
CITY OF KELOWNA
MEMORANDUM

Date: July 3, 2007
File No.: 5280-05
To: City Manager
From: Environment and Solid Waste Manager
Subject: **Pesticide Reduction Strategy**

RECOMMENDATION:

THAT Council receive the attached staff report (attach 1) summarizing the findings from Environment Division Staff and the Pesticide Bylaw Staff Advisory Committee.

AND THAT Council endorse *Option 1: Implementation of a Pesticide Bylaw restricting the use of cosmetic, non-essential pesticides partnered with a comprehensive "Be Pesticide Free" education campaign.*

AND THAT Council direct staff to proceed with a survey of Kelowna residents to establish baseline data of pesticide use in the community.

AND THAT Council direct staff to prepare a bylaw to restrict cosmetic use of pesticides on public and private property for implementation in January 2009.

AND THAT Council approve a five year phase in for City of Kelowna waterfront parks and an ongoing exemption of city sportsfields until results of pilot work demonstrates cost effective measures to achieve a community acceptable service level and future budgets adjustments are made to accommodate required maintenance and capital programs.

AND THAT Council direct staff to bring forward 2008 budget submissions of \$90,000 to cover the costs of an education campaign prior to the implementation of a bylaw, and \$175,100 for park operating and \$60,000 capital costs. Additional parks operating and capital costs will be phased in over a total of five years.

AND FURTHER THAT Council forward the above recommendations to the Regional Board for region-wide consideration.

Background

At the regular meeting of Council held January 30, 2006 approval was given to establish a Pesticide Bylaw Staff Advisory Committee. The purpose of the committee was to review options for the reduction of pesticide usage with particular focus on pesticides that are used for cosmetic purposes.

The committee was made up of stakeholders and interest groups including those opposed to pesticide use, as well as those whose business it is to apply pesticides to residential and commercial properties. The views of various committee members are attached (Attach 2) for Council's information.

Discussion

Pesticide registration and sales are regulated by Federal and Provincial Governments respectively. Many commonly used pesticides, such as Diazinon, have recently come under review by the Pesticide Management Regulatory Agency (PMRA), resulting in many products being phased out or restricted. However, there have been increasing concerns from the medical and scientific community as well as citizens regarding the impacts of registered pesticides. Some municipalities are lobbying upper levels of government for more stringent regulations. Many municipalities across Canada are exercising their rights to protect their residents and the environment and have been passing bylaws restricting pesticide use for cosmetic (aesthetic) purposes. To date some 40% of Canadians are living in communities with a cosmetic pesticide ban in place, some 13 additional communities have bylaws in draft stage and many others are considering similar measures. The detailed report attached outlines the background leading to those decisions as it relates to our community.

A cosmetic pesticide bylaw will have impacts on the community and the lawn care industry. The community will have to increase their tolerance of weeds and / or increase their costs for use of alternative methods or increase their time for mechanical removal. The Lawn Care industry will also have to change services that they provide. In Kelowna, there are local lawn care companies that currently offer environmentally friendly lawn care services. A Regional Municipality report from Halifax reviewed the bylaw following its second year noted that some major pesticide application companies, while opposed to the bylaw, had diversified their operations and were experiencing new business opportunities (King, 2002). Statistics Canada's Business Patterns data showed that Toronto has experienced a 30% increase in the number of companies in the lawn care and landscaping sector since 2001. Additionally, approximately one-quarter of Toronto households with lawns reported hiring a lawn care service, a proportion that has remained relatively consistent between 2003 and 2005 when the bylaw was enacted for lawn care companies (Toronto Public Health, 2007).

The impact on City operations is summarized and also outlined in the attached Environment Division Staff Report.

- a) The City's Roadways Division has identified that they can achieve a reasonable service level for crack and crevice maintenance on sidewalks with mechanical means at current budget levels based on current contractor pricing.
- b) Parks has significant concerns that sports users and tourism will be affected due to an expected reduction in the quality of the sportsfields and all waterfront parks, in particular Waterfront Park. The Parks Division has identified that due to the extensive use of their sportsfields, plus the demands of users for weed-free fields, that they will require additional fields to allow for regular closure of fields for rehabilitation and also additional maintenance periods. They have identified the need for additional budget funds, both operating and capital, to achieve this at a time when there are significant financial pressures on the Parks budget to address many community demands. Details of the cost implications are outlined in this report under Section 6.2.2. The report identifies that to maintain current service levels could cost \$740,000 in additional annual operating costs and \$2.7 million in capital costs. Due to the financial impacts on the Parks Division (and the City taxpayer) and recognizing their extensive IPM measures and low pesticide use, special consideration is recommended. The strategy for the Parks Division is to be cosmetic pesticide free in waterfront parks within a 5 year period, conduct pilot work for sportsfields with a goal to pesticide free sometime in the future, and be cosmetic pesticide free in all other parks beginning 2009. During that period the Parks Division would report back to Council regularly on the results of pilot programs and updated costs for sportsfields.

Staff recommends that Council move to implementation of a cosmetic pesticide bylaw in the interests of the health of residents and our environment. A **cosmetic bylaw** would restrict the use of pesticides on public and private property on lawns, trees, shrubs, flowers and hard surfaces (asphalt, concrete, rocks and gravel, treated wood, brick pavers, crack and crevice). It will require an education period prior to implementation, ongoing education and ultimately enforcement once in place.

Consideration for a region-wide by-law should also be reviewed by RDCO. A region wide bylaw would benefit the environment and help with consistency in regards to environmental education of the entire Central Okanagan. It would also help the business community who provide pesticide products for residents throughout the area. Currently there is a "no pesticide use policy" for RDCO Parks.

Staff recommend that Council consider a bylaw be drafted and brought to Council for consideration before year end 2007. It is expected that 2008 be an educational and transition period for property owners and the lawn care industry and that the bylaw go into effect in 2009.

FINANCIAL/BUDGETARY CONSIDERATIONS:

Environment Division budgetary considerations:

- \$50,000 for the "Be Pesticide Free" education campaign;
- \$30,000 for 1 seasonal employee or contractor from March through September to administer the education and /or permitting program; and
- \$10,000 would be allotted for a survey of Kelowna residents to establish baseline data of pesticide use in the community in 2008 and for enforcement tools such as soil and water samples beginning in 2009.

Parks Division budgetary considerations:

- \$40,000 annually for pilot program work
- \$300,000 for capital cemetery renovations (to be phased over 5 years);
- \$118,000 for maintaining waterfront parks (to be phased over 5 years);
- \$223,000 for maintaining all other park areas (to be phased over 2 years); and
- Costs for maintaining sport turf without pesticides: to be determined based upon pilot program. Estimated at \$400,000 annually.

INTERNAL CIRCULATION TO:

Director of Works and Utilities, Director of Recreation, Parks and Cultural Services, Director of Financial Services, Environment Division Supervisor, Parks Manager, Urban Forestry Supervisor, Roadways Manager, Environmental Technician

PERSONNEL IMPLICATIONS: hiring of 1 seasonal employee or contractor from March through September to administer the education and/or permitting program; Parks to use additional staff and/or contractors as appropriate.

ALTERNATE RECOMMENDATIONS:

BYLAW RELATED ALTERNATIVE RECOMMENDATIONS

Option 2: Implementation of a Pesticide Bylaw which:

- a) restricts the use of "weed and feed" type products, and / or
- b) regulates that only applicators certified by the Ministry of Environment IPM Program may apply pesticides.

This option needs to be partnered with a comprehensive "Be Pesticide Free" education campaign.

Cost: \$90,000

Level of Anticipated Effectiveness: Low to Moderate

Option 3: Intensify the "Be Pesticide Free" education campaign.

Cost: \$80,000

Level of Anticipated Effectiveness: Low

EXTERNAL AGENCY/PUBLIC COMMENTS: Attachment 2 includes comments from members of the Pesticide Bylaw Staff Advisory Committee, Appendix 2 of the Environment Division Staff Report includes comments from the Interior Health Authority and Appendix 3 of the Environment Division Staff Report includes comments from the Canadian Cancer Society.

LEGAL/STATUTORY AUTHORITY: Permitted throughout B.C. and the rest of Canada

LEGAL/STATUTORY PROCEDURAL REQUIREMENTS: Development of bylaw limiting pesticide usage as outlined in the report

EXISTING POLICY:

Council Resolution Monday, January 30th, 2006

THAT the Commercial Pesticide Notification Registry be continued for residential properties in 2006 with the following change:

- The codling moth (SIR Program) and cherry fruit fly spraying are removed from the exemption category; therefore, commercial spray operators will be required to provide notification as requested by registrants;

AND THAT staff continue to develop a "Be Pesticide Free" education campaign that provides alternatives to pesticide use;

AND THAT staff continue researching pesticide bylaws and report back to Council in late 2006;

AND FURTHER THAT staff form a pesticide bylaw advisory committee to research bylaws and alternatives.

Council did not support and therefore removed the third paragraph of the staff recommendation for the City to hire a consultant to conduct a public survey and to host public meetings to gauge the effect that a bylaw would have and the level of public support for pesticide reduction.

Council agreed that there if there is a question in the next citizen survey to do with public support for a pesticide bylaw, the question should be removed.

TECHNICAL REQUIREMENTS: N/A

Mark Watt

Attachments: Environment Staff Report (Attachment 1)
Committee Members Comments (Attachment 2)

cc: Director of Works and Utilities
Director of Recreation, Parks and Cultural Services
Director of Financial Services
Environment Division Supervisor

Parks Manager
Roadways Manager
Pesticide Bylaw Advisory Committee
Urban Forestry Supervisor
Environmental Technician

1.0 Introduction

Each year the Environment Division receives requests for Kelowna to take a stronger approach to protecting its citizens from pesticide use and unsolicited exposure. Municipalities across Canada are recognizing this growing concern; to date, approximately 40% of Canada's population is protected from unwanted exposure through bylaws restricting the use of cosmetic pesticides.

To gauge Kelowna residents on their views of a pesticide bylaw, the following question was included in the Citizen's Survey in 2003, 2004 and 2005:

"Should Kelowna have a bylaw that would restrict the use of herbicides and/or pesticides for cosmetic purposes on public and private property?"

In 2003, 47% of residents surveyed said "YES". That number increased in 2004 to 62% and in 2005 it remained high at 59%, demonstrating strong public interest. Recognizing that there was growing public interest in a bylaw restricting pesticide use, Council directed staff to remove the question from the Citizen's Survey for 2006 and that staff continue researching pesticide bylaws and that staff form a pesticide bylaw advisory committee to research bylaws and alternatives, reporting back to Council with findings (Council meeting, January 30th, 2006). The following report highlights committee findings, staff recommendations and cost estimates.

2.0 Pesticide Bylaw Staff Advisory Committee

The Pesticide Bylaw Staff Advisory Committee was formed in March 2006 under the direction of Environment Division Staff, with the intent of involving a wide range of stakeholders. This committee was formed, not to achieve consensus, but to provide a variety of opinions and expertise in the area of pesticides, bylaws and reduction. Committee members and their associations are as follows:

- Michelle Kam, COK, Chair of Committee
- Danielle Drieschner, COK
- Ian Wilson, City Urban Forestry Supervisor, COK
- Rhoda Mueller, Central Okanagan Regional District Bylaw Enforcement
- Annette Stevens, medical doctor
- Bruce Perrin, Integrated Pest Management Manager
- Carson Tse, Len Good (replaced Carson Tse), commercial pesticide spray operator
- Doug Bakker, organic lawn care provider
- Jeff Bennett, golf course superintendent
- Lloyd Manchester, environmental organization
- Mario Lanthier, horticulture research and advising
- Steve Marino, pesticide supplier
- Valary Chidwick, member of the public

The committee met on a monthly basis, sharing their expertise and receiving information from several presenters including the following:

- Yvonne Herbison, Regional Pesticide Officer for Health Canada
- Jane Stock, Executive Director for the BC Landscape and Nursery Association
- Carol Rubin, Author of How to Get Your Lawn and Garden Off Drugs (public forum)
- Dr. Paul Hasselback, Medical Health Officer for Interior Health Authority
- Dr. Warren Bell, family physician and past founding president of the Canadian Association of Physicians for the Environment (public forum)

- Mae Burrows, Executive Director of the Labour Environmental Alliance Society (public forum)
- Kathryn Seely, Public Issues Manager, BC and Yukon, of the Canadian Cancer Society (public forum)

The Pesticide Bylaw Staff Advisory Committee formed three subcommittees on June 28th, 2006:

1. Bylaw subcommittee
2. Bylaw Alternatives subcommittee
3. Health and Environment subcommittee

These subcommittees researched information and presented findings and recommendations to the committee which were incorporated into this document.

