to acceptable levels.

f. Non-chemical methods of pest control will be given priority when dealing with pest problems.

g. Chemical methods will be implemented only when other options are not feasible or effective. The least-toxic pesticide that effectively controls the pest will be selected and applied. Least-toxic pesticides generally have short residual effects and/or specifically affect target pests. They are:

    i. least hazardous to human health
    ii. least disruptive to beneficial organisms
    iii. least toxic to non-target organisms
    iv. least damaging to the general environment

h. These “preferred” pesticides include insecticidal and herbicidal soaps, horticultural oils, lime sulphur, biological pesticides such as Btk, etc.

i. Training and educational opportunities for City staff involved with the IPM activities will be provided in order to keep up-to-date on the latest IPM developments.

j. Information on IPM will be provided to the general public in order to encourage the use of non-toxic pest management strategies on private lands.

k. Federal and provincial pesticide and pest management legislation will be complied with at all times. Noxious weeds and invasive plants will be controlled using IPM strategies and in accordance with existing legislation.

l. The City will work cooperatively with federal and provincial governments to eradicate introduced exotic pests such as gypsy moth, using the most effective and safe methods available.

II. APPLICATION OF PESTICIDES

a. Application of pesticides will be in accordance with IPM principles.

b. All person applying pesticides on City lands will be trained and equipped to safely and effectively apply pesticides.

c. All persons involved in applying pesticides on City lands will hold a Ministry of Environment (MOE) Pesticide Applicator's Certificate in the "Appropriate Category".

d. Pesticides will be applied during periods of lowest public activity whenever possible.

e. Pesticides will not be applied when children are present at the location being treated.

f. Public areas will be posted with notices stating where and when pesticide treatments are planned, as per MOE guidelines.

g. Public areas will be posted with notices after pesticide treatments have occurred providing details on timing and product used, as per MOE guidelines.

h. Pesticide application techniques and equipment will be used that are specifically designed to prevent pesticide drift.

i. Pesticide applications will not be conducted when wind speeds are greater than eight (8) km/hour if pesticide drift is a possibility.

j. Pesticide application equipment will be calibrated on a regular basis to ensure accurate, effective pesticide applications and avoid pesticide disposal problems.

k. Backflow prevention devices must be used when filling spray tanks to prevent contamination of water supplies.

l. Disposal of rinse water, excess pesticides and empty pesticide containers will be carried out in strict adherence to MOE requirements.

m. Water bodies and riparian zones will be protected from pesticide contamination by the use of pesticide free zones and buffer zones that comply with MOE requirements and guidelines.

n. All pesticide applications will be made in strict compliance with label instructions.

o. Detailed written records will be kept of all pesticide applications, including name of the applicator, name and quantity of the chemical used, target pest, location, size of area sprayed, weather conditions and treatment efficacy based on follow-up inspections of treatment area. In cases where the pesticides are applied by contractors, these records will be completed by them and supplied to the City.

III. PESTICIDE SAFETY AND STORAGE

a. Protective clothing and equipment will be used when mixing, loading and applying pesticides, as per pesticide labels and MOE Guidelines.

b. Pesticide spills will be dealt with immediately, according to MOE Guidelines. A Pesticide Spill Kit will be available at all times during pesticide transportation, mixing, loading and during application of pesticides. A Pesticide Spill Kit will be available in all pesticide storage areas.

c. Pesticides and application equipment will not be left unsupervised at any time during spray operations unless they are locked in secure areas.

d. When not in use, pesticides and pesticide application equipment will be stored in locked storage areas that meet MOE Guidelines.

e. Equipment will be inspected prior to use and defective equipment will be repaired or disposed of immediately. Equipment will be cleaned and maintained according to manufacturer's recommendations and MOE Guidelines.

