

APPENDIX B



REPORT ON PESTICIDES

DECEMBER 2002

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Executive Summary

Introduction

On September 17, 2001, City Council adopted the following motion with respect to the use of pesticides within city limits:

WHEREAS the use of toxic chemicals in the environment is a potential and a real risk to the health of Regina's citizens; AND

WHEREAS alternatives exist for many of the toxic chemicals now in use in Regina; AND

WHEREAS the recent Supreme Court of Canada decision (Town of Hudson, Quebec) identifies not only an authority but also a responsibility of municipal councils to act on behalf of their citizens.

THEREFORE BE IT RESOLVED that the Administration provide the appropriate committee of council with a report which identifies those chemicals for which the City has found and adopted an alternate treatment; AND

BE IT FURTHER RESOLVED that the Administration's report consider the banning of toxic chemicals which are used for aesthetic reasons; AND

BE IT FURTHER RESOLVED that the Administration consult with RUEAC and those companies involved in the distribution, sale and application of these chemicals to identify any additional alternate, less toxic products or procedures; AND

BE IT FURTHER RESOLVED that the report and the attendant bylaw provide for the banning of those toxic chemical products for which an alternative exists and for the restricted distribution, sale and application of other toxic chemicals for which no current alternative product or procedure exists; AND

BE IT FURTHER RESOLVED that the report be circulated to interested individuals and organizations within the city for public discussion; AND

BE IT FURTHER RESOLVED that the report include references to the recent Supreme Court decision and similar actions by other Councils across Canada as reported by FCM; AND

BE IT FINALLY RESOLVED that the Administration report to the appropriate committee of Council on an annual basis with respect to revisions to the bylaw.

In a report to the December 17, 2001, meeting of City Council, the Administration sought clarification of the process that would be used to respond to the September 17, 2001 motion. The report was adopted and the Administration was instructed to report to the Parks and Recreation Board in May 2002. The report in May would address the following:

- Define what pesticide use would constitute “use for aesthetic reasons”;
- Identify chemicals which the City has found and adopted an alternate treatment in the management of public open space;
- Identify chemicals for which companies involved in the distribution, sale and application of such chemicals have found less toxic alternative products or procedures; and
- Identify the impact that would be associated with the introduction of a bylaw to ban or restrict the use of toxic chemicals for aesthetic purposes in the management of public and private owned and operated open spaces.

The Administration later sought and was granted an extension to report to the June 12, 2002, Parks and Recreation Board meeting.

Role of Government in the Management of Pesticides

Pesticides are among the most tested and closely regulated substances in Canada. They are controlled at both the Federal and Provincial Government levels. At the Federal Level, pesticide regulations are administered by the Pest Management Regulatory Agency (PMRA), under Health Canada. At the Provincial level pesticides are governed within *The Pest Control Products (Saskatchewan) Act and Regulations*.

The PMRA administers the *Federal Government Pest Control Act* that regulates the use of substances that claim to have a pest control use. They are responsible for providing safe access to pest management tools, while minimizing risk to human and environmental health.

The PMRA conducts assessments of the risks and value of any new product before it is registered. For registered products, ongoing surveillance, advances in analytical methods and improved evaluation processes provides a means to uncover environmental or health concerns.

The PMRA requires that an extensive battery of toxicity studies be conducted to determine the value and extent of the hazard posed by a pest control product proposed for use in Canada. The studies are extensive and thorough.

In the case of the City of Regina, the relevant legislation is *The Urban Municipalities Act, 1984*, and *The Cities Act*. In the Supreme Court of Canada decision of 114957 *Canada v Hudson (Ville)* however, it was established that just because the province or the federal government has legislated in a certain area, this does not mean that the municipality is precluded from doing so. This is a clear signal from Canada’s highest Court that municipalities will be given some leeway when it comes to legislating for the health and well being of their citizens.

City of Regina Current Pest Management Practices

The City of Regina manages more land than any other single jurisdiction, agency, organization or individual in the city. The land is also among the most diverse and maintenance serves the need of a broad range of public interests and tastes. Although the City continues to experiment with and research alternatives to pesticides, many espoused

methods and products are not cost efficient or proven to be effective on a large scale. The Administration considers the use of pesticides as an important part of integrated pest management and one that should continue to form part of the City's management approach.

The City has a comprehensive Public Open Space Weed Control Policy that serves to regulate and control the use of pesticides on public open space. Although the City uses only those pesticides that are approved by Health Canada's Pest Management Regulatory Agency, the City could further regulate its use of pesticides, particularly as it applies to the management of weeds, by implementing changes to its policy. This can be achieved by Council approved policy without the need for a bylaw.

The City has a strong relationship with Wascana Centre Authority, Regina Catholic School Division and the Regina Board of Education. These jurisdictions also represent the management of significant areas of land in the city. Working collectively, a further reduction in the use of pesticides can be achieved through policy as endorsed by the appointed and elected officials of the respective jurisdictions. Again, improved pesticide management and subsequent reduction can be achieved without the requirement of a bylaw.

The Noxious Weeds Act, which is binding in all provincial municipalities, was established to regulate and control the growth of noxious weeds on private and public land. Failure of land owners or occupants to control noxious weeds on their land to the satisfaction of the Weed Inspector is a contravention of the Act. Pesticides are used as an effective and efficient method of weed control in situations where mechanical control or other methods are not suitable. If the City were to restrict or ban its use of pesticides without having an effective alternative method of control, the City risks being in contravention of the Act.

Golf courses and lawn bowling facilities require intense specialized maintenance. The "greens" at these facilities are comprised of exotic, non-native turf grasses specially suited for the type of play required by the facility users. To sustain the quality of the turf it is necessary to supplement good horticultural practices with the use of pesticides. This recognizes that the greens are heavily used sport areas and maintaining a consistent turf is critical to the enjoyment and success of the program. Any variance in the quality of the greens can adversely affect the quality of the game and, subsequently, revenues.

The City maintains an active membership in various provincial and national level organizations. In the golf course area, for example, the City is a member of the **Canadian Golf Superintendents Association, Sports Turf Association, Saskatchewan Turf Association**, and the **Western Canada Turf Association**. The City also networks frequently with other municipalities on a variety of matters including those related to pesticides. As an active member on various associations and by networking with other municipalities, the City is able to keep current on various initiatives that may improve horticultural practices without the use of pesticides.

Growing Concerns About the Use of Pesticides

It is becoming increasingly clear that the use of pesticides in a manner not strictly controlled exposes the environment and all its inhabitants to chemicals that have health effects which are serious in consequence. Extensive work and analysis of scientific documents and published papers on this subject were done by the City of Toronto Public Health Department. The Toronto Public Health Department published a paper on their website entitled “Lawn and Garden Pesticides: A Review of Human Exposure and Health Effects Research”. This paper is deemed to accurately reflect what the Regina Health District – Public Health Services can say on the health affects of pesticides.

While more studies are required to establish which pesticides contribute to increased risks, the general body of evidence suggests that a more controlled approach be considered in the use of pesticides.

The increased public concern over pesticides in the urban setting has emphasized the need for the senior levels of government to take action. The federal, provincial and territorial governments have developed an **Action Plan** to help Canadians reduce their reliance on pesticides in urban settings. The Action Plan includes a Healthy Lawn Strategy based on Integrated Pest Management (IPM). The Action Plan for Urban Use Pesticides also includes priority re-evaluations, to be carried out by **The Pest Management Regulatory Agency (PMRA)**, of the most common chemicals in lawn care pesticides.

An important part of the report was to consider what other communities were doing to manage pesticide concerns that are being raised in their respective communities. Nine communities were contacted and while few have enacted bylaws to restrict or ban the use of certain pesticides, the majority have or are about to implement Integrated Pest Management (IPM) or Plant Health Care (PHC) programs in an effort to reduce pesticide use in their respective communities.

While much debate on the reduction or ban on pesticides has been focused on pesticides that are used for “cosmetic” or “aesthetic” eg. lawns and gardens uses, those communities that have implemented a bylaw have used the broader definition of a pesticide. They have then listed various products and/or locations that are exempt from the restrictions. This appears to be the most practical approach in establishing how a community would restrict the use of pesticides if it were contemplating to do so.

Enforcement of any bylaw to restrict or ban the use of specified pesticides for defined purposes would be problematic. There is no provision in *The Summary Offences Procedures Act* to allow the City to issue tickets. It would be necessary to lay charges against the offender through the City Solicitor’s office after a full investigation. The evidence gathering process would also be difficult and would rely primarily on the evidence of witness statements.

Stakeholder Feedback

An outside consultant was engaged by the City to gather input from the public and key stakeholders into the report process. The activities and findings undertaken by the consultant are summarized as follows:

1. Previous Surveys:

- surveys conducted in July 2001 clearly indicated that pesticides is not a “top-of-mind” concern for residents in Regina
- surveys conducted at a province-wide level dating back to 1994 also reveal that pesticides has not been raised as a “top-of-mind” issue
- in a survey commissioned by the Regina Urban Environment Advisory Committee in 2001, pesticide use does not arise as a concern to the public.

2. Key Informant Interviews: Organizations responsible for the management of significant areas of land within the City and those involved in the production, sale and distribution of pesticides were contacted. The following is a summary of the interviews:

- property managers practice IPM
- shared concern over inappropriate or uninformed application of pesticides by homeowners and unqualified individuals
- users have moved to more environmentally friendly products and practices and continue to experiment with alternatives
- believe an outright ban on the sale and application of pesticides will not work
- they would support or at least have no objection to an approach which would see
 - Sale of pesticides restricted to licensed and trained merchants
 - Restrict sale of concentrated pesticides to professional applicators and licensed users
 - Sell only diluted compounds to the general public
 - Sales to public would include;
 - counseling in the appropriate and safe use of the product
 - deposit for the return of the container/unused portion
 - sign/posting the product/date of application

3. Focus Group Sessions: Focus group meeting sessions were conducted with citizens who have expressed a concern about pesticides and operators of businesses whose operations rely to varying degrees on the use of and application of pesticides. The following summarizes the meetings:

- While they are reluctant to give the City of Regina high marks for maintaining the environment, environmentalists do consider that there have been improvements in City performance in this area.
 - Regardless of the immediate impact a ban or restrictions on pesticide use might have on their business, operators consider the issue extremely damaging and with long-term disastrous results.
 - Both environmentalists and operators consider careless or uninformed use and application of pesticides by homeowners to be a serious problem.
 - Both environmentalists and operators believe there is a need for extensive public information campaigns and for public education on the appropriate and proper use of pesticides. Environmentalists also see a need for education on alternative products and methods and, while operators would not necessarily oppose this effort, they were sceptical about many touted alternatives.
 - Both groups expressed a high degree of scepticism for the effectiveness of public meetings or open forums as a method to engage the public in this discussion.
 - Both groups independently suggested and supported the concept of sponsoring conferences or symposiums that would address this issue.
 - Both groups, for very different reasons, believe it is important that the City carefully examine the experience of other municipalities who have taken actions in this area. Environmentalists tell of great benefits, operators recount horror stories.
 - While both groups accept the importance or recognize the necessity for public consultation, both have difficulty identifying appropriate steps or activities for this process. Environmentalists' primary concern is that the process be open and transparent and not subject to "closed doors" or to undue influence. Operators' primary concern is that "emotion" be kept to a minimum.
4. Public Attitudinal Survey: A public survey with a precision (range of error factor) of $\pm 4.7\%$ at a 95% level of confidence was conducted. The following represent the highlights of the survey:
- Eight individuals identified pesticides as the most important environmental issue (2%) and another 7 referred to spraying of mosquitoes, weeds and gophers.
 - 70.6 percent rate the City of Regina as excellent or good in their performance in protecting the environment.
 - 78 percent of those with yards and gardens use pesticides, 63 percent of the City's population. The most commonly used form is Weed & Feed.
 - 17 percent of Regina's believe the City should stop using pesticides to control weeds and pests, while 72 percent find the current practice acceptable and 6 percent

would favour the City increasing its use of pesticides.

- One-third of Regina residents (33%) would like homeowners to stop using pesticides to control weeds and pests while 56 percent find current practice acceptable and 3 percent would favour increased use of pesticides by homeowners.
- 27 percent would favour professional commercial operations cease using pesticides, 60 percent find current practices acceptable and 4 percent would favour increased pesticide use by these organizations.
- 24 percent of the sample indicated they are very concerned about pesticide use and another 48 percent are somewhat concerned with 27 percent being not concerned. A majority would favour some restrictions or reductions in the use of pesticides by the City (51%), by commercial operators (57%) and by homeowners (54%).
- While there is support for reductions or restrictions in pesticide use, there is considerable strong opposition to an outright ban on the use of these products for cosmetic purposes. 36 percent would favour such a ban on homeowners, while 58 percent would oppose a ban.
- A majority of residents (58%) would support a City of Regina public information campaign and education programs regarding the appropriate and proper use of pesticides. Those opposed feel it is unnecessary, not the City's job or express concern over the impact on taxes.
- 71 percent would support a campaign to increase awareness for alternative methods and practices to reduce the need for pesticides. Most opposed were concerned about the cost/tax implications.

Recommendations:

The Administration recommends that:

1. ~~the City not develop a bylaw to restrict or ban the use of pesticides at this time.~~

**The City not develop a bylaw to restrict or ban the use of pesticides
Recommendation concurred in by Council May 12, 2003**

Pesticides are among the most tested and closely regulated substances in Canada. Pesticide regulations are administered federally by the Pest Management Regulatory Agency (PMRA) under Health Canada. The PMRA is responsible for providing safe access to pest management tools, while minimizing risk to human and environmental health. The PMRA, the provinces and territories have established working groups to implement an **Action Plan on Urban Use Pesticides**. The Plan includes a **Healthy Lawn Strategy** aimed at pest prevention, the use of reduced risk products and the application of pesticides when necessary. The City's integrated approach to pest management supports this approach.

The City of Regina manages more land than any other single jurisdiction, agency, organization or individual in the city. The land is also among the most diverse and maintenance serves the need of a broad range of public interests and tastes. Although the City continues to experiment with and research alternatives to pesticides, many espoused methods and products are not cost efficient or proven to be effective on a large scale. The Administration considers the use of pesticides as an important part of integrated pest management and one that should continue to form part of the City's management approach.

The City has a comprehensive **Public Open Space Weed Control Policy** that serves to regulate and control the use of pesticides on public open space. Although the City uses only those pesticides that are approved by Health Canada's Pest Management Regulatory Agency, the City could further regulate its use of pesticides, particularly as it applies to the management of weeds, by implementing changes to its policy. This can be achieved by Council approved policy without the need for a bylaw.

The **Regina Health District** supports a prudent approach to the use of pesticides that involves encouraging people to use the least toxic product or appropriate non-toxic alternatives and minimizing pesticide use where there is likely to be exposure to members of society that are potentially more vulnerable to chemical exposure.

Pesticides are not recognized by City residents as a "top-of-mind" concern. Only 2% of residents identified pesticides as a priority issue. While there is support for reductions or restrictions on pesticide use, there is considerable opposition to an outright ban in the use of these products for cosmetic purposes. It is noteworthy that 38% of homeowners reported that they now use less pesticides than they did previously. There is also strong interest in the community (90%) to learn about alternative methods and procedures that would replace or reduce pesticide use. A voluntary cooperative approach to a reduction in pesticides through public education and awareness would be better received by the community than a mandated approach.

Large land holders and those businesses involved in the sale and application of pesticides believe an outright ban on the sale of pesticides would not work.

The majority of private pesticide operators believe their business would be negatively affected. Between 40% to 75% of their respective business is dependent on the use of pesticides.

The Noxious Weeds Act, which is binding in all provincial municipalities, was established to regulate and control the growth of noxious weeds on private and public land. Failure of land owners or occupants to control noxious weeds on their land to the satisfaction of the Weed Inspector is a contravention of the Act. Pesticides are used as an effective and efficient method of weed control in situations where mechanical control or other methods, are not suitable. If the City were to restrict or ban its use of pesticides without having an effective alternative method of control, the City risks being in contravention of the Act.

Enforcement of any bylaw to restrict or ban the use of specified pesticides for defined purposes would be problematic. There is no provision in *The Summary Offences Procedures*

Act to allow the City to issue tickets. It would be necessary to lay charges against the offender through the City Solicitor's office after a full investigation. The evidence gathering process would also be difficult and would rely primarily on the evidence of witness statements.

2. ~~the City establish a Pesticide Advisory Committee.~~

The Administration be requested to prepare a report to the Parks and Recreation Board which would:

- **by bylaw, establish an Integrated Pest Management Advisory Committee,**
- **define the terms of reference for the Committee, including providing advice to City Council with respect to but not limited to Recommendations #3 through #12 and be comprised of representatives of the following:**
 - **Regina Qu'Appelle Health Region**
 - **Pesticide industry**
 - **School Boards**
 - **RUEAC**
 - **University of Regina**
 - **City Administration**
 - **Citizen Members**
 - **Communities of Tomorrow**
 - **Other individuals or groups as required**

Recommendation concurred in by Council May 12, 2003

One of the themes identified by respondents following the public review of the report was a general dissatisfaction with maintaining the status quo. While the Administration has and will continue to make improvements to the manner in which it manages various pests, the creation of a **Pesticide Advisory Committee** will help ensure that there is continuous progress towards a more prudent use of pesticides and subsequent reductions.

It is proposed that the Committee be established through City Council with membership from key community stakeholders. The Committee would have the responsibility to advise the Administration on pesticide matters such as:

- public education and awareness
- City policy, procedures and methods
- research and evaluation of alternatives to pesticides
- monitoring community behaviour and attitudes towards the use of pesticides

Membership on the Committee would include representation from the following key stakeholders:

- Regina Health District
- Citizen Members

- Industry
- Administration
- School Boards
- RUEAC

X X X X

3. ~~the City lead by example in reducing the reliance on pesticides in the management of public parks and open space areas by setting annual measurable reduction targets.~~

**the City lead by example in reducing the reliance on pesticides in the management of public parks and open space areas
Amended by Parks and Community Services Committee Nov 17, 2004**

Approximately 71% of residents rate the City as excellent or good in protecting the environment while 72% consider the City's present use of pesticides as acceptable and reasonable.

The City has:

- considerable knowledge and expertise on matters related to IPM, horticulture and pesticide use;
- a strong network of contacts within various levels of government, the pesticide industry and related agencies and organizations.
- maintenance responsibilities for a diverse and extensive array of parks and open space areas throughout the city;
- an assortment of specialized equipment and experienced, trained staff to implement a variety of IPM practises;
- a corporate culture and administrative systems organized and structured to respond to community inquiries; and
- a strong relationship with the local media and various community organizations, and agencies.

The City is in a favourable position to model appropriate behaviour and demonstrate various IPM practises that will lead to the reduction of pesticide use in the community.

Approximately 51% of residents support reductions in pesticide use by the City. Previous research has shown, however, that more than a third of residents supporting the elimination of pesticide use would not accept an increase in weeds as a consequence. While it is apparent that there is capacity to increase the publics overall tolerance towards an increase in weeds, the City needs to move carefully in this area. As much as possible, every effort

should be made to introduce effective alternative weed control initiatives in concert with pesticide reductions. Moving too quickly to reduce pesticides at the risk of increasing weed populations could undermine the high level of satisfaction and support that the public appears to have for the City in its management of the public open space.

X X X X

4. **the City develop a public communication strategy that focuses on lawn, tree and garden care that will place an emphasis on:**

- **pest prevention;**
- **the use of reduced risk products or alternatives; and**
- **the application of pesticides only when necessary.**

Recommendation concurred in by Council May 12, 2003

It is apparent that there is strong support (71%) in the community to increase awareness for alternative methods and practices to reduce the need for pesticides. Another 58% of residents would support a City of Regina public information and education campaign regarding the appropriate and proper use of pesticides.

90.3% of city residents with yards and gardens are interested in any non-chemical products or alternative methods and procedures to reduce or replace pesticides if they are aware of them. Over half of those indicated a willingness to pay twice as much for the alternative product or practice. It is also encouraging to note that 38% of homeowners reported that they now use less pesticides than they did previously.

There appears to be a strong willingness to move away from the use of pesticides, particularly in the area of lawn and garden care, if residents are aware of alternative methods or products and that they work.

X X X X

5. **the City continue to research and experiment with alternative methods of pest management that do not involve the use of pesticides.**

Recommendation concurred in by Council May 12, 2003

In the mid 80's the City began using Integrated Pest Management (IPM) in its approach to managing various pests. Since then many toxic pesticides have been eliminated in favour of more environmentally acceptable products and methods.

The City of Regina is the largest land manager in the city. It maintains a diversity of open space areas which include a wide range of horticultural features. The City has the specialized equipment, staff expertise, communication networks with various communities and government agencies to continue to research and experiment with new and innovative IPM approaches that may reduce the requirements for pesticides.

X X X X

6. **the City monitor public attitudes and behavior around the use of pesticides.**
Recommendation concurred in by Council May 12, 2003

Although pesticide use is not a “top-of-mind” issue for Regina residents at this time, there is a concern for the issue. The fact that 38% of homeowners now use less pesticide than they did previously reflects a willingness to change. Starting in 2005, the City should survey residents every three years to assess public attitudes and behaviours around the use of pesticides.

The results of such a survey would be used to determine the success of any public education and awareness campaign with respect to pesticide use, IPM or Plant Health Care. Information gathered through this initiative would be valuable in determining the need to implement tighter controls including the introduction of a bylaw to restrict or ban certain pesticides.