3.0 Definitions and Pesticide Bylaws and Strategies

3.1 Definitions

Pesticides include such products as insecticides, fungicides, rodenticides, and herbicides and are defined under the BC Integrated Pest Management Act (2003) as "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 (Canada), and (c) a substance that is classified as a pesticide by regulation."

Cosmetic, non-essential pesticides are products used for an aesthetic purpose or non-essential use. For instance, pesticides used to keep a lawn weed-free. A **cosmetic bylaw** would restrict the use of pesticides on public and private property on lawns, trees, shrubs, flowers and hard surfaces (asphalt, concrete, rocks and gravel, treated wood, brick pavers, crack and crevice).

3.2 Existing Pesticide Bylaws In Canada

In May 1991 the town of Hudson, Quebec passed a bylaw banning pesticide use on public and private property for cosmetic (aesthetic) purposes. When challenged by local lawn care companies, the Quebec Superior Court and the Supreme Court of Canada upheld Hudson's Bylaw 207. With this precedent set, municipalities have the right to protect the health of their residents and the environment.

The total number of Canadians that are protected from unwanted exposure to cosmetic lawn pesticides through a bylaw is 12.4 million, or approximately 40% of Canada's population, including the entire province of Quebec (based on the 2001 StatsCan Census) (<http://www.flora.org/healthyottawa/BylawList.pdf>).

In British Columbia, the City of Vancouver, Maple Ridge, City of North Vancouver, West Vancouver, Port Moody, Comox, Gibsons and Cumberland have all adopted pesticide bylaws. The District of North Vancouver, New Westminster, Nelson, Kamloops and Salmon Arm have bylaws drafted and under review. (<http://www.flora.org/healthyottawa/BylawList.pdf>)

3.3 School District #23 and Central Okanagan Regional District Parks – Pesticide Free

Locally, School District #23 has not applied pesticides to their grounds since 2004. They currently have an Integrated Pest Management plan in place; whereby, any use of pesticides would have to be approved by the District Board. The School District

increased their maintenance budget by approximately \$110,000 to account for additional staff and equipment to be pesticide free.

The Regional District of the Central Okanagan has not applied pesticides to their parks since the late 1980's. Manual labour is used to remove weeds in their parks, paths and walkways. Field and turf areas are aerated, top-dressed and fertilized and mowed regularly as part of their horticultural practices. Some weeds are present, but they receive few complaints from the public in regards to their sportsfields. If an exemption is required, Regional Board approval is necessary. This approval has only been required once in the past decade and an organic pesticide was used for treatment (Foster Sexsmith, pers. comm., 2007).

4.0 Health and Environment Subcommittee Findings

4.1 Pesticides and our Health

The Health and Environment subcommittee reviewed literature for information on the impact of lawn and garden pesticides on human health, with a focus on the general public and children. The attached summary document (Appendix 1) is based on peer reviewed scientific and medical research and provides an overview of health effects, vulnerable populations, types of scientific research used to evaluate pesticide impacts and employing the precautionary principle when considering protecting the public from unnecessary pesticide exposure.

Key points from the attached document are summarized as follows. Pesticides are materials used to prevent, destroy or repel pest organisms such as plant insects and diseases, weeds, or structural pests (Adams, 2005). Pesticides by their nature are toxic agents; they are designed specifically to interfere with normal physiological and growth functions of organisms (Hasselback, pers. comm., 2006).

There is consensus amongst the pesticide industry, government regulating bodies and medical communities that pesticide exposure has the potential to cause harm to human health. Potential harms to human health include both acute and chronic toxicity (Adams, 2005). Acute toxicity describes adverse effects resulting from short term or single exposure, while chronic toxicity describes adverse health effects from repeated exposures, often at low levels, to a substance over an extended time period.

Acute effects are those that occur abruptly after exposure to pesticides and can range from the more common allergic reactions, skin sensitivity and eyes/ears/nose irritation to death (Standing Committee on Environment and Sustainable Development, 2000). Chronic toxicity can lead to:

1. Cancers (multiple types)
2. Reproductive Effects
3. Neurological Effects (such as Parkinson's disease)
4. Immune system suppression and endocrine alterations (Toronto Public Health, 2002).

Throughout Canada, different levels of government, health authorities and medical bodies are utilizing a concept known as "the precautionary principle." One definition of this principle is "when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically" (CPCHE 2005:94). It is with this premise that the Health and Environment subcommittee recommends that the City enact a Pesticide Bylaw restricting the use of cosmetic, non-essential pesticides.

Numerous organizations and residents have written to the City of Kelowna in support of implementing a pesticide bylaw including the Interior Health Authority (Appendix 2), the Canadian Cancer Society (Appendix 3), Faculty of Health and Social Development of UBC Okanagan, Community Action Toward Children's Health and the Canadian Association of Physicians for the Environment.

4.2 Pesticides and the Environment

The summary document, Pesticides and the Environment (Appendix 4) describes some of the potential effects that pesticides can have on ecosystems, fish and wildlife populations.

Pesticides can easily move from their site of application to the broader environment via air, water and soil. Dispersal of pesticides can lead to non-target organisms being exposed to pesticides. Acute pesticide exposure can result in direct mortality of fish and wildlife. Broader impacts to populations may occur, such as:

- Reduced reproductive success due to pesticide impacts on sterility, fertility, sexual development, mating behaviours;
- Disruption of normal growth and development;
- Degradation of habitat – injury to non-target plants and loss of food sources (vegetation and insects); and
- Salmonid olfactory senses (used for finding native streams) impacted by low levels of pesticides such as glyphosate (Round-up), Diazinon, and Atrazine (Tierney et al, 2006).

Pesticide impacts on the environment can be widespread, with total cumulative effects of multiple pesticides often unknown. The toxicity of pesticides is evaluated based on the active ingredient, but the inactive ingredients and surfactants may pose additional environmental health risks. Furthermore, when products are introduced into the environment they combine with other factors that may amplify their toxicity. Some studies have shown amplified toxicity of pesticides when natural stressors such as predators and limited food sources are present (Relyea and Hoverman, 2006).

5.0 Options

Environment Division Staff, in conjunction with the Pesticide Bylaw Advisory Committee, developed and discussed the following options for presentation to Council.

Option 1: Implementation of a Pesticide Bylaw restricting the use of cosmetic, non-essential pesticides partnered with a comprehensive "Be Pesticide Free" education campaign.

Cost: \$90,000 (annual budget of \$20,000 already in place)

Level of Anticipated Effectiveness: Moderate to High

The Canadian Centre for Pollution Prevention researched the impacts of bylaws and public education programs on reducing the cosmetic use of pesticides and determined that:

"Only those communities that passed a by-law and supported it with education or made a community agreement were successful in reducing the use of pesticides by a high degree (51-90%). Education and outreach programs alone, while more popular than by-laws, are far less effective. We could find none that have achieved more than a low reduction (10-24%) in pesticide use to date (CCPP and Cullbridge Marketing, 2004, pg. 3)."

The Pesticide Bylaw Subcommittee recommended that the City of Kelowna should enact a pesticide bylaw restricting the use of cosmetic, non-essential pesticides in the City of Kelowna. Based on these recommendations, staff propose a bylaw containing the following provisions:

- A **cosmetic bylaw** would restrict the use of pesticides on public and private property on lawns, trees, shrubs, flowers and hard surfaces (asphalt, concrete, rocks and gravel, treated wood, brick pavers, crack and crevice);
- That the bylaw be enacted in 2009 for residents and commercial spray operators with a comprehensive "Be Pesticide Free" education campaign beginning in 2008;
- That the bylaw be combined with a larger "Be Pesticide Free" education program to show the public what alternatives exist and how to use them. This education campaign needs to be an ongoing, multi-year program to foster social norm;
- That agricultural lands and backyard fruit trees be exempt from the bylaw;
- That Parks be permitted a five year phase-in period (up to 2013) for elimination of pesticides in waterfront parks and an ongoing exemption of city sportsfields until results of pilot work demonstrates cost effective measures to achieve a community acceptable service level and future budgets adjustments are made to accommodate required maintenance and capital programs. Parks would need to eliminate pesticides on all other parks and open spaces effective 2009;
- That the bylaw contains a provision that includes reducing pesticide use on golf courses. All golf courses would need to have an Integrated Pest Management (IPM) Plan and licensed applicators on staff who must follow the guidelines set out by the IPM Act. Notification would have to be clearly posted to notify golf course users of any pesticide application;
- That the bylaw contains a permitting process for "exemptions". Applicant must provide justification that alternative methods have been exhausted or that no alternative methods are available. Posting requirements would apply should the "permitted pesticides" use be allowed;
- That the bylaw not supersede existing municipal law, such as the Noxious Weed and Noxious Insect Bylaws. An exemption permit would still need to be obtained in order to combat pests/weeds that are included in the aforementioned bylaws;
- That no spraying of residential trees be allowed, except for "permitted pesticides", except for those pests found in the Noxious Insect Bylaw and with approval of an exemption permit. Pesticide alternatives or least toxic products should be encouraged if available;
- That the use of pesticides, except for "permitted pesticides", in hard landscapes such as asphalt, concrete, rocks and gravel, treated wood, brick pavers, cracks and crevices be discontinued;
- That the bylaw contains a schedule of permitted pesticides which exempts such products as insecticidal soaps, dormant oils and biological alternatives. This list will need to be reviewed annually as it will evolve as new products and research are available;
- That the City of Kelowna's Commercial Pesticide Notification Registry Program remain in place so residents are notified by commercial spray operators when permitted spray operations are occurring (through exemption permit process);

- That the bylaw be on a “complaint only” basis, as per other City of Kelowna bylaws. The bylaw would act as an educational tool to inform Kelowna’s citizens of pesticide exposure risks and less harmful alternatives; and
- That the bylaw contains an offence section and that the first offence has a warning provision.

In order for the City of Kelowna to significantly reduce pesticide usage, **Option 1** is anticipated to be the most effective and is recommended by Environment Division Staff, the Bylaw Subcommittee and the Health and Environment Subcommittee.

Option 2: Implementation of a Pesticide Bylaw which:

- a) restricts the use of “weed and feed” type products, and / or
- b) regulates that only applicators certified by the Ministry of Environment IPM Program may apply pesticides.

This option needs to be partnered with a comprehensive “Be Pesticide Free” education campaign.

Cost: \$90,000

Level of Anticipated Effectiveness: Low to Moderate

The Pesticide Bylaw Alternatives subcommittee recommended alternatives to a pesticide bylaw restricting the use of cosmetic, non-essential pesticides. Based on staff review of their recommendations, alternatives to a pesticide bylaw would include the following:

- a) A bylaw that prohibits the use of “weed and feed” products, as they contribute towards unnecessary pesticide usage. “Weed and feed” products tend to be over-purchased and over-applied to the entire lawn, not merely to the problem areas, thus contradicting pesticide reduction strategies (www.flora.org/healthyottawa/weed-and-feed.htm). Many residents who purchase these products are unaware that they are applying pesticides and that these products contain 2,4 –D, Mecoprop and/or Dicamba.
- b) A bylaw that regulates that only applicators certified by the Ministry of Environment IPM Program may apply pesticides. Persons applying pesticides would have to submit a copy of their pesticide applicators certificate to the City. The onus would be on the commercial operators and it would be assumed that certified applicators are following the principles of the IPM Act and applying pesticides as directed in a responsible manner and only as a last resort. Non-certified homeowners would not be permitted to apply pesticides registered by the Ministry of Environment for domestic use; however, they would be permitted to apply products classified under the BC Integrated Pest Management Act as excluded pesticides, including such products as acetic acid (vinegar), fatty acids, domestic and commercial soaps and domestic mineral oils for insect and mite control (ex: dormant oil).