Appendix 2
Examples of Types of Pest Management Practices Used by the City under the IPM Policy

Natural Area Management Program:

Non-native Invasive Species Control follows an integrated pest management approach and was conducted with the goals of containing, suppressing and eliminating non-native invasive vegetation within prioritized and selected Natural Areas. Various methods of vegetation control were implemented including cultural, physical, mechanical and chemical controls. The objectives are to reduce the competition between the non-native and native vegetation, increase diversity of the native vegetation and habitat types and increase the overall health of the Natural Areas.

In 2007, various non-native invasive plants were targeted for removal including; Japanese Knotweed (*Polygonum* sp.) Scotch Broom (*Cytisus scoparius*), English Ivy (*Hedera helix*), Himalayan Blackberry (*Rubus discolor*), Policeman's Helmet (*Impatiens glandulifera*), Periwinkle (*Vinca minor*), Common Tansy (*Tanacetum vulgare*), Dead Nettle Lamium (*Lamiastrum sp*) and Giant Hogweed (*Heracleum mantegazzianum*). English Ivy, Periwinkle, Giant Hogweed, Policeman's Helmet and Scotch Broom were removed manually, Japanese Knotweed was selectively chemically controlled and Common Tansy, Dead Nettle Lamium and Himalayan Blackberry had a combination of mechanical and chemical controls.

Chemical control involved the selective use of herbicides. Herbicides were applied either using a backpack sprayer or a stem injection gun targeting only the invasive plants, thereby minimizing damage to surrounding non-target vegetation.

It's important to note that, for other species of invasive vegetation such as Scotch Broom, the physical and mechanical removal methods, combined with cultural controls, are quite effective, environmentally sustainable and cost effective.

The success of these control methods were excellent in suppressing non-native invasive species within Natural Areas, resulting in minimal damage to native plants and trees while enhancing Natural area health and enhancing habitat values.

A major vector for the introduction of invasive species into Natural Areas is yard waste dumping. Yard waste was removed from Natural Areas and was coupled with public education. In areas where invasive plants and yard waste was removed, native plants were planted to reduce the opportunity of invasive re-growth or future yard waste dumping. The planting sites were covered with a layer of mulch to restrict invasive plant re-growth, while the native plants were watered by deep root injection, increasing plant vigour and health.

On selected sites where isolated conifer stands were declining by the absence of Mycorrhizal fungi in the root zone, the drip line of the trees was deep-root injected with Mycorrhizal fungi and fertilizer. The injection of Mycorrhyzae and fertilizer increased tree vigour, thereby decreasing tree susceptibility to pests and disease.

Specimen Tree Management Program

Insect and Disease Control - Insect and disease control is carried out to suppress insect populations in trees located primarily on street boulevards. The objective was to reduce the insect population when the population reached a threshold that would lead to the mortality of the tree, dramatically affect the vigour of the tree or result in considerable expression of concern from the neighbourhood. The control of insect populations is conducted using mechanical, cultural, biological and chemical control methods.

Aphid control

Staff release of Aphidoletes (predatory midges) on Tilia and other tree types that attract aphids. Aphidoletes aphidimyza is a small midge that eliminates aphids by laying 150-200 eggs at night among aphid colonies. Each egg develops into a bright orange legless maggot that will consume 3-5 aphids a day. Aphidoletes can more quickly reduce high numbers of aphids. As a support measure, we also applied Tanglefoot to trees where predatory insects were released. The intent was to reduce the number of ants from accessing the upper canopy. Ants 'farm' aphids for their undigested sap secretion; they also protect and defend aphids from natural predators. Tanglefoot is an effective barrier against crawling insects that must reach the tops of trees in order to feed, mate or deposit eggs. As the insects climb up over the sticky material they become trapped. Tanglefoot is an effective natural tool in our IPM strategy.

In areas where aphids have caused higher than average public concern, and a previous treatment of predatory insects occurred, we've prescribed a high-pressure water spray. The goal is to dislodge the aphids form the underside of the leaves while minimizing the reduction of previously released predators.

In areas where aphids have caused higher than average public concern, and no previous treatment of predatory insects occurred, we've prescribed an application of insecticidal soap. Insecticidal soap is a product containing natural ingredients such as animal fats and plant oils, useful for controlling aphids to initially reduce large populations.