X X X X

7. ~~**the City develop a process that would enable neighbourhood groups to restrict the use of pesticides in the management of local parks and open space areas; and eliminated by Council May 12, 2003**~~

The City of Calgary established a program that allows community residents to establish pesticide-free parks for a prescribed period of years. The City of Regina should consider developing a similar program. The program would rely on the residents to canvas the neighbourhood and obtain the support required to implement any restrictions. Although the details of the program need to be developed, it is proposed that the initial program be aimed at pesticide restrictions related to turf management.

The implementation of such a program would allow residents to have some control over the use of pesticides in the management of their neighbourhood public park.

X X X X

7. **the City continue to network with municipalities and other appropriate agencies and various organizations and businesses to stay current on pesticide related developments.**
Recommendation concurred in by Council May 12, 2003

The City maintains an ongoing communication network with various municipalities, government organizations, businesses and agencies. The advent of the internet provides an opportunity for a wealth of information to be shared with many in a timely and accurate manner.

Pesticides are carefully regulated in Canada by the Pest Management Regulatory Agency (PMRA) of Health Canada. Increasing public concern over the use of pesticides in the urban setting has caused the federal, provincial and territorial governments to develop an **Action**

Plan for Urban Use Pesticides. The Plan includes a **Healthy Lawns Strategy** and a product re-evaluation. The re-evaluation of a number of ingredients used in lawn care products around homes, gardens and public buildings such as school are targeted by the PMRA to be completed in 2002. It is important that the City continue to maintain its strong communication network to keep current on these types of matters including any alternative approaches to pesticides that may be emerging in the market place.

X X X X

8. ~~The Administration be requested to identify a specific green space as a three-year pilot project with no use of chemicals as a means of maintenance and provide a follow-up report to the Parks and Recreation Board.~~
Recommendation concurred in by Council May 12, 2003 and eliminated by Parks and Community Services Committee Nov 17, 2004
9. City Council recommend to the Premier that the provincial government establish a Provincial Council on Urban Integrated Pest Management under the Department of Environment and Resource Management to ensure education and promotion of Integrated Pest Management.
Recommendation concurred in by Council May 12, 2003
10. ~~By November 2003, the Administration provide City Council with a report outlining current improper uses, storage and disposal of pesticides by residential and non-residential users of pesticides and the potential health and environmental risks of these improper uses.~~
Recommendation concurred in by Council May 12, 2003 and eliminated by Parks and Community Services Committee Nov 17, 2004
11. ~~By November 2003, the Administration develop for City Council a list of indicators of the residential and non-residential use of pesticides in Regina, along with annual target reduction levels in relation to these indicators for the period 2004 to 2009; and that annual reports be provided to City Council stating these indicator results in relation to the target levels set.~~
Recommendation concurred in by Council May 12, 2003 and eliminated by Parks and Community Services Committee Nov 17, 2004
12. The Administration provide a report which outlines the City of Calgary Integrated Pest Management plan and similar programs from other Canadian cities.
Recommendation concurred in by Council May 12, 2003
13. The Regina Qu'Appelle Health Region be invited to contribute financially to coordinate a public communication strategy.
Recommendation concurred in by Council May 12, 2003

I Terms of Reference

Background

On September 17, 2001, Council adopted the following motion with respect to the use of pesticides within City limits:

WHEREAS the use of toxic chemicals in the environment is a potential and a real risk to the health of Regina's citizens; AND

WHEREAS alternatives exist for many of the toxic chemicals now in use in Regina; AND

WHEREAS the recent Supreme Court of Canada decision (Town of Hudson, Quebec) identifies not only an authority but also a responsibility of municipal councils to act on behalf of their citizens.

THEREFORE BE IT RESOLVED that the Administration provide the appropriate committee of council with a report which identifies those chemicals for which the City has found and adopted an alternate treatment; AND

BE IT FURTHER RESOLVED that the Administration's report consider the banning of toxic chemicals which are used for aesthetic reasons; AND

BE IT FURTHER RESOLVED: THAT THE Administration consult with RUEAC and those companies involved in the distribution, sale and application of these chemicals to identify any additional alternate, less toxic products and procedures; AND

BE IT FURTHER RESOLVED that the report and the attendant bylaw provide for the banning of those toxic chemical products for which an alternative exists and for the restricted distribution, sale and application of other toxic chemicals for which no current alternative product or procedure exists; AND

BE IT FURTHER RESOLVED that the report be circulated to interested individuals and organizations within the city for public discussion; AND

BE IT FURTHER RESOLVED that the report include references to the recent Supreme Court decision and similar actions by other Councils across Canada as reported by FCM; AND

BE IT FINALLY RESOLVED that the Administration report to the appropriate committee of Council on an annual basis with respect to revisions to the bylaw.

At the time the motion was introduced at Council, the merit of preparing an attendant bylaw without first having an opportunity to review the matter was raised. It was assumed, however,

that the Administration would research, have consultations and report to committee and Council prior to the preparation of a bylaw thereby ensuring that discussions had occurred.

In December, 2001, Council considered a report prepared by the Administration and adopted a resolution that instructed the Administration to prepare a report to the May 15, 2002, Parks and Recreation Board that would:

- define what pesticide use would institute “use for aesthetic reasons;”
- identify chemicals for which the City has adopted an alternate treatment in the management of public open space and describe the treatment;
- identify chemicals for which companies involved in the distribution, sale and application of such chemicals have found less toxic alternative products or procedures and describe the products or procedures; and
- identify the impact that would be associated with the introduction of a bylaw to ban or restrict the use of toxic chemicals for aesthetic purposes in the management of public and private owned and operated open spaces.

Project Methodology

The following outlines the Committee structure and methodology used to assemble and prepare information on this project.

Working Committee: A working committee consisting of the following individuals was established:

<u>Name</u>	<u>Representing</u>
Mr. Bryan Dimen	General Manager, Parks & Open Space Management - City of Regina
Mr. David Ellis	Manager of Parks - City of Regina
Dr. Maurice Hennink	Regina Health District
Ms. Roslyn Ingram	General Manager, Public Affairs - City of Regina
Mr. Wade Morrow	Supervisor, Integrated Pest Management - City of Regina
Ms. Kathleen Peterson	Office of City Solicitor - City of Regina
Mr. Ron Pitchko	Manager Bylaw Enforcement - City of Regina
Mr. Ken Poure	Superintendent, Open Space Services - City of Regina
Ms. Charmaine Sawchyn	Horticulture Extension Officer - City of Regina

Role of Committee - The role of the Committee was to assist in:

- Defining the scope of the review;
- Developing the review methodology and input mechanisms;
- Conducting research; and
- Preparing the report

RHEAC – Sub Committee on Pesticides: Three members of the Regina Urban Environmental Advisory Committee – Sub Committee on Pesticides, were requested to

participate on the Working Committee. At their request they attended the meetings in the capacity of advisors. They were kept apprised of the progress of the report and were given opportunities for input at certain milestones in the review. The members were:

Mr. Doug Opseth
Dr. Mary Vetter
Ms. Jackie Lukey

Stakeholders

There are numerous categories of organizations/agencies/businesses/individuals that have a stake or an interest in this matter. The following represents a number of the more prominent categories or interests which were identified:

- **Industry** - local businesses that are involved in the application of pesticides, e.g. Weedman, Combat Tree Spraying, AAA Weed Control.
- **Suppliers** - local businesses that are involved in the public sale and development of pesticides, e.g. greenhouses, Agrevo, Walmart, Home Depot.
- **Public** - citizens at large.
- **Environmental Organizations**
 - Regina Natural History Society
- **Other Interested Organizations & Individuals**
 - Organizations or individuals that represent interests and that may be directly impacted by this matter.
 - Horticulture Society
 - Regina Garden Associates

Significant Land Managers - jurisdictions that manage large tracks of land.

- School Boards
- Airport Authority
- RCMP
- Wascana Centre Authority
- Private Golf Courses
- CN and CP Rail

Research and Data Collection: Information was gathered from various communities that have been or are about to engage in the debate regarding the use of pesticides in their community. Nine Canadian communities were contacted. In February a Committee member attended a Symposium in Ontario relating to pesticide use. It provided an opportunity to gather more information and establish contacts.

Stakeholder Input: It was important to solicit input from key community stakeholders on this matter. An outside consultant was engaged to assist in the development and implementation of questionnaires and interviews that were directed to:

- Industryfocus group session
- Suppliersinterviews
- Environmental Organizationsfocus group session
- Other Interested Organizations & Individuals.....focus group session
- Significant Land Managersinterviews
- Public-Soliciting feedback from citizens at large will be achieved through random sample telephone surveys. An outside consultant was engaged to conduct the process. A sample size of 400 with a precision of + or -4.6% at 95% level of confidence, (19 out of 20 times) was used.

II Role of Government in The Management of Pesticides

Responsibility for pesticide regulations in Canada is administered by Health Canada. Before being registered for use in Canada, all pesticides are approved by the **Pest Management Regulatory Agency** under Health Canada.

There are two primary pieces of legislation which deal with the control and use of pesticides in Saskatchewan. Firstly, the Federal *Pest Control Act and Regulations* govern the import, export, manufacture, registration, sale, storage, packaging and labeling of pesticides and enforcement in these areas. Secondly, *The Pest Control Products (Saskatchewan) Act and Regulations* is the provincial legislation that governs pesticides in Saskatchewan. It regulates the use and storage of, pesticides along with their transport, disposal, sale, labeling and other matters including enforcement.

Municipalities are confined to legislating in areas that have been specifically delegated to them by the province. In the case of the City of Regina, the relevant legislation is *The Urban Municipality Act, 1984*. In the Supreme Court of Canada decision of 114957 *Canada v. Hudson (Ville)*, however, it was established that just because the province or the federal government has legislated in a certain area, this does not mean that the municipality is precluded from doing so.

The Supreme Court of Canada decision in *Hudson* would allow the City of Regina, if it so desired, to enact a bylaw to restrict the use of pesticides without directly offending any other legislative provision. The legislative authority for such a bylaw is found in s. 83 of *The Urban Municipality Act, 1984*. Section 8 of *The Cities Act* also gives the authority for such a bylaw. The Supreme Court ruling also stated that the local level of government is in the best position to enact such a bylaw because it is the level of government which is “closest” to the citizens, and is therefore in the best position to legislate in relation to them. This is a clear signal from Canada’s highest Court that municipalities will be given some leeway when it comes to legislating for the health and wellbeing of their citizens.

The Role of The Pest Management Regulatory Agency

The Pest Management Regulatory Agency (PMRA) was established in April, 1995, in response to the recommendations of the Pesticide Registration Review Team. The Multi-stakeholder Review Team was charged with studying and making recommendations to improve the federal pesticide regulatory system. With the transfer of administration of the *Pest Control Products Act* from the Minister of Agriculture and Agri-Food to the Minister of Health, the PMRA was established in Health Canada to consolidate the resources and responsibilities for pest management regulation.

The goal of the PMRA is to protect human health and the environment while supporting the competitiveness of agriculture, forestry, other resource sectors and manufacturing. The PMRA is responsible for providing safe access to pest management tools, while minimizing risks to human and environmental health. The Agency is also dedicated to integrating the principles of sustainability into Canada’s pest management regulatory regime.

Responsibilities of PMRA: - The PMRA administers the *Pest Control Products Act* for the federal Minister of Health. The *Pest Control Products Act* regulates the use of substances that claim to have a pest control use. The Act also regulates other substances, such as formulants, adjuvants and contaminants, that are contained in pest control products.

Pest control products differ from many other substances that enter the environment in that they are not by-products of a process, but are released intentionally for a specific purpose. Although their biological effects are what make most pest control products valuable to society, these effects can also pose risks to human and environmental health. For this reason, the *Pest Control Products Act* and other policies affecting pesticides recognize and consider the environmental risks in addition to the human health risks and value of each product.

Before making a registration decision regarding a new pest control product, the PMRA conducts the appropriate assessment of the risks and value of the product specific to its proposed use. The value assessment may consider whether the use of the product contributes to pest management and whether the application rates are the lowest possible to effectively control the target pest. The risk assessment considers the inherent toxicity, persistence and bioaccumulative nature of the product, while addressing such key concerns as the degree to which humans and the target and non-target environment may be exposed, and the possible health hazards associated with the product. Because pesticides are introduced into the environment at quantifiable rates, the potential short-term impacts of environmental exposures can be closely estimated. For long-term exposure, the PMRA relies on persistence and bioaccumulation data as qualitative indicators, as well as on any monitoring data available.

For registered products, ongoing surveillance advances in analytical methods and improved evaluation processes provide a means to uncover environmental or health concerns, particularly with older products.

It is generally recognized that pesticides may pose a hazard to human health. Possible adverse health effects include cancer, birth defects, adverse effects on reproduction and development, damage to genetic material and other effects that may impair health. For this reason, an extensive battery of toxicity studies is required to determine the nature and extent of the hazard posed by a pest control product proposed for use in Canada.

The required studies are designed to assess the possible adverse health effects on a variety of species that may result from single, multiple or lifetime exposure to a pest control product via the skin, mouth, lungs or eyes. A variety of species are used to indicate whether the same effects are observed in different species, or if they are limited to a certain species. Metabolic and toxicokinetic information are also key, because they provide valuable information on rates of absorption, distribution and excretion in mammalian systems, as well as a profile of metabolites that are likely to be present.

The following is a list of the type of major studies that could be found in the health portion of a data package. In addition to being conducted on the pesticide itself, studies may also be conducted on metabolites.

- **Acute toxicity studies** are designed to provide information about adverse health effects that may result within about two weeks of exposure to high doses of pesticides.

- **Short-term toxicity studies** determine the effects of repeated exposure to a pesticide over a short period of time, usually from three weeks to three months. These studies also examine effects resulting from the most common routes of exposure (mouth, skin and lungs).
- **Long-term toxicity and carcinogenicity studies** determine the effects of exposure to a test substance over most of the test animal's lifetime (e.g., 2 years for rats, 18 months to 2 years for mice).
- **Reproductive and developmental toxicity studies** are designed to generate information on possible effects on growth and reproduction, and are conducted over at least two generations.
- **Teratology studies** are designed to determine whether a chemical may cause adverse effects on the developing fetus.
- **Genetic toxicity studies** are conducted to determine whether the pesticide may interact with genetic material, resulting in mutations and other damage (e.g., chromosome breaks), or interference with normal genetic processes.
- **Metabolism and toxicokinetic studies** provide information about the relative amount of the product that is likely to be absorbed into the body, the relative distribution of the absorbed dose among the tissues, and the rates and routes of excretion (e.g., urine, feces, bile, expired air).

Other Endpoints

- **Neurotoxicity studies** are required for pesticides, such as organophosphorous insecticides, that are likely to affect nervous tissue.
- **Immunotoxicity** is evaluated in the course of examining subchronic and chronic toxicity studies.
- **Endocrine disruptor potential** (such as interference with the production of sex hormones) is evaluated in the course of examining the information from reproduction, teratology, and short-and long-term toxicity studies.

Risk Assessment

Risk assessment combines the results of the hazard assessment (i.e., the evaluation of scientific studies) with those of the exposure assessment. Scientists in the PMRA determine to *no observed adverse effect levels* (NOAELs) from the information provided by the studies described above.

Assessment of cancer risks involves challenges that warrant special consideration. The PMRA's approach to cancer risk-assessment is based on the weight of the scientific evidence obtained through the evaluation of the entire data package.

In occupational/bystander risk assessments, the most appropriate NOAEL (based on such considerations as route and duration of exposure, species tested in toxicity studies, and the endpoint of toxicological concern) is divided by estimated exposure to determine the margin of safety. Typically, a margin of safety of 100 is considered acceptable to account for potential variability in response, both within the same species (i.e., rodents versus humans).

In evaluating the safety of food residues, the most appropriate NOAEL is divided by a safety factor, usually of 100. This number may be lower or higher, depending on a number of factors considered in the hazard assessment, such as the type of effect observed. The resulting figure provides the acceptable daily intake - the amount of pesticide that toxicologists consider safe for humans to consume each day for an entire lifetime. A maximum residue limit is established for each food by first determining the amount of pesticide likely to remain in or on food at the point of sale. The maximum residue limit is accepted only if total consumption of residues from all foods (including consideration of different consumption patterns, such as those of children) will not exceed the acceptable daily intake for that particular pesticide.

Environmental Risk Assessment: Scientific data on the environmental fate and environment toxicology of a pesticide are part of the information package required to support registration. Canadian environmental data requirements for major forestry and agricultural uses of chemical pesticides have been harmonized with U.S. requirements, and are similar to those of other pesticide regulatory systems. The PMRA conducts a critical evaluation of these data to determine the environmental risk of a pesticide.

The environmental risk posed by a pesticide is a function of:

- Environmental fate - i.e., what happens to the pesticide once it enters the environment, including expected environmental concentrations to which non-target organisms may be exposed; and
- Environmental toxicology - i.e., the hazards posed by the pesticide to non-target plants and animals, both on land and in bodies of water.

Conclusion

Pesticides are among the most tested and closely regulated substances in Canada. They are controlled at both the Federal and Provincial Government levels. At the Federal Level, pesticide regulations are administered by the Pest Management Regulatory Agency (PMRA), under Health Canada. At the Provincial level pesticides are governed within *The Pest Control Products (Saskatchewan) Act and Regulations*.

The PMRA administers the *Federal Government Pest Control Act* that regulates the use of substances that claim to have a pest control use. The PMRA is responsible for providing safe access to pest management tools, while minimizing risk to human and environmental health.

The PMRA conducts assessments of the risks and value of any new product before it is registered. For registered products, ongoing surveillance, advances in analytical methods and improved evaluation processes provides a means to uncover environmental or health concerns.

The PMRA requires that an extensive battery of toxicity studies be conducted to determine the value and extent of the hazard posed by a pest control product proposed for use in Canada. The studies are extensive and thorough.

In the case of the City of Regina, the relevant legislation which governs the City's mandate is *The Urban Municipalities Act, 1984*. Section 8 of *The Cities Act* also gives authority for such a bylaw.

The Supreme Court of Canada decision of 114957 *Canada v Hudson (Ville)*, however, established that just because the province or the federal government has legislated in a certain area, this does not mean that the municipality is precluded from doing so. This is a clear signal from Canada's highest Court that municipalities will be given some leeway when it comes to legislating for the health and well being of their citizens.

III City of Regina Current Pest Management Practices

In the mid 80's the City began to review its pest management practices in context of a growing awareness of protecting the environment. Of particular focus were programs aimed at managing the urban forest and mosquito control. What evolved was **Integrated Pest Management (IPM)**. IPM is a process for planning and managing sites to prevent pest problems and for making decisions about when and how to intervene when pest problems occur. It is a sustainable approach combining biological, cultural, physical and chemical tools to manage pests so that the benefits of pest control are maximized and the health and environmental risks are minimized.

Once a pest has been identified, the level of intervention, method and the priority given to manage the pest(s) are then considered in context of:

- **Regulatory Obligations:** Various sections of provincial legislation and various civic bylaws, which may influence the intervention strategy (e.g. Dutch Elm Disease, rats, skunks, weeds.)
- **Public Safety:** Pests, to varying degrees, may affect the safety of the public (e.g. gophers on athletic fields, skunks, weeds, rats, mice, mosquitoes.)
- **Loss of Public Asset:** Pests can cause severe damage and destruction of public assets (e.g. tree damage - beaver, Dutch Elm Disease, ash borers, cankerworms, weeds, golf course greens and bowling greens.)
- **Public Nuisance:** A variety of pests pose a significant inconvenience or an annoyance to the public while not presenting a direct threat to public assets or safety (e.g. low populations of cankerworms, weeds, mosquitoes, crickets, ants, crows, pigeons.)

The Noxious Weeds Act, 1984, is an example of a regulatory obligation. It is provincial legislation that was established to regulate and control the growth of noxious weeds on private and public property within both urban and rural municipalities. A noxious weed is defined as any plant (or the seeds of that plant) that the Minister designated for reference purposes in The Act. The noxious weed list includes 41 weeds including such notables as Dandelion, Canada Thistle, Quackgrass, Scentless Chamolean, and Green Foxtail.

This legislation, which is binding on all provincial municipalities, provides the authority with respect to the provisions of The Act. Such authority is used to appoint weed inspectors required to enforce The Act within the affected municipal jurisdictions.

The Act requires that every owner or occupant of land destroy noxious weeds on their land and prevent the spread of weeds. Where any land is infested with noxious weeds, the Weed Inspector confers with the affected owner or occupant regarding the methods of control to be used with a view to apply the most satisfactory treatment from the standpoint of the owner or occupant as well as of the municipality. However, where an agreement cannot be reached, the Weed Inspector may issue an Order to the owner or occupant of land infested with noxious weeds requiring the destruction of the noxious weeds. In 2002, City Bylaw inspectors

inspected 2,056 properties and issued 893 weed notices to property owners to correct weed problems.

There are a number of noxious weeds which are not easily controlled by mechanical means or such method of control is not practical. In these instances, pesticides provide an effective and efficient method of control. Restrictions or a ban on the use of pesticides where there is no effective alternative control has the potential to put a landowner or occupant in conflict with *The Noxious Weeds Act*.

A. Weed Control - Parks and Open Space Areas

The control of weeds in parks and open space areas is initiated by either the need to maintain a consistent and safe playing surface, as in the case of athletic fields and golf courses, or to meet public expectations for a clean weed free turf, as in the case of parks and open space areas. The judicious use of pesticides has been successfully used as a cost effective and efficient tool to meet these expectations. The variance in the types of park and open space areas managed, however, requires that weed management practices vary to suit the conditions. The following illustrates this point.