The level of anticipated effectiveness for Option 2 is low to moderate due to the fact that pesticides would still be permitted by commercial spray operators; therefore, pesticides would still be applied for cosmetic purposes in the City of Kelowna.

Option 3: Intensify the “Be Pesticide Free” education campaign.

Cost: \$80,000

Level of Anticipated Effectiveness: Low

Regardless of whether or not a bylaw is implemented, the Pesticide Bylaw Staff Advisory Committee recognizes that education is a critical component for achieving a reduction in pesticide use.

To ensure a successful education program, there should be numerous concurrent forms of education including:

- Survey of Kelowna residents to determine current level of pesticide use (this is necessary to establish a measurable goal for pesticide reduction);
- Advertising through various media forms on negative impacts of using pesticides and encouraging pesticide alternatives and sustainable landscaping practices;
- Brochures and fact sheets on pesticide alternatives, available on the City webpage and in printed form;
- Education programs offered to residents at public events and to students through local schools, to better educate students and families about pesticide risks;
- Education of local pesticide retailers, staff and customers on pesticide alternatives and sustainable landscaping by providing point of sale education materials;
- Free seminars throughout the gardening season to educate residents on pesticide-free gardening and landscaping practices;
- Lobbying the federal government to cease registration of higher risk products and to expedite registration of environmentally friendly alternatives and lobbying the provincial government to remove pesticide products from retailers;
- Encourage pest management companies to offer 'organic' alternatives to traditional pesticide treatments, possibly through incentive programs;
- Provide incentives to landowners and businesses who practice environmentally friendly landscaping and pest management;
- Provide education to sports organizations regarding essential turf field rest rotation;
- Work with golf courses to reduce pesticide use and provide education to golfers;
- Work with homeowners and commercial spray operators to provide pesticide alternative information for backyard trees and information on naturalized pests that do not require control; and
- Educate public on increasing their tolerance threshold for weeds.

The level of anticipated effectiveness for Option 3 is low. An analysis of municipal best practices relating to bylaws and education programs for pesticide reduction revealed that pesticide use reduction in communities that only adopted education programs was 10% to 24%, while bylaws combined with education efforts achieved reductions of 51% to 90%.

Option 4: Status quo: staff will continue to administer the Commercial Pesticide Notification Registry, as well as the current provisions of the "Be Pesticide Free" campaign.

Cost: \$20,000 (current annual budget)

Level of Anticipated Effectiveness: Low

Living Greener

The City of Kelowna Environment Division has been encouraging Central Okanagan residents to reduce pesticide use since 2002 via the Living Greener Program – a

pollution prevention initiative designed to encourage all Central Okanagan residents to Live Greener for a Sustainable Okanagan. Radio and newspaper ads encouraging pesticide-free lawn and garden practices run each year, in addition to articles in the annual Living Greener Calendar.

Commercial Pesticide Notification Registry

Following Council direction in November 2003, Environment Division Staff established the Commercial Pesticide Notification Registry in 2004 for residential property owners who wish to be informed when commercial spray operations are occurring on abutting residential properties. The program is voluntary for commercial spray operators; however, pest control/landscaping companies currently participate and comply with the program. Notification only applies when commercial spray operators are applying pesticides to residential properties. The program is not applicable if a resident or neighbouring agricultural property is applying pesticides.

Registrants wish to receive notification so they can take measures to protect their households from unsolicited pesticide exposure. Common reasons include children or pets outside, health and wellness choice, windows open and/or organic garden. A number of registrants also cite chemical sensitivity, asthma, or family members suffering from various forms of cancer as their reasoning for wanting advance notice of spray operations.

Be Pesticide Free

In 2006, the "Be Pesticide Free" campaign was introduced. Lawn signs, pesticide alternative information and carabiner key chains were made available to the public on the City website and at public events. Key chains include tips on growing great grass and controlling weeds, insects and disease by creating healthy soil and a balanced ecosystem, without posing a risk to people, pets, wildlife and beneficial insects.



The level of anticipated effectiveness for Option 4 is low.

6.0 Implications

6.1 Lawn Care Industry

The lawn care industry was represented at the committee meetings. They have also provided information to Council with their views. The Integrated and Environmental Plant Management Association (IEPMA) have provided information that suggests that proper use of pesticides is not harmful to the environment and to humans.

A cosmetic pesticide ban would result in impacts on this industry. Some may choose to close operations and others will have to make changes to their services to their customers. This has occurred in other communities that implemented similar bans. There likely will be increased costs to customers to achieve a weed free lawn.

Some local tree and lawn care companies have initiated a letter-writing campaign in opposition of a bylaw restricting cosmetic pesticide use. They have distributed a notice and form letter to their customers that states, "if you are opposed to this possible bylaw we invite you to complete the form below..." with the intention of presenting the information to Council. There is concern that they will not be able to use the federally and provincially approved pesticides; however, they have not yet outlined what costs will be incurred from making the transition to organic, or environmentally friendly pesticide alternatives.

In Kelowna, there are local lawn care companies that currently offer environmentally friendly lawn care services. A Regional Municipality report from Halifax reviewed the bylaw following its second year noted that some major pesticide application companies, while opposed to the bylaw, had diversified their operations and were experiencing new business opportunities (King, 2002). Statistics Canada's Business Patterns data showed that Toronto has experienced a 30% increase in the number of companies in the lawn care and landscaping sector since 2001. Additionally, approximately one-quarter of Toronto households with lawns reported hiring a lawn care service, a proportion that has remained relatively consistent between 2003 and 2005 when the bylaw was enacted for lawn care companies (Toronto Public Health, 2007).

6.2 Cost

6.2.1 Cost of Bylaw Enforcement and Implementation

It is difficult to determine the cost of implementing a pesticide bylaw due to the uncertainty of complaints once enacted. Through consultation with City Bylaw Enforcement and other BC municipalities, it is thought that the cost will not be significant. Each community is different; however, other BC municipalities consulted had received between three and twenty complaints in 2006, which was the first year of their bylaws.

In consultation with other municipalities, staff has derived the following cost estimates. The cost of Options 1, 2 and 3 are similar due to the fact that they include the following elements:

- \$50,000 for the "Be Pesticide Free" education campaign;
- \$30,000 for 1 seasonal employee or contractor from March through September to administer the education and /or permitting program; and
- \$10,000 would be allotted for a survey of Kelowna residents to establish baseline data of pesticide use in the community in 2008 and for enforcement tools such as soil and water samples in 2009 (Options 1 and 2).

A qualified, seasonal employee or contractor will be required for March through September at an estimated annual cost of \$30,000 to:

- administer the proposed exemption permit system;
- provide advice to residents and permit applicants;
- respond to complaints;
- educate residents through site visits;
- inspect and audit performance; and
- assist with the "Be Pesticide Free" education program and Commercial Pesticide Notification Registry.

6.2.2 Cost Impacts for Parks

Parks has eliminated most "cosmetic" use in recent years through a process of extensive Integrated Pest Management practices, public education and increasing tolerance thresholds. Parks staff have provided Council with annual pesticide usage report outlining the measures being used and experimented with as well as the quantities of pesticides used. The City's Parks Department usage is less than 1% of all pesticides used in the community.

An example of increased tolerance levels is where residents who complain about sticky sap dripping from street trees (due to aphid or scale infestations) are educated about the role of natural predators, who usually bring these infestations back under control within a few weeks time. Very little pesticide is used in neighbourhood parks or in areas where tolerance thresholds are much higher.

City-wide and waterfront parks are maintained to a very high standard because of the key role they play in hosting public events (e.g. public concerts, Wakefest, Canada Day), and supporting the Kelowna economy. A study by Kelowna Tourism found that the number one attraction for visiting tourists is beaches and waterfront parks. These parks are high-profile examples of the beauty of Kelowna and are a major source of community pride and identity. Aesthetics are important in these areas, but there are also many economic and cultural reasons for excluding these parks from a cosmetic bylaw.

The costs to implement a full ban are significant for the Parks Department as summarized in Table 1. The operating costs in Table 1 are associated with increased labour and equipment costs required to maintain parks and turf areas without the use of pesticides. For example, mechanical weeding, increased cultural practices such as aeration and overseeding of turf, and periodic replacement of some plant materials.

Table 1. Summary of Parks Operating and Capital costs, 2008-2012. Does not include sport turf, as these costs will be determined through the pilot study.

	2008	2009	2010	2011	2012
Pilot study	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000
Maintain areas other than waterfront parks and sport turf	\$111,500	\$111,500			
Waterfront park (phased in)	\$23,600	\$23,600	\$23,600	\$23,600	\$23,600
Capital works at cemetery	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000
	\$235,000	\$235,000	123,600	\$123,600	\$123,600

The biggest challenge with ramping up the maintenance program for Kelowna's sport turf is the extremely high levels of use. Most Kelowna soccer fields are used so heavily that it is extremely difficult to close them for even a few days for field maintenance. The new Mission artificial field is starting to relieve some of the pressure, but it is also expected that new field capacity will be taken up by additional users. Parks and Recreation uses a benchmark of a maximum 550 hours of use per field each year. Currently Parks turf program is operating very close to maximum capacity, with an average of 560 hours of use per field in 2006, and some fields are at more than 1,000 hours.

In order to perform more maintenance and periodic site rehabilitation and maintain the level of services, Parks' expect to require additional field capacity. This is above and beyond the normal increase in capacity that might be required due to growth. Placing 24 turf fields on a 10-year rehabilitation

cycle would mean that approximately two fields would need to be taken out of circulation every year.

Two options have been explored in order to offer this additional capacity:

1. Buy additional land and construct two new turf fields; estimated cost = \$4.5 million (\$2.25 million for land acquisition, assuming a minimum \$375,000 per ha; \$2.25 million in field construction costs).
2. Convert an existing turf field to artificial turf. One artificial turf field should be equivalent to at least two turf fields as it would allow more intensive levels of use. Estimated cost is \$2.2 to \$2.4 million, not including the cost of field lighting.

In regards to sport turf, Parks proposes to create at least two pilot study areas where certain fields will become pesticide free, and various cultural or other treatments can be tested and compared to conventional pesticide treated fields. This would also allow Parks to better refine operating and capital cost estimates and the impact on sport turf. Parks would also endeavour to involve academic researchers (e.g. Olds College) in designing and monitoring these experimental treatments. The estimated cost of the study would be **\$40,000** annually.

Environment staff have consulted with several other municipalities that have implemented bylaws, to determine challenges faced by other Parks Departments in eliminating pesticides from their tool box. Halifax, the City of Vancouver, Kamloops, and District of North Vancouver all indicated that the implementation of a pesticide bylaw was not inhibiting to their Parks department, as they had eliminated pesticide use in their parks prior to bylaw implementation. Halifax began using sustainable landscaping practices in 1981, making for an easy transition when the bylaw was implemented in 2000 (King, pers. comm., January 2007). The City of Vancouver has 285 public playing fields and 358 ball diamonds. In 2002, the Vancouver Health Board and Vancouver Coastal Health Authority wrote a report called "Pesticide Use Options for Private Property in Vancouver." In this report, it states:

"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 have been observed..."

(Vancouver Park Board and Vancouver Coastal Health Authority, 2002, pg 8).

A recent report to Kamloops City Council stated that the Kamloops Parks Department has a comprehensive turf maintenance program, which has resulted in the elimination of pesticides since 2001 on all City-owned sports fields (Kamloops Parks, Recreation, and Cultural Services Department, January 2007). The District of North Vancouver started a systematic decline in pesticide use in 1999 and has used virtually no pesticides as of 2005. Parks maintain healthy fields, medians and boulevards through manual efforts and good horticultural and field turf practices (Bennett, pers. comm., January 2007).