Cankerworm control

In addition to the application of Tanglefoot the previous fall, a follow-up treatment using a biological was tested. Bacillus thuringiensis (Bt K) was sprayed in trees where public concern reached higher than normal levels. BT is a biological insecticide for use against leaf-chewing larvae (caterpillars) of certain lepidopterous species. Results can be very effective when coupled with tanglefoot.

Weed control - Weed control is conducted to suppress the growth of vegetation at the base of trees located in parks and on street boulevards. The objective is to reduce the competition between the juvenile tree and the vegetation, prevent mower injury to the tree, reduce compaction to the tree's root zone and improve the aesthetics of the site. We have seen considerable success in suppressing weeds at the base of trees, resulting in little damage to the trees and increased tree vigour.

Deep root fertilizer injection

In a natural setting, trees are fed by the rich blanket of humus on the forest floor. However, in our urban landscaped environment, fertilizer is needed to supplement this natural food. The urban landscape also adds additional stresses such as compacted soils, air pollution, road salts, poor drainage, and competition with turf grass. Stressed trees are more susceptible to infestation by insects and disease.

One way of reducing pests and compaction to the tree's root zone, while improving the health and aesthetics of the site, is to ensure they receive a proper supply of nutrients. A deep root fertilizer injection is an effective method to fertilize trees. This process injects a water and fertilizer mixture under high pressure below the soil surface. The injections are placed in a grid pattern in and around the tree's drip line close to the feeder roots. There are many advantages to fertilizing this way. The high-pressure injection forces the water and fertilizer mix throughout the root zone, which not only feeds the roots, but also reduces soil compaction and encourages additional root zone aeration.

Athletic Fields

For high quality athletic fields, the City uses cultural practices to promote healthy, high density turf. These practices, which include top dressing with sand, over-seeding, fertilization, aeration and irrigation generally ensure that the grass outgrows the weeds, reducing the need for chemical control of weeds that can cause turf grass to become lumpy or slippery, conditions which can lead to player injury.

The City undertakes an annual weed infestation count to track the effectiveness of weed control. The results of this quantitative sampling helps target fields that are incurring high levels of weed infestation and helps to inform the pest suppression program. As weed infestations are not normally evenly distributed throughout the sports field, weed counts are supplemented by in-field analysis of weed distribution, leading to spot-spraying target areas. ***In 2008, only 1.9 litres of liquid herbicide were used on all 211 playing fields in the City.***

Most weed infestations are occurring at the borders of sport fields, where broadleaf weeds thrive in the perimeter turf areas, growing in soils that are heavily compacted, poorly fed and not watered adequately for high turf density. At present there are no specific cultural IPM practices for these perimeter passive areas.

The greatest advance in reducing reliance on pesticides associated with athletic fields is the development of new artificial turf fields. Each of the these fields provides the same amount of

field time as six natural grass fields, lessening the demand not only for new fields, but also reducing our use of pesticides.

A new steam treatment was piloted for weed control on gravel all-weather fields. The results of this trial were not encouraging, and staff have gone back to regular scarification (through drag floating) of the gravel all-weather fields, supplemented with spot spraying of weeds when the fields were closed.

Passive Turf

Weeds, diseases and insects are currently tolerated in passive grass areas throughout the park system.

Limited aeration and fertilization routines are currently implemented on some passive turf areas, typically on public building grounds. In general, there is room for more aggressive activity to enhance grass growth and suppress weed species

Fencelines/Backstops/Carstop Rails

A single annual application of a systemic herbicide is used where no paving strip was installed at the time of construction, thereby reducing the labour required to trim passive turf areas.

Horticulture Planting Beds

Shrub planting density is such that at maturity, no room remains for weed growth. In a related fashion, effective use of groundcover species also help eliminate opportunity for weeds to become established. During the establishment period of a new bed, pre-emergent herbicides are used, in conjunction with mulches, to suppress weeds.