- **Athletic Surfaces** - Turf management practices for Class 2A and 2B athletic fields are set at a high standard. The high level of plant care creates a healthy vigorously growing turf grass that is so competitive for natural resources that weeds are not easily established. These levels of fields are essentially weed free. Subsequently, pesticide application on these fields is rare.
- **Irrigated Parks and Open Space** - The approach to managing turf grass in parks and open space areas has been to advocate the use of sound horticultural practices and pesticide intervention only as a last resort. Good soil preparation, frequent mowing, proper irrigation, fertilization and aeration are important maintenance activities required to sustain a healthy turf grass. The standard of maintenance for irrigated park and open space areas is not at the same level as Class 2A and 2B athletic fields. It is, therefore, necessary to apply pesticides to manage weed populations within community acceptable tolerances.
- **Non-Irrigated Parks and Open Space** - The approach to managing non-irrigated parks and open space areas or “Dryland Vegetation” areas has also been to advocate the use of sound horticultural practices. There are two types of Dryland Vegetation Management approaches:
 1. **Passive Management** - involves working with existing ground cover, which in many cases are non-native, drought tolerant, turf grasses. The goal is to allow the existing desirable plants to compete with weeds to become more dominant and evolve to a self-sustaining plant community. Appendix A shows the areas of the City that are under the Dryland Vegetation Management Program.
 2. **Active Management** - involves redeveloping an area by replacing existing vegetation with native plant material. This process generally requires significant resources to establish the plantings. The City has one Active Management project

referred to as the **Prairie Island Redevelopment Project**. Outside expertise was retained to assist with the project which started in 2000. The project is experimental and being monitored closely to determine the feasibility of expanding the concept into other suitable areas.

Weed Control Policy: In the early 1990's, the City evaluated the weed control program and developed a formal policy, attached hereto as Appendix B. The following highlights a number of changes that were made to the weed control program as a result of the Policy:

- Weed control programs were consolidated under one maintenance section. The reorganization was undertaken to ensure better control and accountability of all weed spraying services.
- Specialized spraying equipment was purchased to ensure more effective, efficient and safe spraying operations. Windfoil sprayers were purchased which reduced product drift and provided more accurate application of product.
- The park weed control program was organized into a Spring and Fall session. The Spring session was targeted to those areas where weed infestations were greatest. The Spring session was limited to approximately 3 weeks. The Fall session represented the major weed spraying effort. It generally extended for approximately 5-6 weeks. The fall represents the time of year when the weed plants are most susceptible to pesticides and more effective control can be achieved.
- The majority of pesticide spraying was scheduled to occur at night. Spray crews worked from 10:00 pm to 6:00 am. Night scheduling reduced the potential for wind drift. Evening winds are generally lighter than during day light hours and lighter wind reduces the potential for members of the public to come in contact with spraying operations.
- School grounds and parks immediately adjacent to schools were scheduled to be treated during the summer recess.
- Areas in close proximity to rear residential properties such as utility parcels, easements and rear lanes were eliminated from the spraying list. This ensured that vegetable gardens and ornamental trees were not at increased risk of being affected by pesticides.
- Formal communication plans were developed which include the following:
 - The Allergy List was started in the late 1980's for residents with sensitivity to pesticide products. People registered on the list were contacted in advance of any pesticide application that may be occurring within proximity to their work or home. The service is available at no cost to the individual. Appendix C provides a copy of the Pesticide Advisory Policy. In 2002, this program was amended to the current Pesticide Advisory Line. Citizens registered with the City are given the Advisory Line telephone number. City of Regina spray activities are recorded in advance of spray operations and residents can call in at anytime to find out where these activities are occurring.

- Site signage was created and posted on the area treated for a period of 24 hours following the pesticide treatment. The signs advise of the product used, purpose of the application, date of spraying and a contact number if additional information is required.
- Information notices were prepared and sent to all elementary schools in the spring of each year advising of the City's spraying operations.
- Public service announcements and the Citizen Information Page notices were developed and used to advise of the City's weed control schedules.
- The Administration established a process to continually monitor public opinion with respect to weed control attitudes and effectiveness. Random sample surveys are conducted annually.

Alternatives to the Use of Pesticides For Weed Control: The City continually monitors developments in the industry to learn about new and innovative products or methods that provide effective weed control. Some of the initiatives and products the Administration is familiar with or has tried are:

- **Steam** - Steam or hot water will kill plants by burning the plant cells. In annual plants this action kills the plant. In perennial plants, such as dandelions, plants often do not suffer root damage and will grow back from the root. The steam or hot water method of weed control is non-selective and any plant that comes in contact with the steam is affected. In turf applications, the grass around the targeted weed is also killed leaving brown patches of dead grass. The Administration has experimented with hot steam and determined that it has merit in controlling undesirable vegetation growing in sidewalk and road cracks, paving stones and ball field infields. The method is slow, labour intensive and needs to be repeated throughout the growing season at regular intervals to achieve effective control. The steamer was used on a limited basis in the 2002 season.
- **Infrared Burners** - These are infrared radiation units that generates intense heat. When the heat is applied to various plants it will destroy them. The control is non-selective and will destroy any plant that it comes in contact with. The Administration purchased a unit in 1999 to evaluate the performance. It was determined that this method of control may be suitable for small areas but not practical on a large commercial scale.
- **Salt, Vinegar and other Products** - Many commonly used products have been tried and found to kill plants. Salt, vinegar, diesel fuel, bleach, even throat spray have all been used to control weeds. A common herbicide, Treflan was initially developed as a fabric die. Most of these products are non-selective in plant control and do more damage to the environment than good. Pesticides such as Treflan have been rigorously tested and approved for use by the Federal Government. The use of any unregistered products for pest control is not legal and should not be considered.
- **Mechanical** - Prior to the development of pesticides, mechanical control was used and continues to be used in many cases. The Administration routinely rotovates around shrub and flower beds to condition the soil and control weeds. In turf areas the mechanical methods are to dig or pull individual weeds. This may be a practical alternative for the homeowner but is prohibitively costly on a larger scale.

Mowing turf is effective to control annual weeds such as pigweed, lambsquarter and stinkweed that typically grow during turf establishment. This method of control is generally ineffective at managing perennials. Weeds like Dandelion, Black Medic, Scentless Chamomile and Canada Thistle continue to regenerate from their extensive root systems. The Dandelion has the adaptive capability to quickly produce another flower head just below the last mowing height. In undisturbed situations a Dandelion will produce a flower stock 30-cm above the ground. In mowed turf it will produce flowers just a few cm from the ground. Dandelions are the predominate weeds in established turf and increased mowing by itself is not an effective method of control. Proper mowing as a component of sound horticultural management practices is important to produce strong healthy turf capable of preventing weed establishment.

- **Weed Barriers and Mulch** - Landscape Fabric and either organic or rock mulch have a use in preventing weed growth in some applications. Areas that may otherwise be rotovated such as tree or shrub beds are ideally kept free of grass and weeds to reduce plant competition with tree or shrub roots. The Administration have recently mulched a number of tree beds in the city. Besides the benefit of weed suppression and the reduction of pesticide use in these areas, soil moisture is conserved, soil temperature fluctuations are reduced and costs for rotovating are reduced. The use of wood or bark mulch is a good horticultural practice in certain applications with benefits to the trees and reduction of herbicide use. There is an initial cost for installation that limits implementation. There are also cost associated with restoration of beds which is necessary every 5-7 years. Mulching initiatives will continue on a site by site assessment.
- **Increase Maintenance Intensity** - Although any plant growing in the wrong location could be considered a weed, all plants defined as weeds in legislation are non-native plants to the area with aggressive growth habits, no natural controls, the ability to disrupt natural environments and limit production capabilities. Weeds are opportunistic and will take advantage of any spot possible to grow; once established they compete vigorously for resources to the point where they may limit other vegetation.

The most effective way to reduce the use of pesticides is to prevent the weeds or other pests from becoming established. This is achieved by creating the ideal environment for desirable plants to grow strong enough that there is no opportunity for weeds to start to grow. Generally the presence of pests in a landscape may be an indicator that something is lacking in the maintenance regime. To attain and maintain good plant health in a landscape there must be a proper balance of sound horticultural practices in context of the use intensity of the area. A sport field is usually under high use but is kept in a healthy condition with an intense maintenance regime. The City's athletic fields are not generally treated with a herbicide to control weeds because of the intense, high level of horticultural practices.

A balanced maintenance regime starts with good soil conditions and then includes proper timing and techniques of mowing height and frequency, watering, fertilization, aeration, and drainage. The City's park and open space system is divided into maintenance classes that identify the maintenance regime for each class. The maintenance given each class of park is designed to produce a quality standard to match the use intensity or the desired aesthetic outcome. The maintenance regime is a balanced package and will not produce healthy plants if out of balance. Altering the mowing or watering intensity alone is not a short cut to make up a short-fall in another aspect of plant health.

- **Biologically Based Weed Control Research** - The Prairie Turfgrass Research Center, operating in conjunction with Olds College, have been engaged to evaluate biologically based weed control products. Claims of pest control effectiveness have been made from research done in warm turfgrass conditions in the southern United States. There is no research done in the cold conditions of our local climate to support

the findings in warm conditions. Biologically based weed control methods using agricultural by-products may provide an alternative to traditional herbicide. Corn gluten meal can inhibit weed seed germination but has no effect on established root systems. Based on this mode of action, a corn gluten meal based product has recently been registered by the EPA as a weed control product in lawns and turfgrass in the US. In addition, soybean meal and sugar beet extracts have shown some promise as control options for weeds in turf. These agricultural by-products are not registered and have not been tested under Canadian Prairie conditions. Aside from the City of Regina, the cities of Calgary and Penticton are providing similar testing sites.

This research is intended to evaluate various natural control products under Canadian Prairie conditions for the control of broadleaf and grass weeds for home lawns, school grounds, and municipal parks. Specific objectives are to:

- (1) Adapt natural control products as weed control agents under cold climate conditions of the Prairie Provinces
- (2) Determine the most effective rate and timing of application of the material
- (3) Compare the effectiveness with a standard chemical pesticide control product
- (4) Conduct a cost analysis of the product versus standard chemical pesticide control

The research directly addresses environmental and societal concerns over chemical herbicide use in urban and suburban areas through development of non-toxic plant-derived products for weed control.

Three products will be tested over a three-year study established on two sites within the Regina parks system. Corn gluten meal, soybean meal and sugar beet extract will be evaluated for their ability to control weeds in turf. Experiments will be conducted at two sites within the parks system on areas that have a high infestation of weeds. Plot sizes will be 3 m² and will be laid out in a randomized fashion with four replications. Three different rates of the products will be compared. Applications will be made either two or three times during the growing season. Occurrence of weed species will be recorded and the number of each weed species will be counted three times a year for the duration of the trial.

B. Pest Management – Urban Forest

The City extends its **Integrated Pest Management** approach to the management of the urban forest. Continuous monitoring of various insects and diseases in the urban forest allows the City to introduce intervention techniques that are suitable to the level and type of pest threat. Monitoring allows not only pests to be identified but also beneficial insect species. In many instances, pests are left for control by naturally occurring insect species. The following represent some of the more significant pest issues facing the urban forest.

- **Dutch Elm Disease (DED) Program**– DED poses the greatest threat to the City of Regina’s urban forest. There are approximately 43,000 publicly owned elm trees at risk to the disease. The strategy for managing DED consists of 6 components.

1. Monitoring and Surveillance

2. Pruning and Sanitation
3. Firewood Collection and Inspection
4. Elm Bark Beetle Spray Program
5. Public Education and Awareness
6. Research

Elm Bark Beetles (EBBs) act as the vector or the carrier of the fungus which causes DED. In order to effectively manage the disease, beetle populations must be controlled. This is achieved by removing and properly disposing of dead or dying limbs from elm trees which are the primary brooding site for EBBs. Firewood inspection and collection is also key to managing the EBB population. A single piece of elm firewood is capable of producing thousands of young EBBs. If the elmwood has been infected with the DED fungus, all of the emerging beetles are infected with the fungus and spread the disease.

Efforts to control EBBs also include the application of the chemical insecticide Dursban™. This product is an important tool in the control of beetle populations. While there is some controversy over the use of the product, it is the most effective control for EBBs currently available on the market. The City ensures that the product is applied in a controlled manner, with licensed staff and that advance notification of spraying operations are communicated to the public. The Pest Management Regulatory Agency recently reviewed the active ingredient in Dursban™, chlorpyrifos, and approved its use for the control of DED.

The City is a member of the **Saskatchewan Dutch Elm Disease Association**. The Association is actively involved in networking inter and intra provincially to ensure that DED management techniques are the most current and effective. The Association also participates in various DED research and is currently involved in a research project with Simon Fraser University.

- **Cankerworms Program**– Each year, cankerworm populations become a public nuisance and can cause damage to the urban forest. An integrated program has been established to address this issue. The cankerworm life cycle was carefully studied and the “weak link” in their life cycle identified. Adult female cankerworm moths are wingless and must crawl up the tree to lay their eggs. Tree banding is a method of reducing cankerworm populations without the use of chemical products. A sticky band is constructed on the tree trunk and adult female moths are trapped. This prevents the eggs from developing in the larvae or worm stage, prevents defoliation and reduces damage and stress to the trees.

A public education and awareness campaign is implemented each year which advises homeowners when and how to band their trees. The local media are very supportive in providing information to the public during the banding periods. Residents have banded thousands of trees annually which has reduced the amount of tree spraying required.

Monitoring of both the Spring and Fall cankerworm population allows the City to identify areas where the infestation will be the greatest. Areas which have the highest cankerworm populations are targeted for the tree-spraying program. The control product currently used to control cankerworm larvae is considered to be non-toxic. The product *Bacillus thuringiensis* (Bt.) used, has a mode of action which is specific to the larvae in

the lepidoptera order, which include cankerworms. The product is non-toxic to humans, pets, birds or other insect species.

The use of *Bacillus thuringiensis* has resulted in the discontinuation of traditional chemical insecticides such as; Malathion, Sevin, Diazinon, Dursban and Methoxychlor. The City has used this non-toxic product for more than 10 years. The *Forestry* Bylaw also prohibits homeowners and private tree care companies from applying chemicals to City owned trees. Homeowners and private companies are permitted to spray City trees only if they use a Bt. product. Private tree spraying companies must attend an annual tree spraying certification course offered by the City. A condition of the certification is that the companies commit to using non-toxic Bt. products. Homeowners are also encouraged to use Bt. products when spraying their own trees. These communications efforts have further reduced the amount of chemical insecticides used within the City.

- **Ash Borer Program** - Ash Borer infestations can be devastating to ash trees. Larvae of this insect species cause extensive damage to maturing ash trees. The tunneling activity by larvae causes damage that weakens limbs and trunks. The damage can weaken a tree to the point that it may topple during moderate winds or suffer extensive structural damage from broken limbs and branches.

Traditional control practices for control of ash borer populations included the application of a systemic chemical insecticide. Since 1990, chemical control for ash borers has been eliminated and is now achieved through the use of non-toxic pheromone traps. Pheromone traps contain a synthetic scent which attracts the adult borers. The City maintains a set of 500 traps throughout the City. The traps have been very successful in controlling ash borer populations and reducing the use of chemical insecticides.

- **Aphid Program** - While aphid populations do not often result in the death of trees, they can cause trees to appear in poor health. ‘Honeydew’ dripping from aphid infested trees result in numerous complaints from residents each year. In the past, aphid populations were treated with chemical products such as Malathion, Diazinon, Sevin and Methoxychlor. During the past 10 years, the City has used the non-toxic product Insecticidal Soap™ for control of aphid populations. The soap spray covers the aphids and dehydrates the insects causing their death.
- **General Insect Control** - The urban forest contains many other insect and disease that must be monitored and controlled on an annual basis. Pear Slugs, for example, are controlled with the use of Insecticidal Soap™. Spruce Budworm populations are controlled with a Bt. spray. Populations of spider mites in Spruce trees are controlled with an application of Insecticidal Soap™ or even spraying with cold water. Control of these pests using the soap has replaced the use of other general, broad spectrum, chemical insecticide products such as Malathion, Diazinon, Methoxychlor, Cygon, Sevin and Meta-Systox.

Monitoring of the urban forest enables the City to identify emerging pests. In many cases, potential problems are identified early and control efforts using less toxic or biological control products can be utilized. Another initiative that has been used over the past several years has been the release of insect predators. Beneficial insect species are

released in areas where monitoring has identified high levels of tree pest species. Predator releases have targeted aphids and scale insects. The predator releases have also been used for control of thrips, whiteflies and other insect species in the Greenhouse operation.

C. Vertebrate Pests:

The City manages various vertebrate pests such as; skunks, rats, mice, porcupines, coyotes, fox, badger and beaver. At times, public health becomes a concern when dealing with animals that may be transmitting rabies and other diseases. Trapping is the primary control strategy used for most animals. With the use of the live animal traps, healthy animals are relocated and released back into the wild outside of the City. Trapping has reduced the use of poison bait products such as Strychnine, Bromodiolone and Chlorophacinone.

- **Gopher Control Program** - Control of gopher populations, or Richardson Ground Squirrels, is done primarily for safety reasons. Athletic surfaces such as Rugby and Soccer Fields and Ball Diamonds receive a higher priority due to the risk of injury to users of these fields. School grounds and finer turf areas are assigned the next level of priority for service while open space or buffer areas receiving a lower priority. Smoke bombs have been used since 1990 to manage the gopher populations. The use of the smoke bombs, (producing oxides of sulphur), has replaced the use of traditional bait products such as Strychnine, Bromodiolone and Chlorophacinone.
- **Beaver Control Program** – The management of beaver populations within City limits is necessary to reduce the loss of trees and prevent blocking of drainage systems that create an increased risk of flood damage. Trapping various pests is appropriate in certain situations, suitable trapping methods have not been found for beaver control. Beaver traps currently available are not acceptable. They do not trap in a humane manner and they do not provide the safety and security when trapping near waterbodies. Other methods used to manage beaver problems include protecting trees with wire and repellents on trees. While these have had some success the most effective and humane method of applying control is to eliminate the beaver with the use of a firearm. The use of firearms to destroy beavers is considered more humane than the use of current trapping methods.

D. Invertebrate Pests – Parks and Open Space Areas

Within this category are insect pests which affect the safety, comfort and potentially the health of residents.

- **Mosquito Control Program** - Mosquitoes are the number one pest which can affect residents outdoor summer enjoyment. Mosquito's are also capable of transmitting diseases such as Encephalitis and West Nile Virus although for the most part they are a nuisance.

Since 1985, the City has controlled mosquito populations with the use of a non-toxic pesticide. *Bacillus thuringiensis var. israelensis* (Bti) is applied to waterbodies to control developing mosquito larvae. Mosquito larvae are the weak link in the mosquito life cycle. Less toxic control products can be effectively used at the larvae stage than is

required to control adult mosquito populations. Bti has a mode of action that is specific to mosquito and biting fly larvae. This product is not harmful to children, pets, birds or even other insect species found within the same waterbodies such as dragon flies, damsel flies, water beetles or even frogs or snakes. The use of Bti has resulted in the elimination of the use of traditional chemical insecticides such as Dursban, Malathion and Sevin.

In 1994, the University of Regina conducted a review of the City's Mosquito Control Program and researched alternative control strategies. The research found that the city was conducting the type of Mosquito Control Program that achieved acceptable results, while recognizing the importance of the environment.

- **West Nile Virus** – West Nile Virus (WNV) was first reported in North America during the fall 1999 in the New York City area. Since then, WNV has continued to spread throughout much of Canada and the United States. The disease has been responsible for a growing number of deaths. Humans over the age of 50 and those with weakened immune systems are especially susceptible. WNV is spread by certain species of mosquitoes.

During 2002, WNV was confirmed within the Province of Saskatchewan for the first time. More than 40 birds submitted for testing of WNV resulted in positive test results. Several of these positive birds were submitted from within the City of Regina and surrounding area. While there were no human cases reported in Saskatchewan during 2002, Provincial Health officials suspect that human cases will occur in the future.

Due to the threat WNV presents, many cities and municipalities throughout North America have implemented Mosquito Control Programs that have included the control adult mosquitoes. This type of control requires spraying or fogging to control mosquitoes in their adult stage. Fogging programs have been implemented to reduce the risk to human health by lowering adult mosquito populations. In Canada, very few insecticides are registered and available for use to control adult mosquito populations. On insecticide that is registered for this use and was used in both Ontario and Manitoba during 2002, is the insecticide Malathion. Should the WNV become a serious health risk in Regina it may be necessary to initiate an adulticiding program with pesticides.

- **Wasp Control Program** - Some people react adversely to wasp stings and may have an allergic reaction causing health concerns. Each year the City receives calls requesting the elimination of wasp nests. Wasp populations grow and develop throughout the summer. By mid-summer wasp populations are at their peak. Wasps are controlled through the application of a Pyrethrin based spray. Pyrethrin is a botanical insecticide and is less toxic than traditional chemical insecticides. Where practical, wasp nests are removed from trees, shrubs or buildings without spraying. The nests may be easily removed during cool weather and spraying is not required. This approach has resulted in the discontinued use of chemical insecticides such as Malathion, Diazinon, Methoxychlor, Cygon, Sevin and Meta-Systox.
- **Storm Water Retention Ponds Control Program** - The City has been managing the water quality in the storm water retention ponds in consultation with the Saskatchewan Research Council and Water Research Corporation for the past 12 years. Over this period, management methods have moved from a program dependent on chemicals to a more integrated approach

relying on bio-manipulation techniques. Bio-manipulation techniques have included; monitoring of minnow populations and the release of pike fingerlings, introducing cray-fish and ducks to feed on weed growth, and introducing clams to assist in filtering water and feed on algae. Water pH has been modified in efforts to discourage favourable conditions for toxic blue-green algae.