It must be understood that many of these communities have increased their operating and capital budgets to allow for a significantly increased

maintenance programs in an effort to keep weeds to a community acceptable standard.

6.2.3 Roadways

An evaluation of the current roadways budget for chemical and mechanical weed control in the crack and crevice program is \$75,041. If crack and crevice weed control were to be strictly mechanical, the cost is estimated at \$71,001, yielding a savings of \$4,040 switching to strictly mechanical control methods. These figures would include two people working for a period of six months from the middle of April to the middle of October, including a 5% contingency plan. The \$4,040.00 dollars could be saved and used for additional material or equipment as required (Thiessen, pers. comm., 2007). There is concern that future contractor prices may increase the costs of this service.

6.2.4 Health and Environmental Costs

Evaluating the costs associated with pesticide impacts on health and the environment are extremely difficult. We can attempt to quantify these costs by examining direct costs of treating illnesses associated with pesticide exposure, but the list of potential health impacts and correlations is long with many unknowns. We would also need to factor in the indirect costs of pain and suffering, lost workplace productivity and social costs for each individual.

We need to recognize that impacts to human and environmental health are incalculable. Healthy communities are a product of a healthy environment.

7.0 Recommendations from Staff

Kelowna's Environment Division believes that Council's consideration of the above findings and staff recommendations is essential for being proactive in reducing pesticide use in our community and in Kelowna's efforts to be a green and sustainable community. Council's endorsement of Option 1 would aid in the protection of Kelowna residents from unsolicited, non-essential pesticide exposure.

An education campaign in conjunction with a bylaw has been found to be most effective in achieving a reduction in pesticide use. Reducing pesticide use and promoting sustainable landscaping practices in our community is in the interest of:

- Public health;
- Environmental protection and pollution prevention; and
- Working towards a sustainable Kelowna.

The primary intent of cosmetic pesticide use in Kelowna is to mimic a culturally induced, modified landscape. The semi-arid climate and dry, sandy soils of the Okanagan are not conducive to the weed-free, lush green patch of turf that residents strive for. Ideally, landscaping should incorporate indigenous shrubs and ground covers and dryland variant grass seed varieties that are suitable to our region and more resilient to the stresses of drought, insects and disease. A strong social marketing program that targets behavioural changes will aid in building a community that embraces sustainable living practices.

In conclusion, it is Staff's opinion that a bylaw restricting the cosmetic use of pesticides in the City of Kelowna is a responsible public policy, for the general health of our environment and population and for vulnerable populations including children, immune compromised and chemically sensitive individuals.

Michelle Kam
Environmental Technician

Mark Watt
Environment and Solid Waste Manager

cc: Director of Works and Utilities
Director of Recreation, Parks and Cultural Services
Director of Financial Services
Environment Division Supervisor
Parks Manager
Roadways Manager
Urban Forestry Supervisor

Appendix:

1. Pesticides and Health Effects
2. Interior Health Authority support letter
3. Canadian Cancer Society support letter
4. Pesticides and the Environment

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Attachment 2
Committee Members Comments

Dr. Annette Stevens MD, FRCP(C)

May 8, 2007

City of Kelowna
1435 Water Street
Kelowna, BC
V1Y 1J4

Dear Mayor and Council,

I am writing in the capacity of Medical Representative on the City of Kelowna's Pesticide Bylaw Committee. I have also participated on the subcommittee of that committee, which submitted the report on the health impacts of pesticides. I am a medical doctor working in Kelowna and the mother of two young children. My husband, Dr. David Hoegler, is a radiation oncologist and researcher who treats cancer in this community (Cancer Center for the Southern Interior). He also endorses the opinions voiced in this letter.

The public health message which I represent is a simple one: there is now sufficient concern in the Canadian medical community about the health impacts of pesticides that from East to West in this country, the precautionary principle is being invoked : ***the risk to our children is too great to take.*** Medical Associations throughout North America are generating statements to public officials conveying the medical opinion that the current regulations on pesticides do not sufficiently protect children or adults. The testing, quite simply is inadequate. We are loading our communities with toxins that are not considered safe by doctors who examine the same evidence that the PMRA does. As with any opinion, you must take into consideration the motivation of the group providing the information. Medical associations have nothing to gain by blowing the whistle on both the PMRA and the pesticide industry. In a recent review of the typical quality of safety testing used by the PMRA, the Canadian Pediatric Society stated "The 2,4-D assessment does not approach standards for ethics, rigour or transparency in medical research. Canada needs a stronger regulator for pesticides" and "Until landscaping pesticides are curtailed nationally, local bylaws...are prudent measures to protect public health" (J of the Can Paed. Soc. April 2006, V.22 No. 4). How could local counselors justify not abiding by these recommendations to protect our children?

We can use denial and minimize our concerns by allowing ourselves to be falsely reassured by industry or we can accept good council from professionals who have no financial interest to protect. Kelowna is full of sunny skies, green grass and happy looking kids. It is easy to think that they are healthy and all is well. That isn't the truth. This is becoming a toxic valley from air quality to water quality, to the basic tenability of our soil (think of the DDT load here that doomed the attempt to restore the peregrine falcon population). Agriculture already loads the environment with pesticides. So when do we get concerned about the tipping point? There is already enough evidence out there to seriously concern doctors about the relationship between exposure to pesticides and the onset of neurologic and oncologic diseases. That is why we are speaking up.

How do we equate the need for satisfactory maintenance of our sports fields, with the the responsibility to protect children in Kelowna to the standards set out by our Nations pediatricians? Do these agendas need to be seen as mutually exclusive? Parks is going to feel some financial strain from reducing their pesticide use further, but if doing so ensures future health for the children it is worth it. I question the Parks delay in providing our committee with a dollar estimate of the cost increase this small change in their current

procedure will make. We have heard wildly expensive quotes and the only example they used as a comparison was Kamloops, which clearly is a community that spends a great deal on its fields as part of its tourism draw. I urge you to closely question exorbitant cost estimates, as the committee did not have the opportunity to fully debate this issue.

Finally, in terms of the effectiveness of a bylaw. It's power is not just in it's enforcement, but in the message sent out to homeowners everywhere. I have talked to many. They are reassured by the fact that these substances are legal and available. They have no idea about the medical concerns and risks to children. Bylaws with bans have been shown to get the message out loud and clear that old practices are no longer socially acceptable. In terms of the sprayers, I have had many conversations with them over the years. When Diazonon (a proven carcinogen which is now banned) was being sprayed in the last year before its ban, I was told by the sprayer company, "We'll just keep using it until a law stops us". Human nature follows the path of least resistance. In the case of protecting our children from this complacency, we cannot be satisfied with leaving this decision up to ill informed consumers and financially motivated operators. Please, step up to the bat and think about your children and grandchildren and future generations. Your stewardship is desperately needed.

Thank-you for your time,

Annette Stevens MD, FRCP(C)
David Hoegler MD, FRCP (C)

July 4, 2007

Dear Sirs and Madams:

In the February 17 2006 issue of the Capital News I saw an advertisement advising that the City of Kelowna was seeking members for a new pesticide bylaw staff advisory committee. After speaking with some City staff I submitted my name and was subsequently informed I had been approved to be a member of the committee. Having been involved in the structural pest control industry for approximately three decades, I felt I had some insight into some of the issues and that I could contribute to a factual and healthy discussion surrounding the use of pesticides and alternatives available. It should be noted that I currently own and operate The Bugman Pest Control Services in Kelowna and that the proposed by-law will in no way impact my business as we solve problems inside the home not in the yard or garden. It was somewhat disheartening to see an us (the environmentalists, anti chemical) and them (industry and so called pro chemical) attitude forming early on in the discussions. An inordinate amount of time was spent debating and discussing peoples motives and abilities to contribute factual unbiased information and your staff was well tested in keeping order and focus during some of the debate.

Through working with the British Columbia structural pest control association and the Canadian structural pest control association, I have been involved in a very healthy shift from treating all pest problems with chemicals to a vastly environmentally friendlier integrated pest management (IPM) approach which has now been adopted by the Pesticide control branch of the Ministry of Environment here in BC. The Provincial and Federal Governments have spent great amounts of time and money testing pesticides and drafting laws governing their use. There already is a properly trained enforcement and monitoring system in place at the provincial level. With the orchard industry operating in this valley and often within city limits we receive much attention from other government personnel in our region, do we need to burden already busy city staff with work already being performed at other government levels? The commercial pesticide notification registry already gives sensitive or concerned citizens a viable tool to minimize pesticide impacts on their property. The choice to use pesticides is and likely will remain a personal choice and attempts to change this may be viewed as a property rights issue. If a bylaw banning the use of cosmetic pesticides is passed, these same chemicals will still be readily available to the general public at the garden centres and big box stores that currently sell them. This effectively takes these products, which we all agree have the potential to be dangerous if not used properly, out of the hands of highly trained, government licensed, privately insured technicians and into the hands of general public. If the issue is in fact public safety then surely forcing pesticides into the hands of the general public seems like a contradiction.

All in all it has been a distinct pleasure to serve on this committee and I wish to thank you the opportunity to be involved in this important procedure.

I remain, at your service

Bruce R. Perrin

City of Kelowna
1435 Water Street
Kelowna, B.C.

April 20, 2007

Mayor Shepherd and Members of Council:

I am the owner and operator of B. & N. Turf Management Inc. (doing business as The WeedMan). The Pesticide Bylaw Committee, of which I am a member, is recommending the enforcement of a pesticide bylaw. It was apparent from the first meeting I attended that the committee was not going to be open-minded, and it is unfortunate that an unbiased party was not chosen to select the committee members. In fact, one of the original members (Carson Tse of Okanagan Tree & Lawn), resigned after the meetings which he attended convinced him that the outcome was already decided. I essentially replaced Carson.

With respect to the issue at hand I would like to put forth the following information:

Pesticide Bylaws that Attempt to Ban Pest Control Products Don't Work:

Pesticide bylaws such as those passed in Hudson, Quebec (1991) and Halifax, Nova Scotia (2003) essentially bans both homeowners and professionals from being able to effectively suppress or control pest infestations. The end result of overly restrictive bylaws **is an increase in the use of pesticides**. The biggest flaw in logic with such bylaws is that they do not remove the source of supply of pesticides from homeowners: retail shelves.

Although Hudson's bylaw was passed in 1991, no homeowner has ever been charged. Until the recently enacted Pesticide Code in the province of Quebec, pest control products were continually sold - despite the presence of the bylaw.

Halifax's bylaw is similarly restrictive, forcing licensed professionals to offer less effective and more expensive "alternative" programs. Homeowners soon lose patience, and end up canceling their alternative program, taking matters (meaning pesticides) into their own hands.

Bylaws that ban professionals and/or homeowners from managing pest problems in their lawns actually encourage people to break the law. Bylaws, in essence, eliminate trained certified professionals - those most qualified to use these products - from the list of people who can and will continue to use pest control products that are available for legal purchase. Unless retailers are forced to pull pest control products from their shelves the use of pesticides increases under overly restrictive bylaws like these. In B.C., municipalities cannot prohibit the sale of registered pesticides.

Education and IPM - The Common Sense Solution:

As an industry, we are committed to minimizing the use of pesticides. Why? Because it simply makes sense, both economically and logically. We know that the best defense against pests is growing and maintaining healthy plants, and this is the focus of Integrated Pest Management (IPM), a practice that is also mandated by the Provincial Government, through the IPM Act. However, there are situations, such as extreme heat, drought, or other weather or environmental conditions that can result in pest problems. A healthy lawn can withstand a certain level of pests. But if a lawn has been weakened by extreme weather, or even by a poor management practice such as mowing too short with a dull blade, the pest problem may need to be controlled

with a pest control product applied on a spot basis to the problem area. This is part of IPM, and as an industry we are committed to the IPM process. Real and measurable reductions of 60-70% in pesticide use have resulted from this program over the past few years. For now, pest control products remain necessary as a sustainable means of pest management.