Pre-emergent herbicides are used in conjunction with mulches to suppress perennial weed development in some established beds. Those beds typically selected for herbicide treatment would be woody or perennial in nature and may be located in areas that are difficult and time consuming to staff to undertake manual removal.

Manual removal is used to control annual weed growth in most beds. Plant species susceptible to disease or insects are replaced with resistant varieties. Biological controls have been periodically utilized to manage insect infestations on some problem plant material.

Parking Lots and Hard Surfaces

Debris removal from parking lots by blowing or sweeping is done in order to reduce the opportunity for weeds to become established in cracks and in built-up organic matter.

Annual weeds that have become established in cracks are removed manually or mechanically trimmed to grade.

Herbicides are occasionally used where perennial weeds have become established and are causing damage to infrastructure.

Plants in Specialty Gardens

Diseases and insect infestations of high value ornamental trees and shrubs are occasionally treated with pesticides in specialty gardens such as Darts Hill or the Glades. More often, susceptible species are replaced with resistant varieties.

Tree circles are treated with pre-emergent herbicides and mulched to avoid establishment of weeds that would adversely affect the tree health by competing with it for water and food.

Playgrounds

Weeds are manually removed on a regular basis. New washed sand is spread, reducing weed growth. Existing play surfaces may be removed and replaced with engineered wood fibre which does not serve as a growing medium for weeds. Wasp, hornets and bees are sprayed on demand if determined to be a nuisance. If a nest is discovered above ground, staff sometimes removes it manually at night. At times, a propane tiger torch is used to burn and stunt weed growth.

Bridges and Stairs

A regular cleaning maintenance program prevents algae growth. These surfaces are blown clean on a regular basis or power washed to avoid build-up of organic materials.

Water Spray Parks

Power washing is carried out to prevent algae build up. At times (pre and post season only) Glyphosate may be applied in cracks as a spot spray for deep-rooted weeds. This is applied only on the nuisance plant following the autumn closing of water parks. A regular cleaning schedule controls most weeds, but at times we use a propane tiger torch to burn and stunt weed growth

Tennis Courts and Sport Boxes

Regular maintenance practices such as blowing surfaces clean and manual weed control prevents most weeds. Some spot spraying of Glyphosate and at times a pre-emergent herbicide are applied to control deep-rooted weeds to prevent further damage to court surfaces. Courts are pressure washed every three (3) years.

Appendix 3
Draft By-law

CITY OF SURREY

BY-LAW NO._____

A by-law to control the use of pesticides.

…….

WHEREAS Council of the City of Surrey deems it expedient to regulate the use of pesticides for non-essential purposes within the City of Surrey; and

WHEREAS Council of the City of Surrey, pursuant to Section 8 (3) (j) and Section 9 of the *Community Charter*, S.B.C. 2003, c. 26, as amended, may pass a by-law regulating the use of pesticides.

NOW, THEREFORE, the Council of the City of Surrey, in open meeting assembled, HEREBY ENACTS AS FOLLOWS:

1. In this By-law:

"**Agricultural Land**" means land that is classified as a farm under the *Assessment Act*, R.S.B.C. 1996, c.20;

"**Agriculture**" means any activity carried out on Agricultural Land that falls within the definition of "farm operation" in the *Farm Practices Protection (Right to Farm) Act*, R.S.B.C. 1996, c.131;

"**Hard Landscape**" means any constructed surface typically used for landscaping such as asphalt, concrete, rocks, gravel, treated wood or brick pavers;

"**Infestation**" means the presence of a Pest in numbers or under conditions that involves an immediate risk of damage to property or significant financial loss in respect of the use of property;

"**Non-essential**" means the use of a Pesticide for an aesthetic pursuit;

"**Noxious Weed**" means a weed that has been designated as Noxious under the Weed Control Regulation of the *Weed Control Act*, R.S.B.C. 1996, c 487;

"**Permitted Pesticide**" means a Pesticide listed in Schedule A of this By-law;