E. Pest Management on Municipal Golf Courses and Lawn Bowling Greens

The City of Regina manages 2 competitive, 1 executive length, 2 par 3 chip and putt level golf courses and 1 lawn bowling greens facility. This represents approximately 265 acres of irrigated and non-irrigated turf. The most intensively maintained areas at these facilities are the specialized turf which are on the “greens”. The greens represent approximately 4.5% of the entire turf areas at these facilities.

While municipalities across the country debate the issue of placing restrictions on the use of pesticides, golf courses and lawn bowling greens have often been exempted. They have been identified as facilities that have special circumstances. These circumstances are directly related to specialized turf grass and play requirements of the golf course and lawn bowling greens. Management of these “exotic” grasses is complex and the use of pesticides is sometimes required as part of an overall management approach.

Over the last eight years the City of Regina Golf Courses and the Leslie Lawn Bowling Greens have implemented Integrated Pest Management (IPM) to the maintenance of the turf and surrounding areas associated with these facilities.

The IPM approach used at the City of Regina Golf Courses includes the following components:

Site Assessment: Assessment of the course and surrounding areas including mapping of irrigation system, trees, drainage patterns, soil and grass types and overall assessment of pest activity in recent years. This allows staff to document current conditions and to identify areas that are most vulnerable to pest activity.

Monitoring: Routine monitoring to determine type of pest problem, disease and what agronomic stresses might be present.

Setting Thresholds: Setting thresholds and tolerance levels is an evolving process. Although this process is not an exact science the philosophy considers the critical components of the course. For example, greens conditions are ranked higher than the fairways in terms of the need to consider intervention practices.

Stress Management: Many pests or pathogens cause little or no damage to turf grass when the turf is actively growing and other agronomic conditions such as soil, water, drainage, air circulation are optimal. However, when one or a combination of agronomic stress factors exist such as high compaction, waterlogging conditions, poor air circulation, low fertility or poor soil conditions, some dormant pathogens can become active resulting in significant stresses and damage to the turf up to and including death of the plant. This is especially true in the case of high maintenance turf types like the ones used in putting and bowling greens.

Without the ability to use a variety of cultural and pesticide intervention tools and methods to protect the turf from these pathogens it would be extremely difficult to manage a quality product. Examples of 2 pathogens common to Northern climates (Regina) that cause severe damage to turf types on putting greens are *Fusarium nivale* (pink snow mold) and *Typhula incarnata* and *Typhula ishkariensis* (grey snow mold). These pathogens are present in the soil medium and will become active following 80 –100 days of snow cover resulting in significant mortality not just in the turf leaf but also in the entire plant.

Identifying and Optimizing Management Practices: When a pest or pathogen is present above the tolerance level, (eg. snow mold damage to greens) options are considered to determine; what conditions are contributing to the situation, what environmental conditions and maintenance practices are contributing to development of the problem, and what practices can be considered to alleviate the situation. Corrective methods employed include adjusting cultural practices, introducing biological control agents or the use of chemical pesticides. The use of pesticides is considered as one of many tools used in the IPM program.

Evaluation: The final step in the IPM approach is evaluating the results of the management program. This is an important step in developing action plans for the long-term management of pests that affect golf courses and the lawn bowling greens.

The following represents examples of a number of cultural initiatives that have been used to contribute to the successful management of pest issues at the municipal golf courses:

- Documentation of daily maintenance practices specifically on greens and continuous evaluation of the impact of the maintenance practices;
- Major improvements in the inventory of the irrigation equipment, which allow improved management of the amount of irrigation water applied;
- Site specific management of trees and shrubs to improve air circulation around greens and tee areas to reduce conditions that support the development of turf pathogens;
- Drainage improvements in high maintenance areas that in past years have presented conditions that negatively impact healthy turf establishment and allow for the development of pest problems to occur.
- Changes in seed varieties and cultivars that can better withstand the climatic conditions;
- Improved cultural practices including incorporation of soil amendments to improve organic content thereby improving nutrient holding capacity and to enhance drainage capabilities;
- Improved mechanical practices such as aeration and dethatching have improved plant health for both leaf and root development. This ensures the turf is more capable of competing against weed encroachment and disease; and

- Use of winter protection methods to reduce impact of turf disease development which occur from severe winter conditions that weaken the turf leaving it more susceptible to disease attacks. This includes the use of tarps, flax straw, snow fences and topdressing applications.

The City maintains a strong commitment to network with other agencies and associations that are committed to enhancing the quality and management of golf courses. These include Associations such as the (CGSA) Canadian Golf Superintendents Association, (RCGA) Royal Canadian Golf Association, (STA) Saskatchewan Turf Association and the (WCTA) Western Canada Turf Association.

In 1998 the CGSA published the Environmental Management Resource Manual. The manual demonstrates the CGSA's commitment to its mission statement and to a process for its members to conduct golf course management practices in a manner which respects the environment. The City participated as a representative in providing input into various portions of the manual during the development stages in the mid 1990's. The Manual provides a useful management guide.

Conclusion

The City of Regina manages more land than any other single jurisdiction, agency, organization or individual in the city. The land is also among the most diverse and maintenance serves the need of a broad range of public interests and tastes. Although the City continues to experiment with and research alternatives to pesticides, many espoused methods and products are not cost efficient or proven to be effective on a large scale. The Administration considers the use of pesticides as an important part of integrated pest management and one that should continue to form part of the City's management approach.

The City has a comprehensive Public Open Space Weed Control Policy that serves to regulate and control the use of pesticides on public open space. Although the City uses only those pesticides that are approved by Health Canada's Pest Management Regulatory Agency, the City could further regulate its use of pesticides, particularly as it applies to the management of weeds, by implementing changes to its policy. This can be achieved by Council approved policy without the need for a bylaw.

The City has a strong relationship with Wascana Centre Authority, Regina Catholic School Division and the Regina Board of Education. These jurisdictions also represent the management of significant areas of land in the city. Working collectively, a further reduction in the use of pesticides can be achieved through policy as endorsed by the appointed and elected officials of the respective jurisdictions. Again, improved pesticide management and subsequent reduction can be achieved without the requirement of a bylaw.

The Noxious Weeds Act, which is binding in all provincial municipalities, was established to regulate and control the growth of noxious weeds on private and public land. Failure of land owners or occupants to control noxious weeds on their land to the satisfaction of the Weed Inspector is a contravention of the Act. Pesticides are used as an effective and efficient method of weed control in situations where mechanical control or other methods are not

suitable. If the City were to restrict or ban its use of pesticides without having an effective alternative method of control, the City risks being in contravention of the Act.

Golf courses and lawn bowling facilities require intense specialized maintenance. The greens at these facilities are comprised of exotic turf grasses specially suited for the type of play required by the facility users. To sustain the quality of the turf it is necessary to supplement good horticultural practices with the use of pesticides. This recognizes that the greens are among the most heavily used areas of these facilities and maintaining a consistent turf is critical to the enjoyment and success of the participants. Any variance in the quality of the greens can adversely affect the quality of the game and, subsequently, revenues.

The City maintains an active membership in various provincial and national level organizations. In the golf course area, for example, the City is a member of the **Canadian Golf Superintendents Association, Sports Turf Association, Saskatchewan Turf Association**, and the **Western Canada Turf Association**. The City also networks frequently with the municipalities on a variety of matters including those related to pesticides. As an active member on various associations and by networking with other municipalities, the City is able to keep current on various initiatives that support horticultural improvements without the aid of pesticides.

IV Growing Concerns About the Use of Pesticides

Pesticides and Health Effects

It is becoming increasingly clear that the use of pesticides in a manner not strictly controlled in the broad sense, exposes the environment and all its inhabitants to chemicals that have health effects which are serious in consequence. A multitude of studies have been done looking at health effects and pesticide exposures. Research often shows some sort of relationship of observed adverse health effects and exposure to pesticides. Exact causality is very difficult to prove because humans are exposed to a myriad of chemicals in the environment in their daily lives. However, observed health outcomes in people occupationally exposed to pesticides, indicate that these chemical compounds may be associated with a number of adverse health effects.

As with neurological effects research, more studies are required to establish which pesticides contribute to the increased risks. Regularly we are seeing reports of findings suggesting adverse health effects. The general body of evidence points in this direction and it is prudent that a more controlled approach be considered in the use of pesticides, particularly where these chemicals are used in the aesthetic field and where more natural and obviously less harmful alternatives exist. Acute, high dose, direct exposure effects are well known such as organophosphate poisoning, but the low dose, multiple agent, multiple exposure events over lengthy time lines effects are being described and suggest areas for concern.

Extensive work in analyses of scientific documents and published papers of the subject has been done by the City of Toronto Public Health Department and published on the website of the City in April, 2002, in a paper titled "Lawn and Garden Pesticides: A Review of Human Exposure and Health Effects Research".

Some examples quoted in the paper include:

- Reproductive effects: Some studies of people working with pesticides suggest increased problems with fertility, spontaneous abortions and miscarriage.
- Brain and nervous system effects: Some studies of workers exposed over a long period to pesticides known to be neurotoxic have shown impairment in information processing, memory and reflexes and subtle psychological, behavioural and cognitive effects.
- Cancer: Recent studies show increased risks of testicular, prostate, non-Hodgkin's Lymphoma and multiple myeloma among those exposed to pesticides through their work.

The implications and concluding observations arrived at by the City of Toronto Public Health Department in the paper are stated as follows:

- Overall, this broad evaluation of studies examining exposure and health effects data, although unable to make definitive statements about risks from specific residential-use pesticides, supports that from a public health standpoint, avoiding unnecessary uses of pesticides is prudent.

- Encouraging reduced or minimal reliance on pesticides for lawns and gardens can be one important strategy, particularly because lawn pesticide use has generated considerable public concern and because this aligns with the stated objectives of government initiatives such as PMRA's Healthy Lawns Strategy.
- Minimizing pesticide use is important where there is likely to be exposure of infants, young children, pregnant women, the elderly and those with pre-existing illnesses, the members of society most immediately identifiable as being potentially more vulnerable to chemical exposures. It would be particularly sound to encourage people to avoid pesticide use in areas where young children are likely to be exposed.
- Prudent practices among Toronto's citizens should be encouraged regarding the use of pesticides indoors as well as outdoors.
- Toronto Public Health should work with appropriate government agencies and representatives of other stakeholder groups to ensure that at a minimum, messages about the proper use of pesticides and legally mandated precautions are effectively communicated to the public. It would also be important for the City of Toronto to provide a supportive environment that encourages people to use least toxic products or appropriate non-toxic alternatives in pest management approaches.
- Toronto Public Health also supports ongoing research, informed by multiple perspectives (including epidemiology, genetics, toxicology and public health), on exposures to pesticides and the potential for health effects among vulnerable subpopulations, including the unborn, young, old, malnourished and sick.

The "Lawn and Garden Pesticides: A Review of Human Exposure and Health Effects Research" paper is deemed to reflect accurately what the Regina Health District - Public Health Services can say on the health effects of pesticides.

The Canadian Public Health Association in a paper submitted to the House of Commons Standing Committee on Health dated April 25, 2002, recommended that given that scientific inquiry into the effect of pesticide use on human health is incomplete and ongoing implementation of the "**precautionary principle**" when considering new registration or re-registration of pesticides. The definition of the Precautionary Principle of the Rio Declaration on Environment and Development (Brazil 1992) stated that "**when there are threats of serious or irreversible damage, lack of conclusive, scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent degradation**".

The Action Plan on Urban Use Pesticides

Increasing public concern over the use of pesticides in the urban setting has emphasized the need to take action. The federal, provincial and territorial governments have developed an **Action Plan** to help Canadians reduce their reliance on pesticides in the urban setting. The key is to be aware of the many alternative ecological solutions that are available and adapt them to the urban environment. The PMRA, the provinces and the territories have established a Working Group through the Federal/Provincial/Territorial Committee on Pest Management and Pesticides to implement this Action Plan.

The Action Plan includes a **Healthy Lawns Strategy** that will help reduce Canadians' reliance on pesticide use for lawn care. Based on Integrated Pest Management principles (IPM), the Healthy Lawns Strategy will place particular emphasis on pest prevention, the use of reduced risk products and the application of pesticides only when necessary. Initiatives under this strategy will include the development of education materials and programs on healthy lawn practices, including a "Healthy Lawns" web site. Appendix D provides an example of lawn care information available on the web site.

The **Action Plan for Urban Use Pesticides** (see Appendix E for the Action Plan) also includes priority re-evaluations, to be carried out by the PMRA, of the most common chemicals in lawn care pesticides. The intent of these re-evaluations is to aggressively apply the most modern risk assessment principles, including additional safety factors to protect children, to products used in the urban setting. A re-evaluation involves a comprehensive review of the scientific data available on the pesticide to determine whether any further restrictions need to be made to its conditions of registration.

Pesticide Issues In Other Communities

An important part of the report was to contact other communities to determine how they are managing pesticide concerns that have been raised in their respective communities. While a few have enacted bylaws to ban certain pesticides, the majority have or are about to implement **Integrated Pest Management (IPM) and or Plant Health Care (PHC)** programs in an effort to reduce pesticide use. The key aspect of this approach is public education and awareness about the proper use of pesticides, IPM and PHC practices and alternatives to pesticides.

IPM is a healthy approach to keeping pest populations (weeds, insects, diseases, etc.) under control. IPM consolidates and co-ordinates all necessary pest management techniques, effectively and economically using environmentally sound methods. Since pest problems often point to ecological imbalances, the IPM goal is to plan and manage ecosystems to prevent organisms from becoming pests. IPM plans generally include the following components: identify the problem, monitor, determine when action needs to be taken, select the least toxic alternative and evaluate.

Plant Health Care (PHC) plans are a little broader in scope than IPM plans. PHC advocates the use of proper cultural practices that promote healthy, vigorous plants. This may not eliminate pests, but it will prevent many pest problems. When pest problems develop, responsible pest management or IPM must be practiced as an ongoing part of the plant health care program. PHC plans can be developed for various landscape components but are often developed for turf and include: monitoring to determine the quality of turf and what cultural practices need to be undertaken; cultural practices such as top dressing, fertilizing, proper mowing, aeration, proper watering, overseeding and dethatching.

Those municipalities that have enacted bylaws to ban pesticides have banned all outdoor use of pesticides with respect to landscape care. They have listed products and/or locations that are exempt from the ban. Exemptions vary, but some examples of exemptions are: various low toxicity or organic products such as Insecticidal SoapTM and Bt; some or all commercial

properties; swimming and decorative pools; treatment to vegetable gardens under a certain square footage; and, golf courses and lawn bowling greens. It also seems common to have a permit process in place for people to apply pesticides in extreme circumstances such as when plants or insects constitute a danger for human beings or to control or destroy insects which have infested a property. Attached as Appendix F is a copy of the Town of Hudson, Quebec bylaw.

The following is a summary of what several other Canadian cities are doing with respect to the management of pesticides.

Halifax Regional Municipality, Nova Scotia: Halifax Regional Municipality (HRM) Council passed a Bylaw in 2000 to regulate pesticide use on both municipal and private property. Commercial properties including golf courses are excluded. The Bylaw is authorized by the province of Nova Scotia under the **Municipal Government Act**, which allows HRM to regulate outdoor applications of pesticides for municipal properties. The four-year phasing of the bylaw requires an immediate halt to pesticide use for turf and plants outside on public property and moves towards a total ban on the use of pesticides on private property by 2003. There is a list of permitted pesticides that are included as part of the bylaw. A permitting system to allow pesticide use in special circumstances has also been implemented. A copy of the HRM bylaw is attached as Appendix G.

Westmount, Quebec: Westmount is a suburb of Montreal. In 1989 a parks policy not to apply pesticides was implemented. In 1994, a bylaw banning pesticide use was passed. The bylaw has since undergone several revisions with each successive bylaw becoming more restrictive. The bylaw bans use of all pesticides in exterior areas and lists a few exemptions. A permit process is in place to allow pesticide applications in certain circumstances. Various education programs have been implemented in the past.

Toronto, Ontario: In 1989, City Council adopted, in principle, the banning of pesticides on all City property and recommended a Pesticide Committee be convened. An Integrated Plant Health Care Program was started in 1989. Since then, the City has reduced pesticide use on parks, sports fields, and roadsides by more than 90%. In 2000, a pesticide reduction communication plan and a Green Guide to Healthy Lawns was initiated to encourage voluntary reduction of pesticides on private property. Public Health is currently conducting a broad public consultation process regarding the restriction of pesticide use on private green space.

Waterloo, Ontario: In 1991, the City implemented a Plant Health Care Program. The City only uses herbicides for spot spraying poison ivy along trails and occasionally uses insecticides for severe insect infestation. Golf courses still use pesticides but are decreasing use as alternatives become available. There is a regional group encompassing Waterloo, Kitchener and Cambridge that is currently surveying the public with respect to opinions about pesticide use on private property. They are also determining whether an education program should be implemented.

Hamilton, Ontario: The City of Hamilton is developing an Integrated Plant Health Program (IPHP) which includes, as a goal, the progressive reduction of lawn chemical use on municipal parks and open spaces. Parks have already made very significant reductions in

pesticide use, only 6.5%, 389 of 6000 acres, of city owned land was sprayed in 2001. The City is also, in collaboration with community organizations, preparing a co-ordinated public pesticide education program aimed at helping residents make informed decisions about pesticide use on residential property.

Mississauga, Ontario: The City of Mississauga has utilized Integrated Pest Management practices since 1990. The City manages weed and pest populations through a variety of physical, biological and cultural practices. Pesticides are only used when there are no other cost-effective alternatives. The City has also adopted a practice that neighbourhood and general park areas not be sprayed with pesticides. In utilizing a collective approach, the City is reducing the need for the application of pesticides, which presently is limited to less than 2% of public lands.

Edmonton, Alberta: In 2002, a Pesticide Advisory Committee made up of stakeholders, experts and citizens was formed. The Advisory Committee will focus on education of the public about use and misuse of pesticides, a review of the City's use of pesticides and planning for future reduction of pesticide use. The City of Edmonton is currently preparing an IPM plan.

Calgary, Alberta: The City of Calgary has IPM Plan in place. It takes a leadership role within the city by educating and promoting IPM to other city departments and the public. Community values were incorporated into the plan during its development in 1998, in consultation with the Pesticide Advisory Task Force, City of Calgary staff and the public. The plan aims to manage Calgary's 7,000 hectares of green space in an ecologically friendly and cost effective manner.

The City of Calgary established a program for communities interested in establishing pesticide-free parks. Community members must submit a waiver, signed by 2/3 of homeowners residing next to the park, or from two-thirds of the community at large in the case of all parks in the community, to initiate a request to ban pesticides for five years. The City then evaluates the site and provides a status report to the Community Association and a Community Association meeting must be held to address the change. Details of this process are attached as Appendix H.

London, Ontario: The position of the City of London is to enact a by-law regulating the use of non-essential pesticides when their legal counsel can confirm that they have the authority to do so under the new Municipal Act. In the interim, they will establish and implement an Integrated Pest Management plan.

Pesticides and Their Regulated Use by Bylaw

“Pesticide” and “pest control product” are general terms for a wide variety of products designed to control and manage pests. Common examples of pesticides include: herbicides to control weeds; insecticides to control insects; fungicides to control certain types of plant diseases; insect repellents; rodenticides to control rats, mice, gophers and other rodents; algicides to control algae in swimming pools; antifouling agents to control organisms that attach to boat hulls; and preservatives to control the decay of wood and other material. Not all pesticides are the same. There can be significant variances from one to another; a pesticide may be chemical or biological (e.g., bacteria and viruses used as pest control products).

Pesticides are used widely. They are likely to be found in nearly every home and business to control insects and other organisms that may threaten human health. They may also be used around the same settings to control weeds and other lawn and garden pests. Pesticides are used widely in agriculture to control many different kinds of pests, and for similar purposes in other industries such as forestry, lumber and aquaculture. Some pesticides, such as those used to control foreign invading species, may be used to protect parts of our environment.

The types of benefits associated with pesticides vary with their uses. In agriculture for example, economic benefits derive from their contribution to increasing the supply of safe, low-cost food for a growing world population. In gardens, parks, playgrounds and golf courses, aesthetic considerations and turf quality are seen by some as important benefits of pesticide use, along with controlling noxious weeds such as dandelions and those which cause allergies. In hospitals and homes, pesticides are commonly used to protect health by controlling pathogenic bacteria and disease-carrying insects such as mosquitoes.

While debate and concern about the use of pesticides includes the broad spectrum of their uses, the focus of the motion adopted by Regina City Council on September 17, 2001, was on “banning those toxic chemicals which are used for aesthetic reasons”. The targeting of pesticides that are used primarily for aesthetic uses, particularly as they are applied for lawn care and related uses around homes, parks and playgrounds, appears to be a reoccurring theme expressed by those communities contacted during the preparation of this report. Most communities have developed or are in the process of developing public education and awareness programs around **Integrated Pest Management** or **Integrated Plant Health** approaches focused on the care of lawns and gardens. The goal of these programs is the reduction of lawn and garden pesticides in residential, business and municipal parks and open spaces through the implementation of sound horticultural practices and the use of alternative products to pesticides.

The introduction of bylaws at the municipal level to restrict the use of pesticides in the community is not wide spread. Those that have adopted bylaws have done so by adopting the broad definition of the term pesticide and then listing various products and/or locations that are exempt from the restriction. This approach eliminates the need to define within a bylaw such terms as “aesthetic” or “cosmetic”. This appears to be the most practical approach to determining what a community might wish to restrict if it were contemplating the adoption of a bylaw to restrict the use of pesticides.