At the homeowner level, education is critical. Rather than focusing on making it illegal to use a registered pest control product that is readily available for local homeowner purchase, the most logical solution should focus on how and when the homeowner uses that product. The City of Kelowna should look towards working with local industry to create educational materials and/or conduct information seminars on how best to care for lawns and gardens. Local lawn care professionals can serve as ideal extensions to local education and outreach programs, as they visit thousands of homes at least 4-5 times per season. More importantly, 2,4-D, the herbicide most commonly used by lawn care professionals, has recently – again – passed a comprehensive review by the federal Pest Management Regulatory Agency (PMRA). All the pertinent data and research on this pesticide was considered, and 2,4-D was certified safe to use according to label recommendations. Those opposed to pesticides often use unscientific and emotion-based data to support their views. The PMRA uses only true science. Why is it so hard to trust the science-based conclusions of respected scientists, who have the knowledge, expertise, and experience required? These are the qualified people to whom we should be listening.

I urge Council Members to realize that banning the use of pesticides by certified professionals is not the answer to arguments based on pseudo-science. Health Canada has employed safeguards for the safe use and disposal of pesticide products by trained professionals, and we follow them. Already regulated and monitored by both federal and provincial governments, we must maintain records of all pesticide use, submit annual reports to the Ministry of Environment, and are subject to inspection at any time.

Although you may feel that imposing a by-law is a positive approach toward protecting public health and safety, such an action may actually be putting the public at a greater risk. Homeowners alone, not trained professionals, would be the only ones using pesticides. Bylaws may have been enacted in over 120 Canadian municipalities, but 875 others have not. Most recently Ottawa, Belleville (Ontario) and Kamloops have chosen not to impose bylaws. Such bylaws are unenforceable, and not one homeowner has ever been charged with an offence. The sale of domestic-use pesticide products is not tracked, and no one has any idea of how much of these are even being used.

By passing the proposed pesticide bylaw, it is obvious that the City, instead of actually reducing pesticide use, will only provide the perception of a reduction. Let trained professionals retain a necessary tool, one that is only used when required.

Respectfully submitted,

Len Good

To whom it may concern;

Having been given the opportunity to be a member of the Pesticide Bylaw Staff Advisory Committee, this is my letter to include in the report Council will see regarding my opinions on the options Council has to consider.

I am a Golf Course Superintendent at The Okanagan Golf Club and have been in the Golf industry over 20 years. I was asked to sit on the committee to give my perspective of how a Pesticide Bylaw would impact the Golf Industry in Kelowna. I am also a Past President of the British Columbia Golf Superintendents Association and have dealt with some Pesticide By-law issues on a Provincial level, so I feel I can give a very educated opinion on the impact a Pesticide By-law would have on our industry in Kelowna.

First I would like to compliment the City for the current program's they have in place ("Be Pesticide Free" Education Campaign & Notification Registry) and for forming a committee of well educated stakeholders to help the Environmental Division with their report they will be presenting. These programs already show that the City is trying to be proactive in dealing with pesticide issues, and with the environmental atmosphere cities have been under lately, this is a good thing.

Of the four options our committee discussed, I understand Option #1 will be proposed, and in this Option there is a section about Pesticide use on a Golf Course, and some guidelines Golf Courses must follow. I recommended these guidelines as they are part of guidelines Golf Courses must currently follow according to the Provincial IPM Act. Superintendents must have a Provincial Pesticide Applicator Certificate to apply federally approved plant control products, and we only do so as a last resort in Integrated Plant Management programs.

It is my concern that if Golf Courses were included in a Pesticide By-law ban without any exemptions, such by-laws would have a crippling effect on management programs when serious disease outbreaks occur at our facilities and the tools necessary to treat potential devastating infestations would not be available. Superintendents in our area strongly endorse Integrated Plant Management and education as a positive approach to these situations and once again only use plant control products as a last resort. These products can be very costly and it just doesn't make good business sense, or plant health sense to use Pesticides if we don't have to. Having to maintain finely mown golf greens without Plant Control Products has proven to be unsuccessful all across North America, and our local industry would suffer immensely if we didn't have the tools necessary to provide well conditioned golf courses golfers enjoy, and travel to play in our City.

Tourism is one of most important industries in our area and golf courses play a major role. The turfgrass industry represents a 1.8 billion-dollar impact to the economy of British Columbia, and although I can't give specific numbers on its impact in our City, I'm sure it's quite lucrative. Certain pesticides are essential to the turfgrass manager to maintain not only golf courses but also parks, sport fields and other recreational facilities. The City's Parks Department will be impacted immensely and I hope consideration is given to increasing funding to this department so the quality of our Parks does not suffer should a complete Pesticide Ban occur.

Although I don't completely agree with Option 1 as a recommendation, I support the considerations made for the Golf Industry to be able to manage our properties effectively. Many golf courses in our area are members of the Audubon Society, and ***strongly promote proper environmental compliance, awareness and reduction*** as part of our IPM programs. Council's decision on this controversial issue will have a great impact on our beautiful City and I hope all thought's are exhausted in making the right choice for our City.

Sincerely yours,
Jeff Bennett,
Golf Course Superintendent



Canadian EarthCare Society

Tel: 250-861-4788

Office: 702 Bernard Avenue

Kelowna, B.C.

www.earthcares.org

Mayor Shepherd and the Kelowna City Council
1435 Water Street
Kelowna, BC
V1Y 1J4

June 15, 2007

Dear Mayor and Councillors,

EarthCare strongly endorses City staff's recommendation that the City of Kelowna "Implement a Pesticide Bylaw restricting the use of cosmetic, non-essential pesticides partnered with a comprehensive 'Be Pesticide Free' education campaign." Information compiled from over 120 municipalities across the country has shown that combining an education program with the pesticide bylaw is the most effective way to change attitudes and protect citizens from pesticide exposure. Communities with pesticide by-laws have promoted alternatives to pesticides and have been successful.

Endorsing Staff's recommendation will support your mandate to protect the health of citizens in this community. As well, you will reduce the amount of pesticides that make their way into our water and air. EarthCare encourages you to follow the example of School District 23, who put the health of children and the community foremost by banning the use of non-essential pesticides.

The City staff pesticide advisory committee debated the issue, looked at pesticide bylaws across the country, received presentations from numerous professionals and in the end the majority of committee members supported the implementation of a pesticide bylaw with an education program.

We look forward to Council making a good decision for the community by acting on City staff's recommendation. We would however encourage you to make the bylaw effective sooner rather than later.

Environmentally yours,

Canadian EarthCare Society

Lloyd Manchester

To CITY COUNCIL KELOWNA, B.C.	Date Monday June 11, 2007
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RE: PESTICIDE BYLAW

The "Environmental Division" of the City of Kelowna is recommending the "Implementation of a Pesticide Bylaw restricting the use of cosmetic, non-essential pesticides partnered with a comprehensive "Be Pesticide Free" education campaign". I was a member of the City's "Pesticide Staff Bylaw Advisory Committee". The views expressed in this letter are my own and not the views of any organisation.

Overall comments

- I support the intent of a municipal pesticide bylaw.
The intent is to reduce non-essential uses of pesticides around homes and playgrounds.
- I favour bylaw wording that allows justified and responsible use of pesticides.
A pesticide should be applied by a certified applicator after confirmation of a problem.

Using pesticides

- Pesticides have the potential to be dangerous to human health.
There is a general agreement on this point among government, manufacturers and pesticide users. For example, no person should drink from a pesticide container.
- At this time, pesticides are absolutely necessary for food production in Canada.
Organic farmers use pesticides. Products used on organic farms are generally safe to people and the environment, but they are still pesticides.
- Companies applying pesticides must practice Integrated Pest Management.
Most pesticide applicators must hold a certificate issued by the provincial government. The "Integrated Pest Management Act" requires the certified applicator to inspect the site to confirm the pest problem *before* making the pesticide application. In practice, there is currently no incentive for pesticide applicators to comply with this requirement.

Reducing pesticide use

- Many pest problems can be solved without using toxic pesticides.
Other solutions include pruning, fertilisation and low-impact "soft" pesticides. However, these methods require more technical knowledge and are more difficult to implement.
- Education is a critical component in reducing pesticide use.
A pesticide bylaw without an education component will not be successful. The education must target home gardeners, but also the companies servicing the gardeners.

Mario Lanthier

Vice-president, Interior Environmental Pest Management Association

Instructor, Okanagan College Continuing Studies, "IPM and Pesticide Applicator Certificate"

Member of the British Columbia Nursery Landscape Association -

Western Canada Turfgrass Association - Canadian Nursery Trades Association -

International Society of Arboriculture

Letter from Steve Marino, member of Pesticide Bylaw Advisory Committee. Evergro Canada Inc.

The issue of banning the cosmetic use of pesticides in an area such as Kelowna needs to be looked at from many different directions; however, the main focus must be whether there is truly a need for a ban. What is the driving force behind the call for a ban on cosmetic pesticide use in Kelowna? Do we really have a problem? Is there imminent danger to our citizens from the types and volumes of products currently in use? This is what I wish to address. Coming from the commercial supply sector our company would be impacted very little if a ban were implemented, yet we do not support pesticide bans because we feel they are driven by misinformation, hysteria, and claims of corporate conspiracies and lack of information sharing.

We look around us and we see agriculture in this area, and always the debate over banning cosmetic use gets misdirected by pesticide use on food crops and concern over the things we consume. This has no relevance to the issue of cosmetic use, it is difficult for many to understand, but we must focus on what we are considering. Cosmetic use has nothing to do with agricultural use, and here is where we begin to explore whether a problem exists and if there is danger to health and environment in Kelowna. Local farmers are among the best at correct pesticide usage.

Dr. Warren Bell gave a talk in council chambers promoting the banning of pesticides for cosmetic use. During the open discussion the topic went off track and ended up being a Q and A period on food safety. It was interesting to note that he stated "80% of the toxins we have in our bodies are from exposure to harmful materials which come from food products". This leaves a remaining 20% which must include exposure by other means including inhalation of numerous suspended particulates and dermal exposure by many different materials we come in contact with every day. How much is due to exposure by pesticides used for cosmetic purposes? The answer is very little to none.

If one were to look around Kelowna this spring you would have noticed an abundance of dandelions, clover, and numerous other broadleaf weeds. This was noticeable not only in city parks but on private property as well. This clearly shows that herbicides are not being over used these days. Every golf course in the Central Okanagan uses little or no herbicide anymore. Professional landscapers must follow the IPM act and cannot broadcast spray a lawn. There must be a breach of a tolerance threshold before they can apply, and they may only treat the areas which are affected. Homeowners have had most of the products once available to them removed from the shelves. There are no toxic clouds or rivers of chemicals running off peoples properties as described by many. The chances of coming in contact with residue selectively applied to a neighbors' property is negligible at worst.

We are constantly bombarded by those promoting pesticide use bans with information which is not relevant or is based on selectively harvested data. Details of horrible accidents or issues in third world countries, although accurate and stomach churning, either are from products not available in Canada, or were released in volumes and/or by circumstances which could never occur here. Products like Diazinon, Chlorpyrifos, Dimethoate (Cygon, Lagon) etc., are not available to the general public anymore. Moreover, many more products will also lose registration for home use. The entire cosmetic use issue is now almost completely focused on weed control. 2,4-D based products and Glyphosate compounds like Roundup would be the main targets of such a ban.

2,4-D is the most studied pesticide ever produced. No science based research has found any direct link between exposure and negative health effects. OCFP released a report of peer reviewed papers linking pesticides to numerous health problems. As thought provoking as it was, peer reviewed papers are only as good as the papers chosen to review. No actual testing is done, nor is any of the data attempted to be replicated. Generally the hypothesis is written after the papers are reviewed, or papers are chosen which support the hypothesis. The report has no support from Health Canada, EPA, the European Union, nor The World Health Organization which has published acceptable limits of 2,4-D in drinking water.