"**Pest**" means an injurious, noxious or troublesome living organism, but does not include a virus, bacteria, fungus, or internal parasite that exists on or in humans or animals;

"**Pesticide**" means a micro-organism or material that is represented, sold, used or intended to be used to prevent, destroy, repel or mitigate a Pest, and includes:

(a) a plant growth regulator, plant defoliator or plant desiccant;

(b) a control product as defined in the *Pest Control Products Act* R.S.C 2002, c. 28;

"**Public Lands**" means lands vested in, owned or controlled by the City of Surrey;

"**Private Lands**" means lands designated as a separate and distinct parcel on a legally recorded subdivision plan or deed filed in the records of the Lands Titles Office, used for residential purposes;

"**Sensitive Ecosystem**" means Private Lands or Public Lands with one or more of the following characteristics:

(a) areas or landscape features identified in a City of Surrey plan, map or zoning bylaw as environmentally sensitive, environmentally significant, environmental protection area, development permit area for protection of the environment, or other similar purpose that is compatible with the conservation of ecological features and functions of the site; or

2. Except as permitted in this By-law, no person shall apply a Pesticide on outdoor trees, shrubs, flowers, other ornamental plants, and turf on Public Lands or Private Lands within the City of Surrey.

3. Section 2 of this By-law shall not apply to the application of a Pesticide used for:

(a) Agriculture and any other form of crop production on Agricultural Land;
(b) controlling a Pest on the residential portion of Agricultural Land;

(c) Forestry operations;

(d) controlling or destroying a Noxious Weed;

(e) controlling a Pest on buildings or structures, or inside buildings or structures;

(f) ensuring the safety of pedestrian surfaces or sport surfaces;

(g) low environmental and human health impact Pest control treatment with a Permitted Pesticide;

(h) managing of outbreaks of an introduced invasive exotic or foreign Pest;

(i) managing of Pests that threaten Sensitive Ecosystems;

(j) preventing the deterioration of hard landscapes;

(k) purifying water used for human or animal consumption; and

(l) responding to human or animal health issues.

4. Every person who violates any of the provisions of the By-law or who suffers or permits any act or thing to be done in contravention of this By-law or who neglects to do or refrains from doing any act or thing which violates any of the provision of this By-law shall be liable to the penalties hereby imposed and each day that such violation is permitted to exist shall constitute a separate offence.

5. Any person who violates any of the provisions of this By-law shall, upon summary conviction, be liable to a penalty of not less than $100 and not more than $10,000 plus the cost of the prosecution, or to a term of imprisonment not exceeding six (6) months, or both.

6. This By-law may be cited as “Surrey Pesticide Use Control By-law, 2009, No.____”.

PASSED THREE READINGS on the _____ day of _____, 2009.

RECONSIDERED AND FINALLY ADOPTED, signed by the Mayor and Clerk, and sealed with the Corporate Seal on the _____ day of _____, 2009.

_____MAYOR

_____CLERK

SCHEDULE "A"

Permitted Pesticides

The following substances or devices are Permitted Pesticides and shall be excluded from the provisions of this By-law:

1. Algicides and bacteriacides used in swimming pools, wading pools, whirlpools and ornamental fountains
2. Animal or bird repellents
3. Anti-fouling paints
4. Bacillus thuringiensis (Bt)
5. Bait insecticides, whereby the bait is enclosed by the manufacturer in a plastic or metal container made in a way that prevents or minimizes access to the bait by humans or animals;
6. Borax
7. Bordeaux mixture and other sulphur compounds
8. Capsaicin
9. Deodorizers
10. Diatomaceous earth
11. Ferric phosphate
12. Injected tree treatments
13. Insecticidal soaps
14. Mineral oils used for insect or mite control
15. Nematodes used for insect control
16. Pesticides used in aerosol containers
17. Pheremones used in conjunction with insect traps
18. Pruning paint
19. Pyrethrum and phethrin
20. Rodenticides
21. Rotenone

22. Sticky traps and other sticky media
23. Wood preservatives