The enforcement of any bylaw that would restrict or ban the use of specified pesticides for various purposes would be problematic. It would be difficult to enforcement a bylaw directed at private land-owners. Enforcement would be limited to responding to citizen complaints with no ability to undertake pro-active enforcement.

Some of the issues associated with enforcement of a bylaw that would be associated with responding to complaints include:

- duration of time between the occurrence of the event (alleged violation) and the complaint made to the City of Regina.
- duration of time between the information via point (a) above and the opportunity for the Bylaw Enforcement Officer to inspect the affected property in relation to other high priority investigations.
- opportunity/availability of the Bylaw Enforcement Officer to acquire relevant evidence and/or witness statements in a timely manner in relation to the occurrence of the alleged violation that would be admissible in Court, if necessary.
- opportunity to legally acquire physical soil and/or vegetation samples based on the required consent of the applicable property owner. There is no current provision in *The Urban Municipality Act, 1984* for the right of entry onto the affected private property for this specific purpose. However, there is a provision to obtain a warrant for the purposes of entry and seizing relevant evidence. It should be further noted that there does not appear to be such a provision in *The Cities Act* to enter a private property and acquire relevant evidence for this specific purpose unless a warrant is obtained accordingly.
- the need to analyze the sample(s) via a qualified testing facility (laboratory) to obtain accurate, independent results to facilitate effective enforcement action. There could also be a substantial time delay in obtaining these results depending on other laboratory/testing priorities and work load.
- any related costs associated with sample testing would most likely be borne by the City of Regina which could be expensive depending on the number of samples/tests required.
- an expert witness associated with the laboratory/testing would most likely be requested to provide relevant testimony, if required.
- any relevant enforcement, whether initiated under current legislation or *The Cities Act*, would be subject to prosecution action.

Conclusion

It is becoming more clear that the use of pesticides in a manner not strictly controlled exposes the environment and all its inhabitants to chemicals that have health effects which are serious in consequence. Extensive work and analysis of scientific documents and published papers of the subject were done by the City of Toronto Public Health Department. The Toronto Public Health Department published a paper on their website entitled “Lawn and Garden Pesticides: A Review of Human Exposure and Health Effects Research”. It is important to note, however, that pesticides is a broad term and not all pesticides are the same.

While more studies are required to establish which pesticides contribute to increased risks, the general body of evidence suggests that a more controlled approach be considered in the use of pesticides. For this reason the City of Toronto Public Health Department supports initiatives aimed at reducing the reliance on pesticides particularly for lawn and garden use.

The paper as prepared by the Toronto Public Health Department is deemed to reflect accurately what the Regina Health District – Public Health Services can say on the health effects of pesticides.

The increased public concern over pesticides in the urban setting has emphasized the need for the senior levels of government to take action. The federal, provincial and territorial governments have developed an Action Plan to help Canadians reduce their reliance on pesticides in urban settings. The Action Plan include a Healthy Lawn Strategy based on Integrated Pest Management (IPM). The Action Plan for Urban Use Pesticides also includes priority re-evaluations, to be carried out by **The Pest Management Regulatory Agency (PMRA)** of the most common chemicals in lawn care pesticides. This will include the herbicides 2, 4-D, MCPA and lawn care use for corbaryl, mecoprop and dicamba.

An important part of the report was to consider what other communities were doing to manage pesticide concerns that are being raised in their respective communities. Nine communities were contacted and while few have enacted bylaws to restrict or ban the use of certain pesticides in their communities, the majority have or are about to implement Integrated Pest Management (IPM) or Plant Health Care (PHC) programs in an effort to reduce pesticide use in their respective communities.

While much debate on the reduction or ban on pesticides has been focused on pesticides that are used for “cosmetic” or “aesthetic”; eg. lawns and gardens uses, there is no clear definition of those terms available. Those communities that have implemented a bylaw have used the broader definition of what a pesticide is and then listed various products and/or locations that are exempt from the restrictions. This appears to be the most practical approach in establishing how a community would restrict the use of pesticides if it were so contemplating to do so.

Enforcement of any bylaw to restrict or ban the use of specified pesticides for defined purposes would be problematic. There is no provision in *The Summary Offences Procedures Act* to allow the City to issue tickets. It would be necessary to lay charges against the offender through the City Solicitor’s office after a full investigation. The evidence gathering process would also be difficult and would rely primarily on the evidence of witness statements.

V Stakeholder Feedback

Essential to the preparation of the report was the development of information feedback mechanisms that would reflect the behaviours, attitudes and beliefs from a broad cross-section of key community stakeholders. While the process of engaging the community in the debate surrounding the use of pesticides is just beginning, the methodology adopted in the development of this report was an important first step.

An outside consultant, Decision Research, was engaged by the City to gather input from the public and key stakeholders into the report process. The activities undertaken by Decision Research included:

1. review of previous surveys that were related to this issue;
2. key informant interviews with those involved in the production, sale, distribution of pesticide products and those responsible for maintaining significant tracts of land within the City;
3. a focus group session consisting of those with a special interest in this issue and those whose business involves the application of pesticides; and,
4. a survey of Regina residents dealing with the issue of pesticide use.

1. Previous Surveys

Decision Research has conducted city-wide surveys dealing with general issues affecting the City since 1986. Sample sizes have ranged from 400 to 1,000 interviews.

In each of those surveys which had asked respondents to identify the most important issue facing the City of Regina, there has been no reference to pesticide use.

While the “most important” issue has varied over time – water, streets, taxation and other issues have shown up and then disappeared – neither pesticides nor the broader issue of the environment have arisen.

In the most recent City Omnibus Survey (July 2001, 800 interviews), there were again no mentions of pesticides. There were three references to “water” (one to cost) and two mentions of Dutch Elm Disease.

Pesticides are clearly not a “**top-of-mind**” concern for residents of Regina.

Since the Fall of 1999, the City Omnibus has also included specific questions relating to the public’s attitude toward the City’s application of herbicides. Respondents have been asked to identify which of three statements concerning the application of herbicides has been closest to their belief. The three statements and the number identifying most closely with each over the past three years follow:

“The City should stop applying herbicides and chemicals to control weeds in consideration of the environment.”			
	Fall 1999	Spring 2000	July 2001
Closest to Belief	53 (13.2%)	71 (18.1%)	68 (17.0%)

“The City’s present use of herbicides to control weeds seems acceptable and reasonable.”			
	Fall 1999	Spring 2000	July 2001
Closest to Belief	293 (73.1%)	274 (69.7%)	285 (71.1%)

“The City should increase its use of herbicides to improve weed control in our city.”			
	Fall 1999	Spring 2000	July 2001
Closest to Belief	53 (13.2%)	48 (12.2%)	46 (11.5%)

Those who have indicated they would favour a cessation in the application of herbicides and chemicals were also asked if they would then be willing to accept an increase in the weed population in the City. Of the 17 % who indicated they would favour a cessation in the application of herbicides and chemicals in July 2001, 46 % would accept this consequence and 33% of this group would not accept this result. Another 21 %would also accept this but do not believe it would in fact be a consequence.

It should also be noted that “Parks” are the area of operation where the City has consistently been given the highest ratings for provision of service by residents over the course of these survey periods. This positive impression will influence opinions in this area as well.

Pesticides also do not arise as a top-of-mind issue in province-wide surveys. In those province-wide surveys conducted by Decision and as well in the quarterly or bi-monthly omnibus surveys commissioned by the Province of Saskatchewan dating back to 1994, pesticides has not been raised although there have been more general references to the environment. Even this broader issue, which encompasses several varied concerns, has not risen above 2 percent as the priority issue.

In the Fall of 2001, the **Regina Urban Environment Advisory Committee** commissioned a public survey which specifically dealt with environmental issues in the City of Regina.

In this case, respondents were asked to identify what they felt was the most important environmental issue facing the City of Regina. They were then asked to identify the “next most important issue” and the “third most important” issue. In the case of this more specific questioning, pesticide use does arise as a concern. The following chart gives actual frequencies of response for a sample of 400.

ENVIRONMENTAL ISSUE				
	Most Important	Next Most Important	Third Most Important	Total Mentions
Drinking Water Quality	103	27	11	141
Outdoor Air Quality	78	54	18	150
Waste Management	40	35	11	86
Dutch Elm Disease	17	7	4	28
Pesticide Use	6	15	8	29

There were 15 females and 14 males who mentioned pesticide use as among their top three concerns. These tended to be older respondents with nearly half over the age of 60 years.

Nearly one-quarter (25%) could not identify an environmental issue of concern to them.

This survey also asked residents if they were personally using more or less pesticides and herbicides than two years ago or if their use of these materials had not changed.

PESTICIDE, HERBICIDE AND INSECTICIDE USE			
More than two years ago	–	21	(5.2%)
About the same	–	144	(35.6%)
Less than two years ago	–	133	(32.9%)
Don't Use	–	106	(26.2%)

One half of those who rent their residence (49.5%) do not use pesticides or herbicides. Thirty-eight percent of homeowners now use less than they did previously. Older residents are more likely to be using pesticides and herbicides less than previously.

The six individuals who identify pesticide use as the most important environmental issue represent 1.5 percent of the population. The 29 who list this as among their top three environmental concerns represent 7.2 percent of the population of the City.

The most recent survey conducted in March of 2002 shows slightly higher numbers expressing pesticide use (8 or 2.1%) or spraying (7 or 1.9%) as the most important issue. This will reflect considerable public discussion of the issue at the time of interviewing including a major announcement by the Federal Government.

This most recent survey, however, also did indicate that a majority of Regina residents are at least somewhat concerned about the impact of pesticides on health and the environment and that they favour reductions in pesticide use by all parties.

2. Key Informant Interviews

Organizations responsible for significant tracts of land within the City of Regina and those involved in the production, sale and distribution of pesticides were contacted to discuss the issue and the proposals before City Council. The groups contacted included greenhouse operators, Aventis, Canadian Tire, Home Depot, Wal-Mart, local golf courses, Regina Board of Education, Regina Catholic School Board, Regina Airport Authority, CP and CN Rail, RCMP, Wascana Centre Authority and Boardwalk Equities.

These groups were asked about their current practices with respect to pesticides and alternative products or practices. They were asked about the impact a ban or restrictions would have on their operation and their experience with similar steps taken in other jurisdictions. All those interviewed were given an opportunity to pass along any comments concerning the work of the Committee that they wished. The following represents a summary of information provided through the key informant interviews. A more detailed response is attached as Appendix I.

- Property managers practice Integrated Pest Management (IPM). This is the practice of irrigation management, cultivation, etc. The use of pesticides is considered as a last resort. Those in the industry encourage IPM among their customers.
- These individuals share concerns over the inappropriate or uninformed application of pesticides by homeowners and unqualified individuals.
- Users have moved to more environmentally-friendly products and practices and continue, with varying success, to experiment with alternatives.
- Experience in other jurisdictions is mostly limited to hearsay with some of the comments being:
 - Golf courses are exempt.
 - Ottawa backed away when Parliament Hill became overrun with dandelions.
 - Where use is restricted but not sales, sales have remained constant, indicating continued residential “midnight” spraying.
- Respondents believe an outright ban on the sale and applications of pesticides will not work and will have the following consequences:
 - A black market in the use of these products, primarily by residential homeowners.
 - The use of more toxic farm pesticides and more harmful commercial organic compounds.
 - Impossible to enforce.
 - Unsafe storage and disposal of unused product and containers.
 - Loss of City golf courses and the resulting impact on tourism.
 - Possible loss of greenhouse crops resulting from a major infestation.
 - Losses in employment including the potential loss of a major employer, Aventis.

- Continued use just outside the City's jurisdiction and continued sale of such products by merchants outside of the City's limits.
- These individuals / organizations would support or at least have no objection to an approach which would see:
 - Sale of pesticides restricted to licensed and trained merchants.
 - Restrict sale of concentrated pesticides to professional applicators and licensed users.
 - Sell only diluted compounds to the general public (no concentrates).
 - Sales to general public would include:
 - Counselling in the appropriate and safe use of the product.
 - Deposit for the return of the container/unused portion.
 - Sign posting the product/date of application.

3. Focus Group Sessions

There were two group meeting sessions conducted the evening of March 14, 2002. The first session was comprised of individual citizens who have expressed a concern regarding this issue and representatives of groups with an interest in the issue of pesticide use. The second group was comprised of 11 operators of businesses whose operations rely to varying degrees on the use and application of pesticides (lawn care companies, pest control companies, etc.). The following represents a summary of the meetings of the two group sessions. The more detailed account of the proceedings is attached as Appendix J.

- While they are reluctant to give the City of Regina high marks for maintaining the environment, environmentalists do consider that there have been improvements in City performance in this area.
- Regardless of the immediate impact a ban or restrictions on pesticide use might have on their business, operators consider the issue extremely damaging and with long-term disastrous results.
- Both environmentalists and operators consider careless or uninformed use and application of pesticides by homeowners to be a serious problem.
- Both environmentalists and operators believe there is a need for extensive public information campaigns and for public education on the appropriate and proper use of pesticides. Environmentalists also see a need for education on alternative products and methods and, while operators would not necessarily oppose this effort, they were sceptical about many touted alternatives.
- Both groups expressed a high degree of scepticism for the effectiveness of public meetings or open forums as a method to engage the public in this discussion.
- Both groups independently suggested and supported the concept of sponsoring conferences or symposiums that would address this issue.

- Both groups, for very different reasons, believe it is important that the City carefully examine the experience of other municipalities who have taken actions in this area. Environmentalists tell of great benefits, operators recount horror stories.
- While both groups accept the importance or recognize the necessity for public consultation, both have difficulty identifying appropriate steps or activities for this process. Environmentalists' primary concern is that the process be open and transparent and not subject to "closed doors" or to undue influence. Operators' primary concern is that "emotion" be kept to a minimum.

Environmentalists believe that pesticides are causing major damage to health and to the environment and are firmly convinced that there are safer, effective alternatives which are not explored for financial reasons. Any pesticide use is too much.

Operators are equally convinced that the products they use are safe, well tested, highly regulated and beneficial to the environment in comparison to the consequences of having these products no longer available. Any restriction is unwarranted.

4. Public Attitudinal Survey

The public survey was conducted by telephone during the period March 22 to March 30, 2002. A survey with a sample of this size will have a precision (range of error factor) of $\pm 4.7\%$ at a 95% level of confidence (19 out of 20 times).

At the time the survey was conducted there was considerable public expose for the issue of pesticide use including the Federal Government's introduction of new regulations governing pesticides.

The following represents the highlights of the survey. The more detailed responses and a copy of the questionnaire are attached as Appendix K.

- Eight individuals identified pesticides as the most important environmental issue (2%) and another 7 referred to spraying of mosquitoes, weeds and gophers.
- 70.6 percent rate the City of Regina as excellent or good in their performance in protecting the environment.
- 78 percent of those with yards and gardens use pesticides, 63 percent of the City's population. The most commonly used form is Weed & Feed.
- 17 percent of Reginans believe the City should stop using pesticides to control weeds and pests, while 72 percent find the current practice acceptable and 6 percent would favour the City increasing its use of pesticides.
- One-third of Reginans (33%) would like homeowners to stop using pesticides to control weeds and pests while 56 percent find current practice acceptable and 3 percent would favour increased use of pesticides by homeowners.

- 27 percent would favour professional commercial operations cease using pesticides, 60 percent find current practices acceptable and 4 percent would favour increased pesticide use by these organizations.
- 24 percent of the sample indicated they are very concerned about pesticide use and another 48 percent are somewhat concerned with 27 percent being not concerned. A majority would favour some restrictions or reductions in the use of pesticides by the City (51%), by commercial operators (57%) and by homeowners (54%).
- While there is support for reductions or restrictions in pesticide use, there is considerable strong opposition to an outright ban on the use of these products for cosmetic purposes. 36 percent would favour such a ban on homeowners, while 58 percent would oppose a ban.
- A majority of residents (58%) would support a City of Regina public information campaign and education programs regarding the appropriate and proper use of pesticides. Those opposed feel it is unnecessary, not the City's job or express concern over the impact on taxes.
- 71 percent would support a campaign to increase awareness for alternative methods and practices to reduce the need for pesticides. Most opposed were concerned about the cost/tax implications.

Conclusion

An outside consultant was engaged by the City to gather input from the public and key stakeholders into the report process. The activities undertaken by Decision Research included:

1. review previous surveys that were related to this issue;
2. key informant interviews with those involved in the production, sale, distribution of pesticides products and those responsible for maintaining significant tracts of land within the City;
3. a focus group session consisting of those with a special interest in this issue and those whose business involves the application of pesticides; and
4. a survey of Regina residents dealing with the issue of pesticide use.

Previous research concludes that the use of pesticides is not a “top-of-mind” concern for residents of the Province of Saskatchewan or the City of Regina. It is apparent that environmentalists, operators of business and large property managers within the city equally shared concern about the careless or uninformed use and application of pesticides by homeowners to be a problem. It was generally supported that there is a need for an extensive public information and education campaign on the proper use of pesticides and alternative products and methods that would be available.

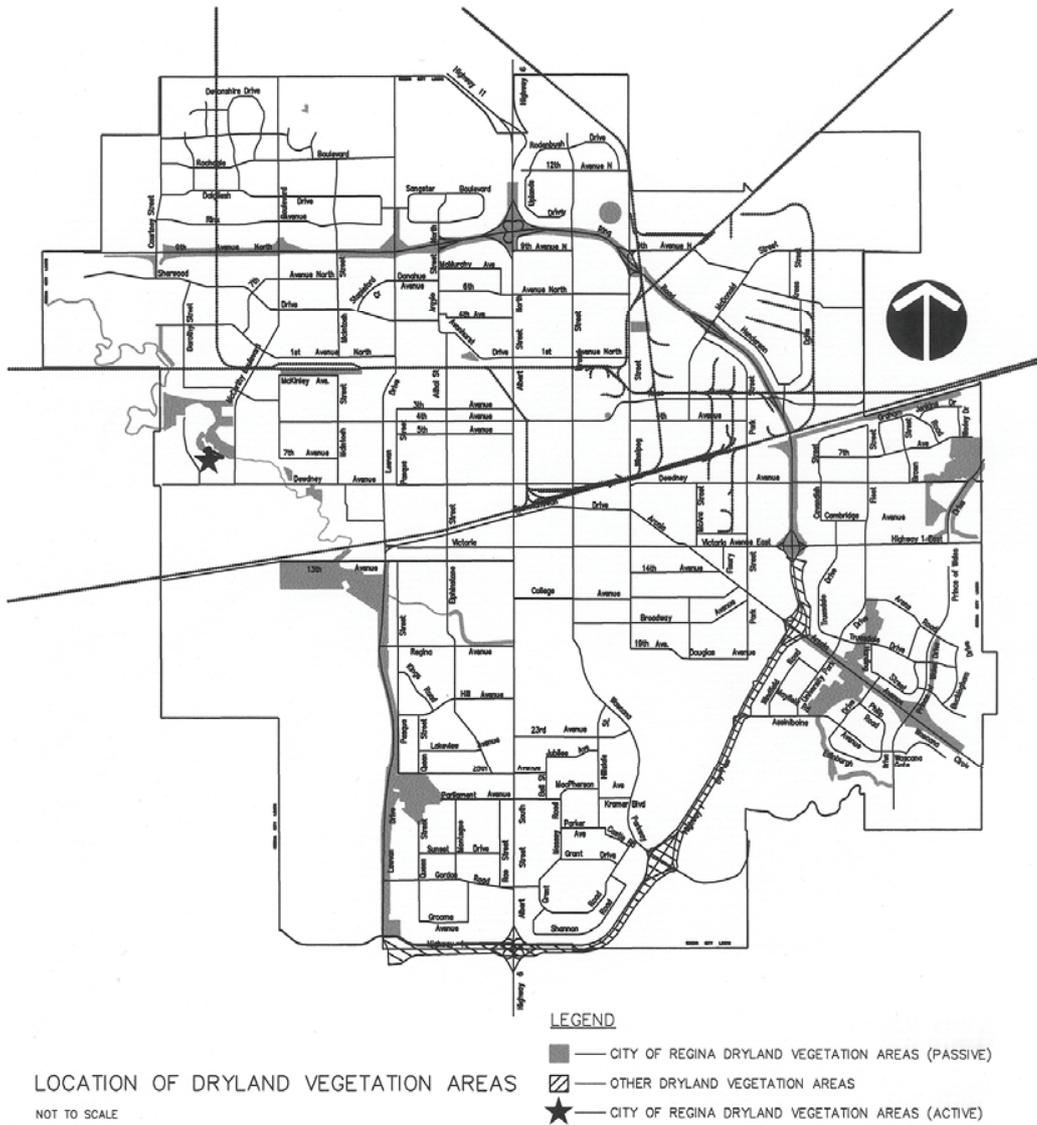
The general public, about 71%, rated the City of Regina as doing a good to excellent in their performance in protecting the environment. Approximately 72% find the City's current pesticide practices to control weed and pests acceptable. While there is support for reduction or restrictions in pesticide use, there is strong opposition for an outright ban on products for cosmetic purposes. There is strong support from all stakeholders for increased awareness for alternative methods and practices to reduce the need for pesticides.