WHO's link to this topic is http://www.who.int/water_sanitation_health/dwq/chemicals/24dsum.pdf. Glyphosate or Roundup has also been studied at great length. Attempts to link this material to negative health effects have been made for years and now focus not on the active(main) ingredient but on carriers which vary from product to product. These products are targeted as unsafe yet science based research states otherwise if used correctly as with anything else in our world like kitchen cleaners, medicine, etc.

If the City of Kelowna wishes to ban cosmetic use of pesticides it should do so based on a real need and un-biased information. The pesticide bylaw advisory committee was ineffective in its duties. It was fractured and any research done was conducted not to gather un-biased information, it was done to support each member's viewpoint. Council members should do their own research, see if there are elevated instances of cancer in this city, look around and see if it appears pesticides are being over used or abused. Instead of assuming an applicator is applying pesticides ask if they are maybe applying liquid fertilizer which is a growing industry. I simply ask that instead of reacting to information which comes from biased sources, members of city council really need to draw their own conclusions based upon their own interpretation of facts available instead of information selectively provided them. The recommendations of the environment division are not the results of the advisory committee's research; it appears that they were drafted prior to the start of the committees work. Banning cosmetic pesticide use perhaps was needed in other cities but is it here?

Mayor Shepherd and the Kelowna City Council
1435 Water Street
Kelowna, BC
V1Y 1J4

June 15, 2007

Mayor and City Council,

As a member of the Pesticide Bylaw Staff Advisory Committee, a medical anthropologist, a parent, and a citizen, I endorse the City staff's recommendation that the City of Kelowna "implement a bylaw restricting the use of cosmetic, non-essential pesticides." This coupled with an education program is the most effective way to protect the environment and people from the potential harmful effects of pesticides.

The City Staff has done an excellent job in thoroughly researching this issue. Their recommendation is based on solid, current, scientific and legal research. I believe this recommendation to be in the best interest of the health of the citizens of Kelowna, especially children and our environment.

However, I suggest that we adopt the bylaw in January 2008. The reasons I encourage the fast tracking of this bylaw are

1. The issue of pesticides is not a new discussion. For the last 40 years, researchers have documented the potential harms of pesticides. There is plenty of substantive evidence to suggest that we need to protect our citizens and environment as soon as possible.
2. Kelowna by adopting a bylaw to protect its citizens would be joining a growing momentum in Canada with over 120 municipalities already successfully adopting similar bylaws. We would also be joining one of the City's partners School District 23, which in 2004 decided to put make children's health a priority and adopt a pesticide free position on school grounds. With this emergent legal consensus, it should be easy for the City to establish this bylaw.
3. The public is becoming more cognisant of the potential harms of pesticides and want to protect itself and the environment.

The medical and scientific literature continues to make links between pesticides and harmful effects to humans and the environment. We do not need to wait longer to protect our citizens especially the most vulnerable – children. The time to act is now. Thank you for your serious consideration of this very important health and environmental issue.

Sincerely,

Valary Chidwick

Appendix 1 Pesticides and Health Effects

Prepared for: City of Kelowna Mayor and Council

Prepared by: Pesticide Bylaw Staff Advisory Committee Health and Environment Subcommittee

PESTICIDES AND HEALTH EFFECTS

Pesticides are toxic agents. They are designed specifically to interfere with normal physiological and growth functions (Hasselback, 2006). Pesticides are materials used to prevent, destroy or repel pest organisms such as plant insects and diseases, weeds, or structural pests. (Adams, 2005). While it is agreed upon and illegal to label any pesticide "safe," some of these chemicals may be defined as having "acceptable risk."

OBJECTIVE

This document briefly reviews the impact of lawn and garden pesticides on human health, with a focus on the general public and children. It was prepared by the "Pesticide Bylaw Staff Advisory Committee" of the City of Kelowna for presentation to City Council.

METHODOLOGY

This summary draws on government documents, reports from medical organizations and information from medical health officials. These sources use peer reviewed scientific and medical research. A key source of information for this summary is the 2002 publication by Toronto Public Health titled "Lawn and Garden Pesticides: A Review of Human Exposure & Health Effects Research." This is one of the most comprehensive and up-to-date literature reviews on human health effects from lawn and garden pesticides.

RECOMMENDATION

There is growing evidence in the medical and scientific literature that pesticides are harmful to human health especially children. It is the recommendation of this committee that we need to enact the precautionary principle when considering policy regarding lawn and garden pesticide use – that is "better safe than sorry." We concur with Dr. Moorehead, former Medical Health Officer for Interior Health, who observes that in the Okanagan "the normal exposure children would have to garden sprays is augmented by agricultural applications, compounding the concentrations of chemicals they would normally experience." As such, their need for protection from unnecessary residential exposure is all that more urgent.

HEALTH EFFECTS

There is consensus amongst the pesticide industry, government regulating bodies and medical communities that pesticides have the potential to cause harm. The potential harms to human health are both acute poisoning and chronic toxicity (Adams, 2005).

Acute effects generally occur soon after exposure to pesticides and can lead to death (Standing Committee on Environment and Sustainable Development, 2000). Some of the most common and important short term exposure health impacts to pesticides are **allergic reactions, skin sensitivity and eyes/ears/nose irritation.**

Chronic toxicity can lead to:

1. **Cancers** (multiple types)
2. **Reproductive Effects** (including fertility problems, birth defects and adverse pregnancy outcomes such as spontaneous abortions and prenatal mortality)
3. **Neurological Effects** (manifest as polyneuropathy, neuropsychological effects, or neurodegenerative conditions such as Parkinson's disease)
4. Researchers are also examining the possible role of pesticides in **immune system suppression** and **endocrine alterations** (Toronto Public Health, 2002).

VULNERABLE POPULATIONS

It is generally accepted that the **fetus** and **children** are two of the most vulnerable populations to health effects caused by pesticides exposure. Exposure to pesticides begins in utero and continues throughout life. Children are more vulnerable than adults because

- they have immature and underdeveloped organs
- their bodies take in and absorb more chemical contaminants than adults
- they are less able to withstand the harmful effects
- their behavior often involves playing on the ground and putting things in their mouths leading them to have greater exposures to pesticides than adults
- and more recent research is finding that from conception to the end of adolescence there are many "windows of vulnerability" where toxic exposures can lead to permanent lifelong impacts (Toronto Public Health, 2005).

Adverse effects of pesticides are not limited to one generation, but may continue on to affect multiple generations by virtue of pesticide's impacts on reproductive organs (OCCP) and changes made to the DNA (CBC).

It is crucially important with children to consider lifetime **cumulative** pesticide loads and the possible long term effects of early life exposure to pesticides. Presently, there is very little research in this area (CPCHE 2005; Toronto Public Health 2002).

In Canada, pesticides are registered by the Pest Management Regulatory Agency (PMRA), under authority of the federal Pest Control Products Act. This Act was changed in 2002 and the new regulations came into force in June 2006 (PMRA, 2006). There are important changes in the new Act, including margins of safety to protect infants and children, and cumulative exposure through food, water and around homes and schools. However, the **majority of pesticides** currently on the market were **tested under the old standards** which are now recognized as **inadequate for protection of children's health**.

Another vulnerable population to the effects of pesticides is individuals with "**chemical sensitivities**." People with chemical sensitivities are more susceptible to certain chemical exposures such as pesticides. This population is not well researched, nor are health impacts on this population considered in reviewing pesticide toxicology or in warning labels and application requirements. People with sensitivities to chemicals can be severely affected by pesticides and their health concerns should be considered when developing a plan to reduce pesticides.

TYPES OF SCIENTIFIC RESEARCH

Scientific knowledge regarding exposure and the potential health effects from cosmetic use of pesticides can be divided into two types of research: toxicological and epidemiological. Since conclusions regarding health impacts of pesticides are based on these studies, it is important to understand what kind of information these two different perspectives provide.

Toxicological studies are used to ensure the risks posed by pesticides, when they are used as intended, are not unacceptable. Toxicological research studies the adverse effects of chemicals and physical agents on living organisms. This research is conducted on laboratory animals. However, this research has limits:

- even the rigorous laboratory testing done by toxicological research cannot fully predict the real-life effects of these products on the population or the environment
- this approach does not adequately address the issue of **synergic** and **cumulative** effects of pesticides - the combined effects of exposure to more than one pesticide or chemical and the effects of pesticide exposure over time
- Inferences on the effects of pesticides on humans based on testing of laboratory animals are problematic as different species may react differently to a chemical (Toronto Public Health 2002; Standing Committee on Environment and Sustainable Development 2000).

Presently the means by which to best assess the health effects of **long-term complex exposures** to pesticides is through epidemiological studies (Toronto Public Health 2002:1). Unfortunately these types of studies are not currently reviewed by the federal agency PMRA when determining pesticide safety.

Medically oriented research on pesticides and humans is based on epidemiological evidence. Epidemiological studies examine actual human impact by looking at groups of people and patterns of illness in communities. Epidemiological research is able to examine the long term health effects of pesticides. Generally epidemiological studies of pesticides occur in occupational exposures (direct testing on humans, especially children, is unethical). However, this type of research has limits.

- It is generally understood that people working with pesticides would have higher exposures. As such, the results of occupational studies are not directly reflective of health risks associated with the general public's use of lawn and garden pesticides.
- With some exceptions, most epidemiological studies are unable to ascertain the degree to which specific lawn and garden pesticides are linked with the health effects under study.
- Occupational studies do not adequately provide knowledge of the risks to children (Toronto Public Health 2002).

MAKING THE RIGHT CHOICE

Governing agencies require some guiding principles to derive conclusions from inconclusive data. Throughout Canada, different levels of government, health authorities and medical bodies are utilizing a concept known as "the **precautionary principle**." One definition of this principle is "when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically" (CPCHE 2005:94).

The evidence of pesticides and health effects viewed through this lens would strongly suggest that the public, especially fetuses, infants, and children, require protection from unnecessary exposure to pesticides. We concur with Dr. Moorehead, former Medical Health Officer for Interior Health, who states that in the Okanagan "that the normal exposure children would have to garden sprays is augmented by agricultural applications, compounding the concentrations of chemicals they would normally experience." Thus the need for **protection of our children** from unnecessary residential exposure is all that more **urgent**.

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Interior Health

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March 26, 2007

City of Kelowna
1435 Water Street
Kelowna, BC V1Y 1J4

Dear Mayor and Council:

Over the past year, a group of diligent individuals have worked at preparing a policy position for the City of Kelowna on pesticide issues. While Interior Health was not able to actively participate in the Pesticide Bylaw Staff Advisory Committee, we have had the opportunity to interact with the committee and committee members in an effort to contribute to the quality of the product of the committee deliberations.

Interior Health has had the opportunity to review policy directions undertaken in other Canadian communities and have provided where possible, literature that reflects understanding of health impacts of pesticides, public perception measurements, and evaluation of efforts to reduce pesticide use ranging from education through regulation.

Interior Health has itself engaged in a review of pesticide use on its properties and is already moving towards landscaping practices that are more sustainable and the elimination of the cosmetic use of pesticides on its properties throughout the Interior of BC.

In reviewing the staff report, the City staff is commended for capturing the key points in the staff report required for policy development. We have also had the opportunity to review the subcommittee on Health and Environment report and found that the key constructs relative to health impacts from the use of pesticides and the concerns at household use levels were reasonably represented.

In the subcommittee report and to some extent in the staff summary report, we have noted that there is a propensity to lump together all pesticides under a single category and suggest that the potential negative impacts apply to all pesticides. There are clearly certain pesticides that have lesser impact, for example the use of soap spray is a pesticide but the mechanism of action is minimal risk to human health. Likewise the use of *Bacillus thuringiensis* for the control of mosquitoes. Specific pesticides have specific human health risks and these needs to be considered in planning activities around reduction of the use of certain chemical pesticides.

In the subcommittee report, the balance between food security issues and the use of pesticides within the agricultural industry needs to be considered in the context of discussions on health and environment. Locally produced food products should not be compromised by local regulatory changes.

The cumulative impact of chemical use in the environment is a field that has received considerable public scrutiny, and some evidence is developing of population health impacts. Shortcomings in the pesticide approval and review process have resulted in a potential public vulnerability and prudent measures to reduce exposure by individuals, particularly youth, are reasonable.

A measured approach to the concerted effort to reduce pesticide use appears to require the combined efforts of regulation and education. To this extent the recommendation of the City staff to support a combined program is based in the best available evidence to achieve pesticide use reduction.

While the issues of pesticide use remain under debate, precautionary approaches which reduce exposure, address public perceptions and concerns, and support adoption of healthier behaviors are supported. We commend the City of Kelowna for providing leadership in addressing this challenging policy issues.

Yours in health,

A handwritten signature in black ink, appearing to read 'P. Hasselback', written in a cursive style.

Paul Hasselback MD MSc FRCPC
Medical Health Officer
Central and North Okanagan

Appendix 3
Canadian Cancer Society Support Letter



Canadian
Cancer
Society

BRITISH COLUMBIA AND YUKON

Mayor Shepherd and Kelowna City Council
1435 Water Street
Kelowna, BC
V1Y 1J4

February 13, 2007

Dear Mayor and Councillors:

I understand that you will soon be considering the issue of whether to implement a bylaw which bans the cosmetic use of pesticides. On behalf of the Canadian Cancer Society, BC and Yukon Division, I am writing to recommend that you implement a bylaw, which would ban the cosmetic use of pesticides, as research tell us that that a cosmetic pesticide ban, coupled with public education, is the most effective way to reduce pesticide use.

The Canadian Cancer Society is a national organization, which, among other things, advocates for cancer prevention and healthy public policies. The Canadian Cancer Society is very concerned about the use of potentially carcinogenic substances for the purpose of enhancing the appearance of private gardens and lawns as well as parks, recreational facilities and golf courses. We base this concern on the conclusions of the International Agency for Research on Cancer (IARC), which state that some substances used in pesticides are classified as known, probable or possible carcinogens. Studies have linked pesticide exposure to both adult and childhood cancers. The list of cancers includes childhood and adult leukemias, childhood brain cancer, non-Hodgkin's lymphoma, neuroblastoma, brain cancer, prostate cancer, kidney cancer, and some lung cancers. Further, the use of pesticides to beautify lawns and gardens is non-essential. Therefore, because of the association between certain substances in pesticides and cancer, and because the use of pesticides has no countervailing health benefit, the Canadian Cancer Society calls for a ban on the cosmetic use of pesticides.

Research into the health effects of pesticides and effective strategies at reducing them has found that the most effective and successful way for municipalities to reduce pesticide use, and hence exposure, is through a bylaw banning the use of pesticides accompanied with an educational program. Whereas an education campaign resulted in a 10-24% reduction in pesticide use, an education campaign coupled with a ban resulted in a 51-90% reduction in pesticide use (*From The Impact of By-Laws and Public Education Programs on Reducing the Cosmetic/Non-essential, Residential Use of Pesticides: A*

Best Practices Review Jointly prepared by the Canadian Centre for Pollution Prevention and Cullbridge Marketing and Communications).

Further, there are numerous non-toxic alternatives to pesticides, and research tells us that, in regions where pesticide bylaws are in place, businesses have not only shifted successfully to non-toxic alternatives, but that sales and offerings of non-toxic alternatives are growing.

At present, 127 municipalities in Canada have taken a leadership role in banning pesticides in their communities. Many more will soon to follow. Kelowna is in a beautiful region and could gain outstanding placement by offering itself as the healthy, pesticide-free, outdoor enthusiast capital of British Columbia.

In summary, since the cosmetic use of pesticides has no countervailing health benefit, and has the potential to cause harm, the Canadian Cancer Society calls for a ban restricting the cosmetic use of pesticides on private and public lands. As a community with a growing population that is concerned about the health of its citizens and future generations, to the City of Kelowna can show leadership by implementing the most effective and successful approach to reducing pesticide exposure: a bylaw, which bans the cosmetic use of pesticides, coupled with an educational program.

I thank you for your consideration to this issue. I am available to provide further information and answer questions on this issue.

Sincerely,

A handwritten signature in cursive script, reading 'K Seely'.

Kathryn Seely
Manager, Public Issues
Canadian Cancer Society, BC and Yukon Division
604-675-7108 or kseely@bc.cancer.ca

Appendix 4

Pesticides and the Environment

Prepared for: City of Kelowna Mayor and Council

Prepared by: Pesticide Bylaw Staff Advisory Committee Health and Environment Subcommittee; written by Danielle Drieschner, City of Kelowna Environmental Technician and subcommittee member

Pesticides and the Environment

This summary of pesticides and the environment draws on scientific studies and, where possible, considers research specific to the region. It describes some of the potential effects that pesticides can have on ecosystems, as well as fish and wildlife populations. The summary also examines the ability of pesticides to enter and persist in natural aquatic and terrestrial environments.

Transportation/Mobilization of Pesticides into the Environment

Pesticides can easily move from their site of application to the broader environment via air, water and soil. Pesticide contamination typically occurs in pulses as a result of drift, surface flow over land and drainage inputs from agricultural and urban runoff (Boxall et al, 2004). Groundwater and surface water sources experience widespread pesticide contamination and are particularly vulnerable to the accumulation and distribution of sediments laden with contaminating substances (Eder et al, 2004; Khan and Law, 2005). A study in Toronto watersheds revealed that 20% of river samples collected contained diazinon at levels exceeding the Ontario Water Quality Objective for Protection of Aquatic Life (Struger et al, 2002 as per March 18, 2003 Toronto Staff Report).

Local Research on Pesticides and the Environment

Research has been conducted in the Okanagan to determine the presence of pesticides in the natural environment and impacts to the region's diverse wildlife. A sample of this research is outlined below.

Pesticide exposure and reproductive effects in two species of native amphibians using agricultural habitat, South Okanagan, BC

Ashpole, S., Bishop, C., Elliot, J. Wilson, L., University of Guelph, ON, Canada, Canadian Wildlife Service, Delta, BC, Canada. 2004. Proceedings of the 2004 SETAC 25th Annual Meeting in North America. PW212.

The Okanagan Valley is home to many rare species of wildlife; this study was conducted based on the presence of these species and high potential for multiple pesticide exposures (Ashpole et al, 2004). This study examined breeding adult, larval productivity and relative population densities of Great Basin spadefoot toads and Western toads in both conventional and organic orchards. Toads in conventional orchards were exposed to realistic doses of current use pesticides. Both types of toads experienced mortality rates of 92% and 100% at one conventional site, while in comparison, one organic site only had 3-4% mortality. Other locations ranged in mortality between 15-38%.

Assessing breeding potential of peregrine falcons based on chlorinated hydrocarbon concentrations in prey

Elliott, J.E., Miller, M.J., Wilson, L.K., 2005. *Environmental Pollution*. 134: 353-361.

The loss of peregrine falcon populations globally has been largely attributed to the use of DDT and its primary metabolite DDE and associated impacts on eggshell quality and embryo hatchability (Elliott et al, 2005). The Okanagan, a historic peregrine falcon breeding area, was treated extensively with DDT between the early 1950s and 1975; over 30 years later, ongoing contamination of bird species, including peregrine prey items, is still being documented. DDT and its metabolites continue to be measured at toxicologically significant concentrations in birds, particularly in orchard areas (Elliott et al, 1994; Harris et al, 2000; Gill et al, 2003, as per Elliott et al, 2005).

Prey items from orchard and non-orchard habitats in Kelowna were sampled for contaminants in tissues and eggs. American robins, red winged black birds, Brewer's black birds, black-billed magpies, European starlings, American kestrels, mourning doves, rock doves, California gulls and ring-billed gulls were sampled; only taking DDE contamination into account, peregrine falcons attempting to breed in Kelowna would only succeed if they almost exclusively ate dove species (Elliott et al, 2005). Eggs of robins, tree swallows, California quails and house wrens consistently revealed mean concentrations of DDE exceeding 0.5mg/kg (Elliott et al, 2005). The levels of DDE contamination pose a risk to peregrine falcons and other bird-eating raptors (Elliott et al, 2005). Additional toxicants exist, including feeding on prey items exposed to anti-cholinesterase pesticides, including azinphos-methyl and diazinon (Elliott et al, 2005). The 30 "return of the peregrine falcon" releases that have occurred in Kelowna since 1999 in an attempt to re-establish peregrine falcon populations have not resulted in observed successful nesting/reproduction in the Okanagan (Elliott et al, 2005).

Environment Canada

Environment Canada has been conducting research to determine levels of current use pesticides in the Canadian environment, as per a National Pesticide Science Fund study; a public report regarding agricultural runoff in the Okanagan is scheduled for release Spring 2007. Environment Canada is considering using Kelowna as one of their urban sampling sites to determine if herbicides are entering the aquatic receiving environment from urban runoff (Mark Sekela, Senior Environmental Quality Scientist, Environment Canada, Personal Communication, January/March 2007).

Pesticide Effects on Fish and Wildlife

Pesticides and their enzyme and hormone disrupting capabilities have been linked as contributors to the decline of fish, amphibian and reptile populations (Khan and Law, 2005). Amphibians have semi-permeable skin and develop eggs and larvae in aquatic environments, making them especially vulnerable to pollutants and strong indicators of environmental contamination.

While pesticide exposure can result in direct mortality of fish and wildlife, populations can be negatively impacted by sublethal effects caused by exposure to low-levels of pesticides (Ministry of Environment, 2005; Eder et al, 2004; de Solla et al, 2002; Khan and Law, 2005). Pesticides may indirectly affect survivorship of fish and wildlife species by disrupting normal growth and development of young, such as hind limb deformities or

stunted growth, or by reducing reproductive success by influencing sexual development, fertility, sterility, low hatching rates, sex ratios in a population or mating behaviour (de Solla et al, 2002; Khan and Law, 2005; Relyea and Hoverman, 2006). Sublethal effects can also limit the ability of an organism to escape or avoid predators (Ministry of Environment, 2005). Indirectly, the use of herbicides and insecticides alters the physical habitat and food source for fish and wildlife; the resulting habitat degradation can become a limiting factor for survival (Ministry of Environment, 2005; Khan and Law, 2005).

Pesticides such as glyphosate (Roundup) have been found to impair olfactory senses in salmonids (Tierney et al, 2006). Salmon species use olfactory senses for imprinting and return migration to their natal streams for spawning, as well as for eliciting alarm and avoidance responses to cues in the natural environment; therefore, sublethal exposures to glyphosate can influence survival (Tierney et al, 2006). Other pesticides known to inhibit salmonid olfaction include diazinon, atrazine, and IPBC; all have acetylcholinesterase inhibiting properties, which may also result in tetanus (sustained muscular contractions), elevated heart rates and mucous secretion (Tierney et al, 2006).

Pesticide Effects on Ecosystems

Pesticide use can alter the structure and function of the natural environment by altering aspects of an ecosystem. Herbicides can cause injury to non-target plants and dispersal of pesticides into aquatic and terrestrial environments can lead to many non-target organisms experiencing pesticide exposure to some degree (Ministry of Environment, 2005; Relyea and Hoverman, 2006). Insecticide application can reduce the diversity and abundance of invertebrates in a community, affecting the food chain, while herbicide application can change community structure as tolerant species remain and sensitive species are eliminated (Relyea and Hoverman, 2006). Outdoor pesticide use also poses a risk to honey bees, wild bees and beneficial insects, with many products being highly toxic to bees, including carbaryl (used for bark beetle control in Kelowna ponderosa pines) (Ministry of Environment, 2005).

Additive and Synergistic Effects of Pesticides

The toxicity of pesticides is evaluated based on the active ingredient, but when products are introduced into the environment they are intentionally or unintentionally combined with other factors that can amplify their toxicity. Combining different pesticides can have additive and synergistic effects (Relyea and Hoverman, 2006), with some combinations increasing acute toxicity, such as carbaryl increasing acute toxicity of 2,4-D (Khan and Law, 2005). The addition of surfactants in pesticides can increase the toxicity of the active ingredient, such as the general increase in toxicity of glyphosate when in product formulation (Tierney et al, 2006).