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APPENDIX “A”

Dryland Vegetation Management City Map



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APPENDIX "B"

Public Open Space Weed Control Policy

Public Open Space Weed Control Policy

Purpose	To ensure that the application of pesticides for the control of weeds is performed in an effective, efficient, safe, responsible and environmentally sensitive manner.
Principles	<p>The guiding principles in the use of pesticides to control weeds are:</p> <ul style="list-style-type: none">• Pest control products can pose risks to our health and the environment;• Pest management is important to our quality of life and economic well-being;• Pest control products can be a useful tool as part of an Integrated Pest Management approach.
Authority	General Manager, Parks & Open Space Management - September 15, 1992.
Definitions	<p>Biological Control Agents:</p> <p>The control or suppression of pests by the action of one or more organisms, through natural means, or by manipulation of the pest, organism or environment.</p> <p>Chemical Spill:</p> <p>Means a discharge, other than a discharge that is expressly authorized under the Environment Act or any other act for such chemical.</p> <p>Mechanical Control:</p> <p>Means a discharge, other than a discharge that is expressly authorized under the Environment Act or any other act for such chemical.</p> <p>Naturalization:</p> <p>A process which enables desirable plant communities to establish and develop into a sustainable landscape.</p> <p>Noxious Weed:</p> <p>A plant or the seeds of a plant declared by the Provincial Minister of Agriculture as troublesome and difficult to control.</p> <p>Weed:</p> <p>Any undesired, uncultivated plant growing in profusion so as to crowd out a desired crop.</p>

Open Space:

Open space is a generic term used for numerous forms of landscape or environment, and generally refers to an outdoor environment which incorporates or includes natural physical elements to create a setting which supports or encourages human activities. The common definition concerns the physical character only. The preferred definition is essentially behavioral, since the emphasis is on the presence and actions of people and especially their freedom of movement and choice. Furthermore, open space is an inclusive term, since it accounts for any outdoor locale which is open for human use. This would include public and private places, large and small spaces, natural parkland, golf courses, athletic fields, but also cemeteries, as yet undeveloped urban fringes, pedestrian settings and routes or grounds between buildings.

Pesticide:

An "economic poison" defined as any substance or mixture of substances used for controlling, preventing, destroying, repelling or mitigating any pest. Includes fungicides, herbicides, insecticides, nematocides, desiccants, defoliants, plant growth regulators, etc.

1.0 Weed Control:

The control of weeds will be primarily through the implementation of good horticultural practices. The assistance of pesticides in the control of weeds will be secondary and then only on a selective basis

1.1 Mechanical: Control of weeds through mechanical means will be used in areas where there is a risk of environmental damage to water bodies, gardens or other such sensitive types of horticultural products.

2.0 Herbicides/Pesticides:

Use only those products that are approved by Health Canada and registered by number with the Pest Controls Product Act. All products used shall come complete with M.S.D.S. Data Sheets, warning labels and handbooks (application rates, safety, etc.)

2.1 Herbicide Types: Phenoxy Herbicide: selective - fine turf, course areas. Post Emergence Herbicide; non-selective - fence lines and aggregate surfaces. Pre Emergency Herbicide selective - shrub beds and flowerbeds.

2.2 Herbicides: Phenoxy liquid herbicide; selective weed control. This herbicide is used to control a wide range of weeds. Most effective when applied to weeds that are actively growing. Post-emergency water-soluble herbicide; non-selective weed control. This herbicide is used to control a wide range of broad leaf weeds. Most effective when applied to weeds that are actively growing. Pre Emergency granular/liquid herbicide; selective weed control. This herbicide is used for the pre-emergency control of annual grasses and broad leaf weeds. Most effective when applied prior to any weed/grass growth (spring).

Note: Current inventory of chemical products available from Park Stores

3.0 Equipment:

Equipment used to apply the product shall be kept in peak operations condition. Equipment shall be checked before and at the completion of each operating shift by the operator to ensure that it is in good operating condition. All malfunctioning equipment shall be repaired immediately.

3.0.1 Specialized Mechanical Equipment:

The Department maintains a fleet of specialized mechanical spraying equipment to ensure a safe and efficient application of pesticides and to ensure operator and public safety.

3.0.2 Specialized Hand Equipment:

The Department utilizes various types of specialized hand-operated spraying equipment and the applicator shall ensure that it is in good operating condition to ensure a safe and efficient application of pesticides for both applicator and public safety.

3.0.3 Expedite Wands:

Self-contained units that apply a regulated amount of controlled product to specifically selective areas (specific to Sections 4.7.6 and 4.7.7).

4.0 Areas To Be Treated:

The Department manages a diversity of open space which is accessed by the public to varying degrees and at varying intervals. In order to ensure the least inconvenience to the public, certain areas and types of open space shall be treated for weeds accordingly.

4.1 Irrigated Fine Turf:

These are generally park areas which are designed to accommodate a mix of passive and active recreation activity. These areas shall be treated on an as required basis according to standards detailed in Section 7.0 of this policy. Treatment of these areas shall be “selective” and shall recognize residential rear yards and the potential to damage vegetable gardens as high risk areas.

4.2 Athletic Fields:

The Department manages a variety of athletic field types which receive varying levels of maintenance and use by organized and spontaneous play.

4.2.1 Neighborhood Athletic Fields:

These fields generally form part of a passive park. They may be irrigated or unirrigated and although they are regularly scheduled for organized play, they also receive a great deal of unscheduled, spontaneous play.

4.2.2. Community and Regional Fields:

These fields are generally designed as athletic fields. Use of these fields are scheduled by the Department. These fields shall be treated for weeds only after notification is provided to the Central Scheduling Office, or on regularly scheduled rest days of these fields

4.3 School Grounds:

School ground and open space areas immediately adjoining a school ground shall only be treated during the summer school break. (The months of July and August) and no pesticide treatment shall occur seventy-two hours before any school day.

4.4 Water Bodies:

Treatment of water bodies such as storm water retention ponds, shall be performed on an as required basis with appropriate posting of signage. (As outlined in Section 5.0.4).

4.5 Golf Courses:

Treatment of golf courses shall be on an as required basis. The Clubhouse Notice Board and also by #1 and #10 tee off areas provide detailed information about pesticide treatment of golf course areas. The Pro Shops will be provided with all information in regards to any pesticide treatment.

4.6 Cemeteries:

Treatment of cemeteries shall be on an as required basis and recognize the sensitivity of applying chemical products in proximity to areas where burial services are being performed.

4.7 Non-Irrigated Turf:

The Department maintains thousands of acres of unirrigated turf throughout the City. While many of the sites are removed from residential areas, many more are immediately adjacent. Pesticide treatment may not always be appropriate where there is close proximity to residential and environmentally sensitive areas.

4.7.1 Utility Parcels, Walkways:

These areas are generally adjacent to residential rear lots. Weed control in these areas will be through mechanical means. The use of pesticides

in these areas shall be permitted on a selective basis only due to the potential risk of damage to vegetable gardens and/or other horticultural products.

- 4.7.2 Environmental Reserve, Flood Plain, Storm Channels:
These areas are generally adjacent to or drain into a water body. The use of pesticides to control weeds in these areas shall be selective. The primary control of weeds will be by mechanical means or through the process of “naturalization”.
- 4.7.3 Curb and Sidewalk Crack Spraying:
The control of weeds along roadway curbs and through cracks in sidewalks shall be achieved through the application of a pesticide or by mechanical means. Due to the physical surrounding, these areas shall not be signed.
- 4.7.4 Fence Line Trim:
Treatment of fence lines to control vegetation and reduce trimming costs shall be conducted on an as required basis. These areas shall not be signed.
- 4.7.5 Road Allowances:
Pesticide treatment of side road allowances such as Ring Road, Arcola Avenue, Victoria Avenue East, Lewvan Drive South, etc., shall be carried out in accordance with the appropriate Section of this policy.
- 4.7.6 Passive Open Space Areas:
These areas that are selectively treated with “expedite”, or an equivalent controlled product, shall be exempt from Section 5.0.1 and 5.3.3 of this policy, provided that area to be selectively treated does not exceed 5,000 sq. ft. and is not within 100 feet of areas noted in 4.7.7 (i.e.: tree wells, shrub beds, light standards, fence posts, center medians, side boulevards, traffic islands and walkways).
- 4.7.7 Active Open Space Areas:
These areas that are selectively treated with “expedite”, or an equivalent controlled product shall be required to conform to this policy in its entirety (i.e.: athletic fields, ball diamonds, backstops and bleachers, waterfalls and drinking fountains, playground equipment, picnic tables, benches, tennis courts, etc).

5.0 Communications:

To ensure that citizens have the opportunity to avoid areas that have been treated with pesticides, a variety of public information strategies shall be implemented. All communications shall be done in conjunction with the Public Affairs Department.

- 5.0.1 On Site Signage:
The Department shall post signage on or near open space or water bodies that have been treated where there is a risk of citizens coming in contact with the sprayed product.
- 5.0.2 Signage Type/Symbol/Information:
The style of sign to be utilized in the pesticide spraying program is a 6-mil poly white plastic bag with red and black information lettering. The symbol is the figure of a person with a diagonal slash across the figure (see Appendix "A"). Information on signs to include date posted, date treated, chemical used, registration number of chemical, information contact telephone number and what the chemical is intended to control.
- 5.0.3 Signage Size:
Is 15"x20". All signage for the Pesticide Spraying Program will include all information as listed in 5.0.2.
- 5.0.3 Posting Process:
Posting of signage during chemical application and/or immediately after application, is to remain posted for a twenty-four hour period after treatment at which time the signage is to be removed.
- 5.0.4 Sign Locations:
All normal access pathways to the area being treated and along sidewalks/roadways adjacent to treated areas shall be posted with signage.
- 5.1 Local Newspaper:
Notice shall be provided through the local newspaper advising the public of the impending weed spraying schedule. The following information shall be included: proposed start and finish dates, areas to be sprayed, information number for more information (i.e. allergy list, supervisor and City Central) (See Appendix "B").
- 5.2 Public Service Announcements:
 - 5.2.1 Public Service Announcements shall be prepared and distributed to the local media outlets.
 - 5.2.2 All media releases shall include the City Central contact number.
- 5.3 Allergy Lists:
 - 5.3.1 For those citizens who are sensitive to airborne chemicals, the Department shall maintain a contact list, the Allergy List, of such residents. The list shall be kept current and updated regularly, for those citizens who contact the Community Services, Parks and Recreation

Department. The list shall be totally revised and updated every two years. (1992)

5.3.2 Information about the Allergy List shall be advertised through the local newspaper and other forms of media as deemed necessary by the operating division.

5.3.3 Residents who are registered on the Allergy List shall be contacted a minimum of twenty-four hours in advance of any weed spraying which may occur within one kilometer of their residence.

5.3.4 Residents who are unable to be contacted by telephone shall receive a written notice advising them of the pending program, product to be used and a telephone number to call for further information.

5.4 **School Notices:**
Schools which are located adjacent to open space areas which are scheduled for treatment shall be advised one week in advance of the scheduled event.

5.5 **Community Associations:**
Where and when practical, the Department shall endeavor to provide Community Associations with information about the weed spraying schedules.

5.6 **City Central**
The Department shall maintain a public information line through which residents may inquire about the chemicals being utilized, the weed spraying schedule, to report weed problems or allergy list inquiries.

5.7 **Chemical Summary Sheet:**
A Chemical Summary Sheet (Appendix "C") shall be completed by the operator at the completion of his/her shift. Copies of the sheet shall be forwarded to the City Central staff and the operator's supervisor for their records and potential response to public inquiries.

5.8 **Health Department:**
The operating department shall provide to the City Health Department, the following documentation one week prior to the commencement of any Pesticide Application Program.

- name of all employees involved in handling/application of chemicals;
- M.S.D.S. of all chemicals being utilized;
- time frames for programs (start and finish);
- schedule of area by sectors for treatment (sector map).

6.0 Staff Safety:

Handling and applying of all chemicals shall only be carried out by trained personnel who are licensed according to Provincial Pesticide Legislation, and all

Policies and Procedures shall be in accordance with the City of Regina Occupational Health and Safety Manual (Section 7.0.3).

6.1 WHMIS

All employees shall be trained in what is WHMIS and what is to be available in regards to M.S.D.S. (Material Safety Data Sheets). It is a requirement by Provincial Law that all M.S.D.S. be available for employees.

6.2 Clothing:

Protective clothing shall be in compliance with the requirements as specified by the M.S.D.S. for the handling and application of each specific pesticide as a minimum requirement.

6.3 Training and Licensing:

All supervisory personnel and employees who are involved in the handling and/or applying of pesticides shall be trained and licensed, and maintain a valid Applicators License as required by Provincial Legislation (Appendix "D").

6.4 Blood Tests:

At present time, blood tests are not required. However, at the first signs of physical health problems, employees will be tested and monitored in accordance with the City Health Department. The City Health Department may call for random testing of employees prior to the start of the program as a pre-cautionary measure (i.e. chemical change, M.S.D.S.)

6.5 Chemical Spills:

In the event of a chemical spill, in accordance with the Environment Spill Control Regulations, the person having control of a pollutant which is spilled shall report the spill as soon as possible to:

- the Environmental Technologist (Municipal Engineering 777-7694);
- the Saskatchewan Environment Department;
- the owner of the property on which pollutant is spilled;
- the owner of the pollutant; fill out Chemical Spill Fact Sheet (Appendix "E").

7.0 Standards:

Visual inspection of the various types of open space are conducted and rated by the Foreman responsible for the open space area. The main criterion to be considered before a decision is made to treat areas:

- 1) safety and proximity of public;
- 2) proximity to water bodies;
- 3) when weed growth hinders growth of desirable vegetation;
- 4) public complaints;
- 5) time of season.

All treatments are selective to the area infested and a request for treatment is submitted by the section who is responsible for the maintenance of the open space (Appendix "F").

7.1 Irrigated Turf Areas:

Area scheduled for two selective treatments per season, once in spring and once in the fall season. A standard of five weeds/m² extending over fifty percent of fine turf areas is regarded as necessary for chemical treatment, as outlined in Section 4.0.

7.1.1 Irrigated Turf Areas:

A standard of twenty weeds/m² extending over fifty percent of the area is regarded as necessary for chemical treatment, as outlined in Section 4.0.

7.1.2 Natural Areas:

A standard of twenty weeds/m² extending over fifty percent of the area is regarded as necessary for chemical treatment as outlined in Section 4.0.

7.1.3 School Grounds:

A standard, as indicated in 7.1.0 irrigate turf and/or 7.1.1 non-irrigated will be applied to school grounds. No treatment will be applied during the school season, as noted in Section 4.3.

8.0 Weather Conditions:

The application of herbicides is done in conjunction with the manufacturer's recommendation in regards to temperature condition. All standards utilized for weather conditions are from Environment Canada (Airport Office). The Department, however, ensures that discretion is used in sensitive areas when wind conditions may cause chemical drifting.

8.1 Treatment Period:

The optimum time of year to apply pesticides to ensure an effective and efficient kill is in the early fall and for a short period in the spring. Application of pesticides will consist of a selective spring weed control program and a major fall weed control.

8.2 Wind Conditions:

Equipment specifications (Windfoil) state that pesticides may be applied with wind conditions of up to 25 M.P.H. Due to the sensitivity of chemicals and to ensure that chemical drift is kept at an absolute minimum, 25 K.P.H. is the maximum wind velocity for the spraying of chemicals.

8.3 Moisture/Rainfall:

Since most herbicides are water soluble, applying chemicals to moist surfaces does not pose any problems nor does it reduce the efficiency of the product. To ensure that environmental concerns are respected, no chemicals will be applied during any periods of rainfall.

8.4 Evening Spraying:

The herbicide treatment program is recommended to be conducted at night and in the early mornings when winds are at their lightest and thus further reducing the risk of chemical drift.

8.5 Day Time Spraying:

Areas such as slopes and certain road allowances shall be treated during daytime hours to ensure operator safety.

8.6 Low Drift Additive:

To be utilized where possible in herbicide applications to further reduce drifting of the herbicide.

9.0 Evaluation/Inspections:

Upon the completion of any pesticide program a random site inspection by the supervisor of the program along with a comprehensive evaluation shall be conducted to ensure that the maximum benefit of utilizing pesticides is achieved.

9.1 Percentage of Kill (Success):

Within seventy-two hours an assessment of success can be measured, formal documentation is evaluated seven to ten days after application.

9.2 Annual Evaluation/Program Evaluation:

Components that are evaluated would include equipment, staff, structure of program, communication, public inquiries, weather conditions, effect of treatment and possible alternatives to the application of pesticides into the environment.

9.3 Areas Sprayed/Treated:

Refer to Section 4. An evaluation at the completion of the program and the following year to ensure the desired results are being realized. Areas will be documented (time, year, etc.), and will form part of the cyclical maintenance of open space areas. An up-to-date map of areas treated is updated and maintained weekly.

9.4 Regular Assessment/Field Staff:

Pesticide application for selective and mass weed control programs are assessed regularly, with alternatives that recognize environmental concerns to be the benchmark for such evaluations. Field staff are evaluated annually and the Department ensures that Provincial regulations and licensing requirements are part of the program. This is intended to ensure both staff and public safety. (Appendix "D").

APPENDIX "C"

Pesticide Advisory Line

Pesticide Advisory Line

Purpose	To provide citizens with advance notification of scheduled City of Regina spraying activities. The notification system provides an environmentally responsible service to a section of the public with special requirements.
Scope	The policy shall be in effect during the pesticide application seasons throughout the City of Regina.
Authority	This policy is under the authority of the General Manager of Parks & Open Space Management.
Contact	For further information about the policy, contact the Coordinator of Open Space Management.
Definitions	<p>(a) Pesticide: Any product (Toxic or Non-toxic) applied for the control of weeds or insects that may impart airborne particles.</p> <p>(a) Recipient: Refers to any City of Regina resident wishing to receive advance notice of the Parks & Open Space Services and Integrated Pest Management application activities.</p>
Policy	For those recipients who express interest in the program, the Parks & Open Space Management Division of Community Services Department shall offer advance notification of pesticide application.
Responsibilities	<p>1 Parks & Open Space Management shall:</p> <ul style="list-style-type: none">1.1 monitor the implementation of the policy to ensure adherence;1.2 recommend changes to the policy as may be required;1.3 record all messages within the phone system. <p>2 Foreman of Open Space Services and Supervisor of Integrated Pest Management shall:</p>

- 2.1 e-mail the pesticide application schedules and related information to the Parks & Open Space Management support staff;
- 2.2 inform Parks & Open Space Management support staff of any changes to pesticide application schedules.

3 The recipient shall:

- 3.1 Dial 777-7777 for notification about spraying.

Procedures

1 Parks & Open Space Management Staff shall:

- 1.1 record and update a message, through SaskTel message manager, the day prior to scheduled day shift spraying and the same day as night shift spraying;
- 1.2 record a message of spray activities completed in the last two working days.

2 Parks & Open Space Services and Integrated Pest Management shall:

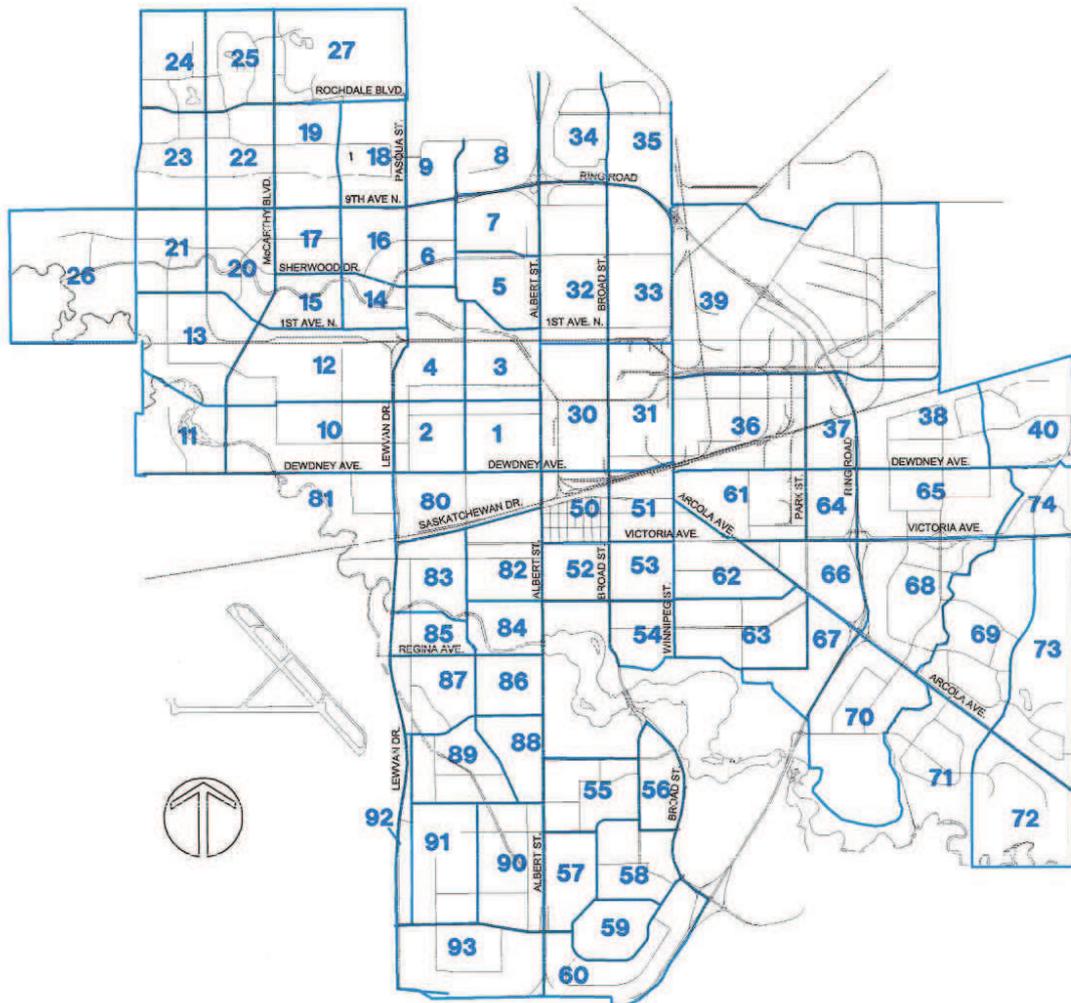
- 2.1 provide updates to the Parks & Open Space Management staff. Daily updates for night shift weed spraying are to be provided by 8:00 a.m. the same day of spraying. Daily updates for day shift weed and insect spraying to be provided by noon the day prior to spraying;
- 2.2 re-notify the Parks & Open Space Management staff by email if spraying is delayed more than 48 hours due to weather or other reasons.