Other factors to consider are the synergistic effects of pesticides and natural environmental stressors (Relyea and Hoverman, 2006). Some studies revealed amplified lethality of pesticides with the addition of limited food resources (Relyea and Hoverman, 2006). Studies have shown that the presence of predator cues in water can make carbaryl 2 to 46 times more lethal in frog tadpoles (Relyea and Mills, 2001, as per Relyea and Hoverman, 2006). Pesticides malathion and glyphosate (roundup) are also known to become more lethal to organisms when predator cues are present (Relyea and Hoverman, 2006).

Conclusion

Becoming aware of the detrimental effects that pesticide use has on the environment is an important aspect of considering the need to minimize pesticide use in the community and the unwanted exposure of Kelowna residents to pesticides. Developing an improved understanding of the realm of pesticide impacts also provides a benefit to managing and conserving freshwater systems and the natural environment.

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- Tierney, Keith B., Ross, Peter S., Jarrard, Hugh E., Delaney, K.R., Kennedy, Christopher J. 2006. Changes in Juvenile Coho Salmon Electro-olfactogram During and After Short-term Exposure To Current-use Pesticides. *Environmental Toxicology and Chemistry*. 25: 2809-2817.
- Toronto Public Health, Pesticide Use and Effect on the Environment, March 2003.

CITY OF KELOWNA
MEMORANDUM

Date: November 27, 2007
File No.: 5280-05
To: City Manager
From: Environment and Solid Waste Manager
Subject: **Pesticide Reduction Strategy Supplementary Report**

BACKGROUND:

When the original staff report was presented to Council on July 9, 2007, the staff recommendation in that report was moved and seconded. Subsequently, a motion to defer until after a Council Workshop at which all members of Council could be present was carried. The workshop was held this fall.

This supplementary report summarizes additional information regarding pesticide bylaws, public input, PlantHealth BC Accreditation Program, and a revision to the alternative recommendation Option 2 since the Council meeting on July 9th, 2007.

In regards to the bylaw Options 1 and 2 the proposed timeline for implementation is that education be the focus in 2008 and the bylaw be implemented in 2009.

There was considerable discussion at the pesticide workshop on October 1st, 2007. City staff reviewed new information from PlantHealth BC as well as the pesticide bylaw information that was considered by the City of Kamloops.

PlantHealth BC:

PlantHealth BC was originally created as an initiative of the BC Landscape and Nursery Association, and is now an independent program operating out of the Institute of Sustainable Horticulture at Kwantlen University College (Langley) and other industry, NGOs and government agencies to create a new Pest Management Accreditation Program. The Program Objectives include the following:

1. To encourage widespread responsible pest management in BC by holding lawn care, arboriculture and landscape maintenance companies, golf courses and parks accountable to a high standard of practices for weed, disease and insect control and by facilitating industry access to IPM / PlantHealth training;
2. To create a program which is open and transparent, self-sustaining and built on strong partnerships with key stakeholder groups; and
3. To provide the public with a simple, reliable method for identifying companies and organizations that use responsible pest management practices.

This accreditation program is ready to be implemented in 2008 for municipalities as well as businesses that apply pesticides. The cost for the City of Kelowna to become part of PlantHealth BC is \$3,000 in 2008 and up to \$5,000 for future years plus additional Parks staff training. This cost will be used to pay for accreditation of the City's Parks Division, as well as a public education program. City of Kelowna funds will be levered with additional Provincial and Federal funding, to contribute to the cost of brochures, advertising, and other forms of public education for local residents. By pooling the money collected across the Province, PlantHealth BC also proposes to capitalize on economies of scale for production of brochures and educational materials, and to present a unified message across BC.

Although the Parks Division is already practicing a full IPM program, it is expected there will be some additional administrative and training costs (estimated at \$10,000 per year) for the Parks Division to become accredited.

City of Kamloops:

The City of Kamloops is one of the pilot municipalities for the PlantHealth BC accreditation program. City of Kamloops Council passed a resolution "that a pesticide education campaign be implemented for the years 2007 to 2011 and directed staff to continue to work with the BC Landscape and Nursery Association on achieving a program of pest management accreditation with the goal of having a pesticide bylaw in place by April 2009 which will include limitation of use of pesticides in the City of Kamloops to certified applicators. The Parks, Recreation and Cultural Services Department will provide a report to Council in September 2008 advising on the accreditation program and provide a draft bylaw for Council's review." (Zeeben, Parks Manager, pers. comm., November 26th 2007).

Public Input:

Council requested public input regarding the recommendations of the Pesticide Reduction Strategy dated July 9th, 2007. Correspondence from the public was sent to the City Clerks Office between September and the end of November 2007. (Please note that this does not include submissions regarding pesticide reduction prior to Council's request). See attached Summary of Correspondence.

FINANCIAL/BUDGETARY CONSIDERATIONS:

See original staff report dated July 9th, 2007.

If Council chooses to endorse Option 1, the Parks Division may not be able to implement that recommendation unless additional funding is approved within the 2008 budget.

INTERNAL CIRCULATION TO:

Director of Works and Utilities, Director of Recreation, Parks and Cultural Services, Director of Financial Services, Environment Division Supervisor, Parks Manager, Urban Forestry Supervisor, Roadways Manager, Environmental Technician

PERSONNEL IMPLICATIONS: see original staff report dated July 9th, 2007.

ALTERNATE RECOMMENDATIONS:

(Please note – should the original staff recommendation which is already on the floor be defeated, staff recommends a slightly revised alternative from what was in the original staff report as outlined below.)

BYLAW RELATED ALTERNATIVE RECOMMENDATIONS

REVISED: Option 2: Implementation of a Pesticide Bylaw restricting the use of cosmetic, non-essential pesticides partnered with a comprehensive "Be Pesticide Free" education campaign, with an exemption for certified applicators to continue to use pesticides.

The Kelowna Parks Division will pursue PlantHealth BC accreditation in 2008 and City staff will encourage private industry to also pursue accreditation. Once PlantHealth BC is deemed successful by City staff, an amendment will be recommended to Council in 2008 to require mandatory PlantHealth BC accreditation for all pesticide applicators as part of the Pesticide Bylaw.

The bylaw if **Option 2** is recommended would come into effect in 2009.

Cost: \$90,000 (ongoing) plus \$10,000 (additional Parks training and administration in 2008)

Level of Anticipated Effectiveness: Low to Moderate

Option 3: Intensify the "Be Pesticide Free" education campaign.

Cost: \$80,000

Level of Anticipated Effectiveness: Low

Option 4: Status Quo: staff will continue to administer the Commercial Pesticide Notification Registry, as well as the current provisions of the "Be Pesticide Free" campaign.

Cost: \$20,000 (current annual budget)

Level of Anticipated Effectiveness: Low


EXTERNAL AGENCY/PUBLIC COMMENTS: see original staff report dated July 9, 2007.

LEGAL/STATUTORY AUTHORITY: Permitted throughout B.C. and the rest of Canada


LEGAL/STATUTORY PROCEDURAL REQUIREMENTS: Development of bylaw limiting pesticide usage as outlined in the report

EXISTING POLICY: see original staff report dated July 9, 2007.

TECHNICAL REQUIREMENTS: N/A



Mark Watt,
Environment/Solid Waste Manager



Approved for inclusion:
John Vos,
Director of Works & utilities

cc: Director of Recreation, Parks and Cultural Services
Director of Financial Services
Environment Division Supervisor
Parks Manager
Roadways Manager
Pesticide Bylaw Advisory Committee
Urban Forestry Supervisor
Environmental Technician

Attachments: Summary of Correspondence
Report to Council, July 9th 2007

Pesticide Reduction Strategy

Summary of Correspondence

Council requested public input regarding the recommendations of the Pesticide Reduction Strategy dated July 9th, 2007. The correspondence that was sent to Clerks between September to November 26th, 2007. (Please note that this does not include submissions regarding pesticide reduction prior to Council's request.)

Letters of Support

A package of form letters of support signed by 77 citizens.

A petition of support signed by 203 citizens.

Arja Moreau, MD
Sterling Haynes, MD
David Hoegler, MD; Judy Sutherland, MD; Islam Mohamed, MD; Elaine Bouttell, MD; Kong Khoo, MD; David Saltman, MD; Sanjay Rao, MD; Marina DeLuca, MD; BC Cancer Agency
Dr. Kim Burrows and Dr. Tom Warshawski,
Canadian EarthCare Society
Gwen Steele
Tina Duggan
Carol Kergan
D. Johnston
Marnie Boers, 467 Osprey Avenue
Danielle Drieschner
Wyatt Miller-Unser
Lorne Gilbert
Robyn Wiebe, Amy Gray, Kelsey Neufeld
Mirjam Grimm
Heather Miller
Tracy Miranda
Garry Klammer, Turf Logic
Gary Roos, Turf Logic
Amy Fairholm
Gwen Wright
Debbie, Amber and Derek Lazar
Jennifer Sanders, 1128 Pinecrest Lane
Paul Kitz
Rose Lynch, 7373 Leon Avenue
Pearl M.
Peter Kerr, 5405 Lakeshore Road
Denise Brownlie, 102-867 KLO Road
M. Louise McKenzie, 2248 Margard Road, Westbank
Wendy McNiven, 1646 Lambert Avenue
Chris Thatcher
Valary Chidwick
Gail Hourigan
Eleanor Fox
Kim Sterling

Deb Hunter
Kevin and Katherine Trowbridge
Craig Jaffray
Tammy Saunders
Barbara and CJ Maddess
Kirsten LeDuke
Sarah Rilkoff
Blair Strate
Evan
Linda Jaffray
Lauren Strate
Sonia Newman, Peachland
Nicola Newington, 853 Hawthorne Road
Robert Dixon
Lee Tucker, Robert Phillips, Beth Manson
Jordon McIsaac, Joseph Reidford, Gary Fenwick, Karolina Radic
Kelly Walsh, Clayton Dregger, Kiel Wilkie, Ryan Booth
Julia Navarro Rojas, R.N.
Barbara McNair
Pascal Sutherland
Kim Ecker, 2860 Springfield Road
Nancy Holmes, 1112 Hammer Court
Shelley Hoffmann
Susan Clifford
Capt. E.A. Wray
Isobel Cole, 337-550 Yates Road
Elizabeth Hodgkinson
Wanda Manchester
Melanie Steppuhn, 1635 Smithson Place
Mark Haley, Mission Creek Country Inn
Helene Guy, 326-495 All Star Court
Louise Rukin Czenczek, 180 Kathler Road
Marlo Edwards and Jake Kennedy, 657 Rose Avenue

Letters of Opposition

A package of form letters of opposition signed by 57 customers of Sun Valley Tree and Lawn

Len Good, Weedman
John Holland, IEPMA
Carson Tse
Terence Brownlee
Brad Wright, 1210 Graham Road
Cathy Fenton, 196 Terrace Drive
Rick and Barb Scott
Simonne Macklem
Frank Grigel, 8-4524 Eldorado Court
John Vielvoye
Gary Lohmeier
Debra Pitre

C.W. Holford, 1305 Shaunna Road
Doug Rue, 213 Omineca Place
Stewart Hill
Darrell Gunn, Leigh Trainor, Melissa Currie and Earnest Rutherford, 1000 KLO Road
Katherine and Joseph Lange, 2197 Wilkinson Street
Vern Lange
Calli Lange
H. Kennedy

Letters of Concern / Other

Jean Cotton, PhD, Ontario (discussion on types of science)
Megan Harris, Kevin Larson, Brian Martin (support original Option 2)
Bob Harkness (support original Option 2)
Byron Cook (support original Option 2)
Hugh Philip, PAg, 265 Knowles Road (support original Option 2 and Option 3 combined)
Kevin, Lynnette, Emma and Ethan MacKenzie (support of increased regulation on the use and sale of pesticides)
Rick and Dianne Holmes (concerned about dying trees in their yard)

PESTICIDE BYLAW

PLEASE NOTE:

NOT included in this package is the related correspondence. Due to the amount of correspondence a binder will be placed in the Mayor's Office for viewing.