3 Recipient shall:

- 3.1 check for the Parks & Open Space Management Division message by dialing 777-7777.

Appendix A

Sector Map



APPENDIX "D"

Lawn Maintenance

Web Information



So you have a beautiful, healthy, relatively pest-free, vigorously growing lawn and you want to keep it that way. The best way to do that is through cultural practices, such as proper mowing, watering, fertilizing, aerating, raking, and topdressing. Keeping in touch with your lawn alerts you to any possible pest action long before it can become a problem.

Mowing

When mowing, as with all plant trimming, always follow the 1/3 rule: never cut more than one third of the plant's productive material, i.e., the grass blade, so leave it sufficient resources to repair itself and grow. The ideal height for mowing changes a bit with the seasons. In the early spring, it is best to mow your grass fairly short the first few times because there is less productive (green) material. Later, when the temperature rises and your grass is growing well, cut it a bit higher (5–8 cm). This will help keep the lawn healthy because it will develop a deep, extensive root system, the grass will grow thicker and thereby reduce competition from weeds, and leaf material will remain for photosynthesis, and soil moisture will be retained.

Longer, thicker grass also prevents beetles from laying the eggs



that become white grubs in your lawn, since they prefer thin grass for this.

Cut your grass when it's dry. Also, sharpen your mower blade in the spring and keep it sharp — your grass can repair itself more quickly and easily when there is only one clean cut and not many tears. Grass can be cut repeatedly because the new material grows from the base of the plant and not from the ends of the shoots.

Most of the season, leaving the lawn clippings on your lawn after mowing provides a great source of slowly-released nitrogen for the grass and humus for the soil. Under wet spring conditions, it may be necessary to remove thick layers of clippings (over 1/2 cm) to avoid smothering the grass.

Fertilizing and Watering

Knowing your site and grass will help you determine what fertilizer to use and when. Commercial fertilizers contain three important nutrients for your lawn, nitrogen (N), phosphorus (P), and potassium (K), in some combination, for example, N-P-K 20:20:20. Nitrogen helps your grass grow and makes it dark green, phosphorus helps the roots grow, and potassium is essential for stress resistance. Compost is also a great fertilizer mixed into soil before seeding or laying sod, or raked over the lawn.

Most lawns do best if watered deeply (put a container on your lawn and stop when about 2 cm of water has collected in it) and infrequently (about once a week). While your lawn will recover from the drought in the heat of the summer if you don't water it and quickly become green again with rain or watering, the stress can leave it less resistant to insects and disease.



Seeding or Replacing Sod

Bare patches are a real eyesore! Sometimes your grass will disappear in areas even with your best efforts, such as when you've removed large weed clumps in a spot. When reseeding a bare area, follow the directions for your seed type and site, and overseed. To replace a piece of sod, cut out the dead or damaged area to about 2 cm deep, rake the soil, and add some fertilizer to it, then put the new piece of sod in, stepping on it or rolling it. With either method, water the area well.

Aerating

Aerating your lawn does wonders for it. Not only does it allow a better flow of water, air, and other vital nutrients to the plants, but it lets roots grow more easily through the soil. Mechanical aerators are available, as are sandals and shoes with spikes on them.

Dethatching

Thatch is a tough mixture of dead grass and roots that accumulates at the soil surface. However, if it becomes more than one centimeter thick, it can prevent water, air and nutrients from getting to the roots and can harbour harmful insects. Thatch accumulates due to improper watering and mowing, over fertilizing and heavy use of lawn care insecticides and fungicides which may decrease earthworms and other soil organisms required to break down thatch. Thatch can be removed with a heavy rake or thatching equipment. Aerate the soil and topdress the lawn with a thin layer of garden soil or compost.

The Pests: Weeds, Insects, Diseases, Animals

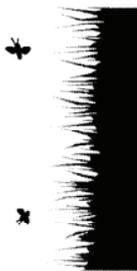
The Pest Management Regulatory Agency has several pest notes specifically written for common pest problems of lawns and gardens, for example, ants, aphids, moles and voles, and white grubs. Please contact the Information Service or download a copy of these from the web site.

Beneficial Creatures

Besides insects that are pests, there are also many beneficial insects around your lawn, and you want to take precautions not to eliminate these if possible. They fall into one of three categories.



Lawn Maintenance



May 2001

Predators are insects that eat other pests (insects and weeds), such as ladybugs, centipedes, yellow jackets, praying mantis, lacewing larvae, syrphid fly larvae, and ground beetles. Parasites are insects that live in or on other pests and are usually tiny wasps or flies such as the tachinid fly larvae. Pollinators are insects that feed on nectar or pollen and include bees, honeybees, some flies, butterflies, and moths.

There are also in your lawn a variety of other beneficial creatures, such as earthworms that aerate your soil and microorganisms that decompose organic matter. Spiders and some mites are predatory on insects and other mites that are pests.

Equipment Requirements

What equipment you need depends on the size of your yard, how intensively you want to maintain it, whether you want to do it yourself, and the cost of the equipment. Common equipment needed is a mower, rake, hoe, shovel, bucket, shears, aerator, trimmer, and spreader. These are all available from a home and garden store and the staff there can help you clarify what you need. You can buy or rent most items.

Letting Someone Else Maintain Your Lawn

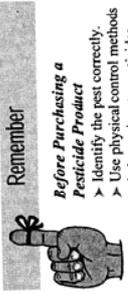


And if you prefer to let an expert take care of your lawn, decide what you want to use your lawn for and what approach you

prefer for the maintenance of it. Professional lawn care services must be licensed and any employees applying pesticides must be certified. These companies stay informed about the latest technology and methods available. They are also safety conscious — yours and theirs. Many companies emphasize an integrated pest management approach, using chemical pesticides only after trying other options.

Integrated pest management or IPM is a process for planning and managing sites to prevent pest problems and for making decisions about when and how to intervene when pest problems occur. In an IPM program, pest managers use regular inspections, called monitoring, to collect the information needed to decide whether or not action must be taken. A key idea in IPM is that it is necessary to take action against pests only when their numbers warrant it, not as a routine measure. In most cases it is only necessary to suppress pest

populations to non-damaging levels, not to eliminate them. If treatment is warranted, pest managers choose the most appropriate combination of control measures for the site. You can use these principles in controlling pests around your yard and home.



Remember

- Before Purchasing a Pesticide Product**
- Identify the pest correctly.
 - Use physical control methods and alternatives to pesticides.
- Read the label directions and safety precautions before buying the product. The label must include the name of the pest to be controlled and the treatment location (e.g., indoor, outdoor, garden uses, pet treatment).
- Purchase only the quantity of product needed for the treatment.
 - Alternatively, you may choose to hire a licensed pest control operator.

- When Using a Pesticide**
- Carefully read all label instructions and precautions before using pesticides.
 - Do not drink, eat or smoke while applying pesticides.
 - Persons and pets should vacate the area during treatment. Cover or remove aquaria.
 - If kitchen area is to be treated, cover or remove food, dishes and utensils.

- After Handling a Pesticide**
- Always wash your hands thoroughly after handling any pesticide product.
 - Do not permit persons or pets to contact treated surfaces until residue has dried completely.
 - Provide adequate ventilation of treated areas after use.
 - Wipe clean all surfaces that come in direct contact with food, such as counters, tables and stovetops, including indoor and outdoor surfaces.
 - Always store pesticides out of reach of children and pets and away from food and beverages.

- In Case of Accidental Poisoning**
- Call a poison control centre immediately and seek medical attention.
 - Take the pesticide container or label with you to the emergency facility or physician.
 - Follow first aid statements on the label.
 - In case of accidental poisoning of pets seek veterinary attention immediately.



Pest Management Regulatory Agency
2720 Riverside Drive
Ottawa ON K1A 0K9

Pest Management Information Service
Telephone: 1-800-267-6315
From outside Canada: (613) 736-3799*
* Long distance charges apply.
Fax: (613) 736-3788
Internet: [www.healthlaws.net](http://www.hc-sc.gc.ca/pma-aria/www.healthlaws.net)

- When Disposing of Pesticides**
- Do not reuse empty pesticide containers. Wrap and dispose of in household garbage.

Unused or partially used pesticide products should be disposed of at a provincially or municipally designated household hazardous waste disposal sites.

- Use Common Sense**
- These are general recommendations.
 - Consult the label for specific instructions.
 - When in doubt, contact a professional.

APPENDIX "E"

Action Plan On Urban Use Pesticides

Action

The Action Plan on Urban Use Pesticides will focus initially on the outdoor use of pesticides and is based on the following three key elements:

1. Healthy Lawns Strategy for Urban Pesticide Risk Reduction

The objective of the Healthy Lawns strategy is to reduce reliance on pesticide use for lawn care through the application of IPM principles, with particular emphasis on pest prevention use of reduced risk products and application of pesticides only when necessary.

2. Registration of New Reduced Risk Products

PMRA will continue to facilitate access to reduced risk products through harmonization activities including priority joint review of reduced risk chemical pesticides and biopesticides.

3. Product Re-Evaluation

The re-evaluations of the seven most common active ingredients used in lawn care products are targeted to be completed in 2001. Changes to registration or withdrawals of lawn products resulting from these re-evaluations will be implemented in the same time frame in Canada as those made in the U.S. All the organophosphate insecticides used in homes, home gardens and public buildings such as schools are targeted to have the re-evaluation completed in 2002. This includes insect control in home gardens and on ornamental plants; insect control in homes and public buildings.

As per current PMRA standards, the re-evaluation of all of these lawn care products will target child specific exposure and will incorporate additional safety factors and aggregate exposure, similar to the EPA. Incorporation of cumulative risk assessment will be synchronized with the EPA as methodology for doing so is completed.

Scope of the Action Plan

The Action Plan focuses on urban use of herbicides and insecticides for lawn care as a priority for 2001.

Other indoor and outdoor urban uses of organophosphorous insecticides are targeted as a priority for 2002.

Details of the Action Plan

1. Healthy Lawns Strategy for Urban Pesticide Risk Reduction

Objective

- To reduce reliance on pesticide use for lawn care through the application of Integrated Pest Management principles, with particular emphasis on pest prevention, use of reduced risk products and application of pesticides only when necessary.

The PMRA, the provinces and the territories will achieve this by:

- assessing which type of products should be available to homeowners;
- narrowing the existing domestic category and establishing a new category for products for more controlled domestic use;
- improving product labeling so that the use of lawn care pest control products is compatible with enhanced risk reduction practices;
- developing training materials and programs:
 - to educate homeowners on healthy lawn practices which minimize the need for pesticides,
 - for vendors of domestic products,
 - to facilitate adoption of healthy lawn practices by working with organizations to enhance the training of lawn care and landscape service providers and green space managers;
- establishing a “Healthy Lawns” web site to disseminate information on healthy lawn practices, to receive input from stakeholders on the development of risk reduction programs, and to report on training programs and progress.

Considerations

- The five main target groups are homeowners, lawn and landscape service providers, municipal parks managers, golf course managers and grounds keepers of school playing fields. A key early step will be development of a mechanism to provide information to these groups on “Healthy Lawns” practices.
- To be effective, changes in product classification, labeling, use and registration at the federal level will need to be reflected in and complemented by provincial and territorial training and certification programs. Recognizing the role of the provinces and territories in training and certification, and recognizing the potential for regional differences and

solutions, it will be critical to work closely and continuously with provinces and territories, as well as stakeholders, in order to develop and implement these programs.

2. New Reduced Risk Products

PMRA has developed a number of approaches through harmonization activities to facilitate access to reduced risk products including the establishment of joint review programs with the U.S. for both reduced risk chemical pesticides and biopesticides. PMRA encourages companies to submit jointly to the U.S. and Canada in order to take advantage of the priority review status available through these joint review programs.

- PMRA has harmonized most data requirements and test protocols with the U.S. Environmental Protection Agency (EPA) for a number of types of pesticides including biopesticides.
- Both the U.S. and Canada now accept a common international format for submissions for chemical pesticides.
- A Program of Joint Review for Reduced Risk Chemicals in the place with U.S. EPA, with a priority review of one year.
- A Program of Joint Review for Biopesticides (Microbials and Pheromones) is in place with U.S. EPA, with a priority review of one year.
- PMRA will continue to build on existing priority review processes for reduced risk products and look for additional ways to encourage development and submission of reduced risk pesticides.

Product Re-evaluation

Re-evaluation involves a comprehensive review of the scientific data available on each pesticide using modern scientific standards to determine whether any restrictions need to be made to its conditions of registration. Although re-evaluations have been underway over the years for many products, the PMRA is undertaking a priority re-evaluation of the lawn and turf uses of the insecticides diazinon, carbaryl, and malathion and the herbicides 2,4-D, mecoprop, dicamba and MCPA. The results is that the most recent additional risk assessment factors will be applied to the products most likely to be used in the urban setting. The re-evaluation of chlorpyrifos has already been completed and there will be restrictions on its urban uses that are identical to those recently implemented in the U.S.

The PMRA will complete the re-evaluations of the seven products most frequently used for lawn care in 2001. As per current PMRA standards, the re-evaluation of all of these lawn care products will target child specific exposure and will incorporate additional safety factors and aggregate exposure, similar to the U.S. EPA. Incorporation of cumulative risk assessment will be synchronized with the U.S. EPA as methodology for doing so is completed.

- The modernized databases which include studies of carcinogenicity, teratogenicity, neurotoxicity and reproductive toxicity and recent reviews by other regulatory agencies will provide the basis for the PMRA to re-evaluate these chemicals and update the registration status and conditions.
- The PMRA is currently re-evaluating the organophosphate insecticides (including diazinon, malathion) and the herbicides 2,4-D and MCPA.
- The PMRA will immediately initiate a re-evaluation focussed on lawn care uses for carbaryl, mecoprop and dicamba.

The PMRA will ask companies to coordinate any voluntary requests to withdraw registrations or restrict uses for lawn care products they make in the U.S. with Canada.

- Companies are making a number of voluntary changes to U.S. product registrations in response to U.S. re-evaluation activities. In some cases these changes are being made before the re-evaluation process is completed.
- To date, those changes have not usually been requested for Canadian products at the same time. The PMRA is asking companies to do so.

APPENDIX "F"

Town of Hudson Pesticide Bylaw



Hudson

***BY-LAW N° 270 – PESTICIDES**

Adopted 91/05/08 – Published 91/05/15
Includes amendments by By-Laws n° 327 / n° 341

EXTRACT of the regular meeting of the Council of the Town of Hudson held at St-Mary's Parish Hall on May 6th, 1991 at which the following By-Law was adopted :

**BY-LAW N° 270
CONCERNING PESTICIDES**

WHEREAS Notice of Motion was duly given at the February 4th, 1991 Council meeting;

THEREFORE it is moved by Councillor Chris Wilkin and seconded by Councillor George White and thereafter it is moved by Councillor Pierre Frappier and seconded by Councillor Chris Wilkin that the following By-Law bearing No. 270 be and is hereby adopted and decreed as follows:

By-Law N° 327 – Amendment to by-law n° 270 concerning pesticides: (adopted on June 5^e, 1995)

WHEREAS an objective of the Town of Hudson is the reduction and eventual elimination of the use of pesticides;

WHEREAS the Town of Hudson adopted on May 6th, 1991 By-Law No 270 concerning Pesticides;

WHEREAS article 5 of this By-Law was valid for a period not exceeding 5 years, that is until May 6th, 1996;

WHEREAS the Whitlock Golf & Country Club presented to Council, at the April 13th, 1995 meeting a report of their activities concerning the use of pesticides from 1989 to 1994;

WHEREAS this report indicates that the use of pesticides decreased over this period;

WHEREAS an amendment to this By-Law is required since article 5 is valid only until May 6th, 1996;

WHEREAS Notice of Motion was duly given at the May 1st, 1995 Council meeting;

THEREFORE it is moved by Councillor Huddy Walsh, seconded by Councillor Marie Madeleine Doty that the following By-Law bearing No 327 being an amendment to By-Law No 270 be and is hereby adopted and decreed as follows:

By-Law N° 341 – Amendment to by-law n° 270 concerning pesticides: (adopted on April 9^e, 1996)

WHEREAS the Town experienced a serious infestation of chinch bugs in 1995;

WHEREAS the present regulation concerning the use of pesticides does not permit the use of any products in the case of such infestations;

WHEREAS many complaints were received from citizens in general and also homeowners who experienced the problem concerning the lack of remedy;

WHEREAS the Environment Committee has examined the situation and has recommended an amendment to Council;

WHEREAS Notice of Motion was duly given at the regular meeting held on March 4th, 1996;

THEREFORE, it is moved by Councillor Gordon H. Drewett, seconded by Councillor Albert Pilon and unanimously resolved that By-Law No 341, be and is hereby adopted and decreed as follows:

*Administrative codification : only the original By-Laws have a legal value.



Hudson

***BY-LAW N° 270 – PESTICIDES**

Adopted 91/05/06 – Published 91/05/15
Includes amendments by By-Laws n° 327 / n° 341

1. The following words and expressions, whenever the same occur in this By-Law, shall have the following meaning:
 - a) "PESTICIDES": means any substance, matter or micro-organism intended to control, destroy, reduce, attract or repel, directly or indirectly, an organism which is noxious, harmful or annoying for a human being, fauna, vegetation, crops or other goods or intended to regulate the growth of vegetation, excluding medicine or vaccine;
 - b) "FARMER": means a farm producer within the meaning of the Farm Producers Act (R.S.Q., chap., P-28);
 - c) "INSPECTOR": means any member of the Police Department of the Town as well as any other person designated for this purpose by the municipal council.
2. The spreading and use of a pesticide is prohibited throughout the territory of the Town.
3. Notwithstanding article 2, it is permitted to use a pesticide in the following cases:
 - a) In a public or private swimming-pool;
 - b) to purify water intended for the use of human beings or animals;
 - c) inside of a building;
 - d) to control or destroy animals which constitute a danger for human beings;
 - e) to control or destroy plants which constitute a danger for human beings who are allergic thereto;
 - f) as a wood preservative.

Amendment by By-Law No. 341:

1. Article 3 of By-Law No 270 is amended by adding the following:

- g) to control or destroy insects which have infested property.
The infestation must be positively confirmed, in writing, by a qualified individual.

A permit, issued by the Town Engineer or his designate, must be obtained for conditions c), d), e) and g) above."

That, for the purpose of subsections d), e) and g) above;

- a sign, visible from the street, be posted indicating the use of pesticides. This sign must be erected from the day prior until and including the day after the application.
- there be no application of pesticides within five (5) meters of any open watercourses;
- there be no application of pesticides when wind velocity exceeds fifteen (15) km/hr;

4. FARMERS:

Notwithstanding article 2, a farmer using a pesticide on an immovable which is exploited for purposes of agriculture or horticulture, in a hot house or in the open, is requested to

- a) register, by written declaration, with the Town, in the month of march of each year, the products which he stores and which he will be using during that year. Any modifications or additions to the said list must also be registered with the Town as soon as possible.
- b) also provide, in the written declaration at article 4 a), the schedule of application of said products and the area(s) of his property where the products will be applied.



Hudson

***BY-LAW N° 270 – PESTICIDES**

Adopted 91/05/06 – Published 91/05/15
Includes amendments by By-Laws n° 327 / n° 341

Amendment by By-Law No. 327:

1. That article 5 of By-Law No 270 be replaced by the following:

5. GOLF COURSES:

Notwithstanding article 2, it is permitted to use a pesticide on a golf course as long as the following conditions are met:

- a) The use of the pesticide be done by a licensed applicator only;
 - b) The pesticide be stored in a fireproof storage area with containment, ventilation, steel shelving and fireproof sign.
The Golf Clubs must maintain an up to date inventory list which must be available to the Town of Hudson's Environment Committee upon request;
 - c) The applicator must have and comply with material safety data sheets available for each product they might apply and they must provide the sheet to any abutter of the Golf Club property;
 - d) That there be no application of pesticides within two (2) meters of the Golf Clubs' property lines;
 - e) That there be no application of pesticides within five (5) meters of any open watercourses;
 - f) That there be no application of pesticides when wind velocity exceeds fifteen (15) km/hr;
 - g) Each year in the month of January, the Golf Clubs must submit to the Town a written report of all the measures which have been taken to control the application of pesticides and produce a detailed inventory of all chemicals used and applied during the year;
 - h) That this report be examined by the Town of Hudson's Environment Committee to establish that the activities enumerated in the said report meet all the requirements of Integrated Pest Management and demonstrate a continuing effort to minimize the use of pesticides. The committee's decision to be submitted to Council on or before March 31st of each year.
6. Notwithstanding article 2, it is permitted to use a biological pesticide to control or destroy insects which constitute a danger or an inconvenience for human beings.
7. Any person and/or entity must conform to the National Fire Code re the storage of pesticides.
8. This By-Law binds the Town, its officers and employees as well as any person carrying out works on its behalf or at its request.
9. Any inspector may visit and examine all moveable and immoveable property, as also the interior or exterior of any house, building or edifice whatsoever, to ascertain that this By-Law is executed; the owners or occupants of such property, buildings and edifices must admit such inspector.
10. For the purpose of article 8 or the Agricultural Abuses Act (R.S.Q., chap. A-2) an Inspector designated by the Town may use a pesticide, notwithstanding article 2 of the By-Law, if there is no other efficient way of destroying noxious plants determined as such by the Provincial Government and the presence of which is harmful to a real and continuous agricultural exploitation.



Hudson

***BY-LAW N° 270 – PESTICIDES**

Adopted 81/05/06 – Published 91/05/15
Includes amendments by By-Laws n° 327 / n° 341

Amendment by By-Law No. 327:

2. That article 11 of By-Law No 270 be replaced by the following:

11. Anyone contravening a provision of this by-law, or tolerating or permitting such a contravention, commits an infraction and is liable, besides the costs, to the following fine:
1. for a first infraction:
a minimum of THREE HUNDRED DOLLARS (300 \$) and a maximum of ONE THOUSAND DOLLARS (1 000 \$) if the offender is a physical person or a maximum of TWO THOUSAND DOLLARS (2 000 \$) if the offender is a moral person;
 2. for a repeat infraction:
a minimum of SIX HUNDRED DOLLARS (600 \$) and a maximum of TWO THOUSAND DOLLARS (2 000 \$) if the offender is a physical person or a maximum of FOUR THOUSAND DOLLARS (4 000 \$) if the offender is a moral person.

VOTE

voted in favour:

Councillor Chris Wilkin
Councillor George White
Councillor Pierre Frappier

voted against:

Councillor Larry Durrell

The majority being in favour, the motion is

CARRIED

By-Law No 270 is signed by Mayor G. Michael Elliott and Town Clerk Louise L. Villandré

Councillor Larry Durrell requests that the following be recorded:

That he be relinquished of any legal or other responsibility resulting from the acceptance of this By-Law by any governing body.

This By-Law will be submitted to the Ministry of Environment for approval.

CARRIED

Original signed: **G. Michael Elliott, Mayor**

Louise L. Villandré, Greffier

Certified true extract

**Louise L. Villandré, c.m.a.
Greffier**

APPENDIX "G"

Halifax Regional Municipality Pesticide Bylaw

**HALIFAX REGIONAL MUNICIPALITY
BY-LAW P-800
RESPECTING THE REGULATION OF PESTICIDES, HERBICIDES AND
INSECTICIDES**

BE IT ENACTED by the Council of the Halifax Regional Municipality pursuant to Sections 533 and 171(1)(c) of the *Municipal Government Act* as follows:

Short Title

1. This By-law shall be known as By-law No. P-800 and may be cited as the "Pesticide By-law."

Definitions

2. In this By-law,
 - (a) "affected property" means a property all or part of which lies within the spraying prohibition radius of a property registered in the Halifax Regional Municipality Pesticide Notification Registry;
 - (b) "commercial applicator" means any person, firm or corporation any part of whose business involves the application and use of pesticides;
 - (c) "Inspector" means any person designated for such purpose by the Regional Council;
 - (d) "Municipality" means Halifax Regional Municipality;
 - (e) "owner" means a person who is assessed as the owner of a property on the Assessment Roll of the Municipality;
 - (f) "pesticide, herbicide or insecticide" means any pesticide as defined under the *Environment Act*, Stats, N. S. 1994-95, C. 1, as amended and means
 - i any substance that is intended, sold or represented for use in preventing, destroying, repelling or mitigating, directly or indirectly, any pest,
 - ii any substance that is a pest control product within the meaning of the *Pest Control Products Act (Canada)* or is intended for use as a pest control product,
 - iii any substance that is a plant growth regulator, a defoliant or a plant desiccant,
 - iv a fertilizer within the meaning of the *Fertilizers Act (Canada)* that contains a substance referred to in subclause i, ii or iii,

v or any other substance designated as a pesticide in the regulations to the *Environment Act*,

but does not include a substance that is intended, sold or represented for use in potable water to prevent or destroy bacteria, parasites or viruses if the substance is not a pest control product within the meaning of the *Pest Control Products Act (Canada)*;

(g) "pesticide application" means the application and use of pesticides for the maintenance of outdoor trees, shrubs, flowers, other ornamental plants and turf on the part of a property used for residential purposes or on property of the municipality;

(h) "treated property" a property upon which a pesticide application has taken place.

Prohibition on Municipal Property

3. No person shall carry out or permit or suffer to be carried out any pesticide application on property owned by the Municipality.

Prohibition Around Public Areas

4. Commencing April 1, 2001, no person shall carry out or permit or suffer to be carried out any pesticide application on property all or part of which lies within a 50 metre radius measured from the boundary of a property containing any school, licensed day care centre, park, playground, licensed senior citizens' residence, university, church or hospital.

Prohibition Within Halifax Regional Municipality

5. (1) Commencing April 1, 2003, no person shall carry out or permit or suffer to be carried out a pesticide application within the Halifax Regional Municipality.

(2) After April 1, 2003, the Municipality shall cease to maintain the Pesticide Registry pursuant to Section 7 of this Bylaw and the provisions of Sections 7 to 10 inclusive shall no longer apply.

6. (1) Notwithstanding any provisions of this Bylaw, the pesticide applications of those pesticides which are identified as "Permitted Pesticides" in an Administrative Order enacted by the Halifax Regional Council are permitted and the provisions of the Bylaw do not apply to these exclusions.

(2) Notwithstanding any provisions of this Bylaw, a pesticide application may be carried out to control or destroy plants or insects if such plants or insects constitute a danger for human beings or to control or destroy insects which have infested a property, if such pesticide application is specifically permitted by the Inspector for that purpose and the pesticide application is carried out subject to such terms and conditions as shall be prescribed by the Inspector.

(3) The owner of a property, prior to carrying out a pesticide application on the owner's property pursuant to subsection (2) shall notify the owner of on any property all or a part of which is within a 50 metre radius of the property to which the pesticide application is to be made, received within 5 days of the proposed application, provided however, if a commercial applicator provides notification in respect of the pesticide application, the owner of the property is not required to provide notification in respect of the same pesticide application.

(4) A commercial applicator may give notice of more than one application in the same notice.

(5) Notification shall be in writing and shall contain the following information:

- (a) the location of the pesticide application;
- (b) the date and approximate start time of the pesticide application, within a 24 hour period, and, in the event of inclement weather, an alternate date or dates on which the pesticide application may occur;
- (c) the brand name and registration number of the pesticide product which will be used;
- (d) the name and telephone number of the person or company making the pesticide application.

(6) If the owner of a registered property and an owner of an affected property or a commercial applicator subject to the notice requirements of this bylaw can reach an agreement on notification provisions acceptable to both parties other than those described herein, then the requirements prescribed by this Section are waived in favour of the agreed to requirements.

(7) The provisions of subsection (6) shall not take effect unless the agreement referred to therein is reduced to writing and signed by both parties.

(8) A notification agreement entered into pursuant to subsection (6) may be terminated by either party by providing 14 days written notice to the other party.

Property Registration

7. (1) There is hereby established a Halifax Regional Municipality Pesticide Registry.

(2) The Registry shall be administered by the Inspector.

(3) An owner of a real property wishing to have that property listed on the Registry shall pay the registration fees prescribed by Administrative Order 15 and provide to the Inspector the following information:

- (a) name of the owner;
- (b) mailing address of the owner;
- (c) civic address of the property to be registered;
- (d) daytime and evening telephone number(s), one of which is designated as the primary contact number; and
- (e) a letter from two physicians licensed to practice medicine in the Province of Nova Scotia expressing an opinion that a named resident of the property to be registered is hypersensitive to and suffers adverse medical reactions as a result of exposures to pesticides which are potentially life-threatening.

(4) On receipt of the information prescribed in subsection (3) and the applicable fee, the Inspector shall include the identified property in the Registry.

(5) The registration period shall be from April 1, 2001 to March 31, 2003.

(6) A separate registration application shall be made and registration fee paid for each property wished to be registered.

(7) The registration of a property shall cease when

- (a) the owner who applied to register the property files with the Inspector a written notice to the effect that the owner no longer wishes the property to be registered;
- (b) the owner who applied to register the property or a new owner files with the Inspector a written notice that the registered property has changed ownership; or
- (c) the municipality receives a Deed Transfer Tax Affidavit indicating that the registered property has been sold; or
- (d) on April 1, 2003.

(8) The Inspector shall forthwith notify by ordinary mail the owners of all properties previously affected by the registration that their properties are no longer subject to the notification requirements of this Bylaw.

Notice To Owner Of Affected Properties

8. (1) Within 10 days of the entry of property in the Registry, the Inspector shall mail to the owner of each affected property a letter, addressed to the mailing address of the owner of the affected property as contained in the Assessment Roll of the Municipality, informing the landowner of

- (a) the existence of the Registry;
- (b) the civic address of the registered property;
- (c) the name, mailing address and the telephone numbers of the owner of the registered property as provided in the application for registration; and
- (d) the effect of this Bylaw on affected properties.

but the letter shall not disclose the identity of any individual who is the subject matter of a medical opinion provided to the Inspector pursuant to Section 7(3)(e) or the nature of the medical condition of that individual, provided that this restriction does not prevent the Inspector from identifying the individual as the owner of the property, if such be the case.

(2) If the affected property is not occupied by the owner of the property, the owner shall forthwith notify the occupant of the information contained in the letter sent to the owner pursuant to subsection (1).

Notice To Commercial Applicators Of Pesticides

9. (1) On or before the end of February in each year, the Inspector shall mail to each commercial applicator of pesticides operating in the municipality and known to the Inspector a printed list of all registered and affected properties and the restrictions that apply to each property.

(2) At least monthly during the period from March to October in each year, the Inspector shall mail to each commercial applicator of pesticides operating in the municipality and known to the Inspector a printed updated list containing all registered and affected properties added to the Registry within the preceding month and the restrictions that apply to each property.

(3) The requirements of subsection (1) and (2) do not relieve any commercial applicator of pesticides from the responsibility of determining the restrictions that apply to a pesticide application on any property in the municipality.

Pesticide Applications Prohibited On Certain Affected Properties

10. No person shall carry out or permit or suffer to be carried out any pesticide application on an affected property all or part of which lies within 50 meters of the boundary of a registered property.

Rules Respecting Pesticide Applications

11. (1) When a pesticide application is to take place on a property, the owner of the property or any commercial applicator of pesticides shall post signs in a prominent place on the property not less than 24 hours prior to the pesticide application and keep the signs continuously posted for a period of 4 days after the pesticide application and if such property abuts or is adjacent to a public street or private road shall post signs facing each such street or road, and signs shall be placed one sign within 3 meters of each of the property lines separating the treated property from the adjoining property and thereafter one sign for each 16 meters of frontage abutting or adjacent to such street or road.

(2) The signs prescribed by subsection (1) shall

- (a)** be square or rectangular, measuring not less than 25 centimeters by 25 centimeters;
- (b)** be bright yellow in colour;
- (c)** be made of a material that is weather resistant and shall be placed on a support that is weather resistant;
- (d)** bear the words, in letters, black in colour, of at least 24 point type: "Warning - Pesticides In Use"; and the symbol of a skull and crossbones at least 4.5 inches in diameter and shall indicate the commercial name of the pesticide used or to be used in the pesticide application and shall further indicate that all contact with the portion of the treated property upon which the pesticide application has taken place must be avoided; and
- (e)** shall bear a contact telephone number for the applicator of the pesticide and the date of application.

and the signs required pursuant to this By-law, or signs substantially similar to such signs shall not be used for any other purpose.

(3) There shall be no pesticide application within 2 meters of any property line unless the permission of the adjoining lot owner has been obtained in writing.

(4) There shall be no pesticide application within 5 meters of a bus stop, mailbox or a facility which contains a post office.

(5) The pesticide application shall be applied in accordance with the written instructions of the manufacturer and the label on the container.

(6) There shall be no pesticide application by means of spraying or fogging on trees or shrubs of a height equal to or greater than 2 meters when the wind velocity exceeds 8 km/hr.

(7) There shall be no pesticide application by means of spraying or fogging on trees or shrubs of a height less than 2 meters when the wind velocity exceeds 18 km/hr.

(8) There shall be no pesticide application when it is raining.

(9) There shall be no pesticide application when the temperature exceeds 27 degrees Celsius unless otherwise indicated on the pesticide's label.

(10) There shall be no pesticide application on trees during their blooming period.

Penalty

12. (1) A person who does anything prohibited by this bylaw is guilty of an offence and is liable on summary conviction to a penalty of not more than \$2000.00 and, in default of payment, to imprisonment for a term not exceeding thirty (30) days.

(2) A person alleged to have violated this bylaw given notice of the alleged violation may pay a penalty in the amount of \$100.00 to the Halifax Regional Municipality; provided that, said payment is made within a period of fourteen (14) days following the day on which the alleged violation was committed, and where the said notice so provides, payment shall be in full satisfaction, releasing and discharging all penalties and imprisonments incurred by the person for said violation.

Done and passed by Council this 15th day of August, 2000.

Mayor

Municipal Clerk

I, Vi Carmichael, Municipal Clerk for the Halifax Regional Municipality hereby certify that the above-noted bylaw was passed at a meeting of the Halifax Regional Council held on August 15, 2000.

Vi Carmichael, Municipal Clerk

APPENDIX "H"

City of Calgary Pesticide Moratorium Program

Facilitating a Conditional Moratorium on Pesticide Use in a Community Park

The following proposed process was developed to address potential inquiries from communities interested in establishing pesticide-free parks:

1. A Calgary Parks & Recreation representative will provide information to community residents interested in requesting a conditional moratorium on pesticide use in a community park. The representative will bring the request to the attention of the Parks Area Superintendent and the IPM Coordinator.
2. The community members must submit a waiver, signed by two-thirds of the home owners that physically reside next to that park or community-at-large in the case of a request for all parks in the community, to initiate a request to conditionally prohibit pesticide applications for a period of five consecutive years.
3. The proposed site(s) will be inspected and evaluated for current status on turf health and conditions of surrounding trees. Following the initial evaluation, a status report will be prepared and submitted to the community association. The report will include information consisting of costs to maintain the site, proposed reclamation costs (in the event of turf decline) and the required costs of cultural controls to offset the costs of chemical controls.
4. The community members who are requesting the change will be directed to bring the proposed change forward to their community association for endorsement. The request to stop pesticide applications within the community park(s) is to be included as an item at the community's regular General Meeting, which must be open to the public. Communities also have the option of calling a public meeting to specifically address banning pesticide applications.
5. The details of the proposed change and the time and location of the meeting which will address the change must be well advertised to the community. At the meeting, communities may vote on the proposed conditional moratorium on pesticide use.
6. All parties involved will be provided on opportunity to present relevant information: Calgary Parks & Recreation (present information on the IPM Plan, current maintenance standards, operational goals and IPM prescriptions for that site, associated costs); community members (adjacent to the park(s) and other park users; community association executive.
7. Community members will have to consider whether they are prepared to pay an additional levy for alternative practices to replace the pesticide application or tolerate the resultant level of turf maintenance and quality as a result (that excludes pesticide applications).
8. When the community association has approved the proposed ban, a copy of the motion is to be submitted to the Parks Superintendent, IPM Coordinator, and the appropriate Ward Alderman.

9. This agreement will be valid until the end of the fifth calendar year. This agreement is in effect as long as the site(s) is(are) maintained to the established maintenance standards agreed by the community association.
10. This public process will be required following the expiration of the five year period, otherwise, the Park(s) sites will revert back to their original status following unless the process will have to occur prior to the start of the following operational season.
11. This conditional moratorium on pesticide use will remain in effect for the duration of the five year period or until such time where current site conditions fall below a recognized standard and threaten the asset value of that site.

APPENDIX "I"

Key Informant Interviews

- A. Greenhouse Operators**
- B. Suppliers**
- C. Major Merchants**
- D. Major Property Managers**
- E. Other Jurisdictions Experiences**

KEY INFORMANT INTERVIEWS

Overview

Organizations responsible for significant tracts of land within the City of Regina and those involved in the production, sale and distribution of pesticides were contacted to discuss the issue and the proposals before City Council.

These groups were asked about their current practices with respect to pesticides and alternative products or practices. They were asked about the impact a ban or restrictions would have on their operation and their experience with similar steps taken in other jurisdictions. All those interviewed were given an opportunity to pass along any comments concerning the work of the Committee that they wished.

Some common threads from these interviews:

- Property managers practice Integrated Pest Management (IPM). This is the practice of irrigation management, cultivation, etc. The use of pesticides is considered as a last resort. Those in the industry encourage IPM among their customers.
- These individuals share concerns over the inappropriate or uninformed application of pesticides by homeowners and unqualified individuals.
- Users have moved to more environmentally-friendly products and practices and continue, with varying success, to experiment with alternatives.
- Experience in other jurisdictions is mostly limited to hearsay with some of the comments being:
 - Golf courses are exempt.
 - Ottawa backed away when Parliament Hill became overrun with dandelions.
 - Where use is restricted but not sales, sales have remained constant, indicating continued residential “midnight” spraying.
- Respondents believe an outright ban on the sale and applications of pesticides will not work and will have the following consequences:
 - A black market in the use of these products, primarily by residential homeowners.
 - The use of more toxic farm pesticides and more harmful commercial organic compounds.
 - Impossible to enforce.
 - Unsafe storage and disposal of unused product and containers.
 - Loss of City golf courses and the resulting impact on tourism.

- Possible loss of greenhouse crops resulting from a major infestation.
 - Losses in employment including the potential loss of a major employer, Aventis.
 - Continued use just outside the City’s jurisdiction and continued sale of such products by merchants outside of the City’s limits.
- These individuals / organizations would support or at least have no objection to an approach which would see:
 - Sale of pesticides restricted to licensed and trained merchants.
 - Restrict sale of concentrated pesticides to professional applicators and licensed users.
 - Sell only diluted compounds to the general public (no concentrates).
 - Sales to general public would include:
 - Counselling in the appropriate and safe use of the product.
 - Deposit for the return of the container/unused portion.
 - Sign posting the product/date of application.

Industry

A. Greenhouse Operators

1. Number of Properties

Five greenhouse operators were interviewed: West 25th, Unique Gardens (retail sales only), Plant Ranch, Wascana Greenhouses, Lakeview Gardens. These businesses employ approximately 95 part-time and full-time employees, in six locations, within City limits, and five employees outside City limits.

2. Use of Pesticides

Greenhouses sell very little in the way of pesticides. Volumes in terms of revenue are less than 1 percent, e.g., \$600 per year, and measured in litres per year. Their sales are 100 percent to residential customers.

3. Discontinued Use of Such Products

All operators indicated that they have almost stopped using all forms of chemical-based pesticides in their day-to-day operations, and stopped using soil sterilants. Basically, all have stopped using and selling cloridanes, diazanon, smoke 103, soil sterilants and malathion.

As a matter of course, greenhouse operators follow Integrated Pest Management (IPM) practices. All use organic compounds in their day-to-day operations. Normal pest control is done with insecticidal soaps. However, all believe it is necessary to have pesticides on hand in the event of a major infestation.

4. Support of Licensed Merchants

All respondents supported the idea of controlling the sale of pesticides to domestic users through licensed, trained merchants. Some went so far as to say that most consumers do not know what products are made of and for what use, and do not know how much and when to apply such products. This problem is exaggerated by sales by untrained part-time staff in general merchant stores.

5. Training

All greenhouse operators and a large number of their full-time staff are trained pesticide applicators and trained in IPM.

6. Impact of a Ban

The impact of a ban on sales of such products would be very minimal. If there was a ban on the use of such products, the greenhouses could face the loss of an entire crop in one year, and be out of business. The availability of pesticides is necessary, however rarely used, to combat a major infestation (aphids are a potentially serious greenhouse problem). The respondents stated that their use is limited to the indoors, and as such the material does not spread to the general environment of the City. "The City can't take this last option away."

7. Advice to Committee

- The Committee should be aware that some organics are more potent than chemically-based pesticides. For example, Rotenone, which is a substitute for malathion, is more dangerous to children and pets than malathion.
- The Committee should be cautioned against faulty science as it evaluates its decision to ban pesticides.
- The City's use of pesticides should be monitored more closely. They spray during daylight hours, often on windy days. Their practice should be to spray during the night and on calm days.
- If pesticides are applied safely and correctly, there is less concern for the need for a restriction.
- Greenhouse people have been "green" people for a long time and are not offenders in the irresponsible use of insecticides.
- The City should educate the consumer and promote IPM as it relates to residential property – when the consumer contemplates the purchase and use of pesticides.

- Consumers will not change their habits. If they decide to use such products they will get them somewhere.
- The Committee should be aware that we live in a natural prairie landscape, and most of the trees and shrubs planted here will not survive without some use of insect and fungus control. For example, the Estevan coal mining and reclamation efforts – where significant trees were planted – died within three years as a result of not being committed to some practice related to insect control. Eventually all such plant life, which is not natural to the area, would die.
- Certain organic products are not available to consumers. If pesticides are banned these organic products would have to be made available to consumers, and could create a whole new set of problems because of their potency and potential dangers.
- If a ban is put in place, consumers need an alternative to avoid misuse of pesticides.

B. Supplier (Aventis)

Aventis has one operation employing over 100 people. Of the company's sales, 100 percent come from the manufacture and sale of pesticides and related products and 100 percent of sales are for agriculture/crop use. Sales amount to about \$100 million.

1. Change in Products

The company's basic products, as solutions for various needs, have not changed, but the composition of such products has changed as more efficient and safer compounds are formulated. There has been a move to biotechnology using environmentally benign compounds that have no lasting effect on soils.

2. Training and Licensing

Responders believe this is a great idea. It is a standard in their industry now, especially for those involved in the production, distribution and sales – all holding post-graduate and graduate degrees in agriculture. Anybody giving advice should be an agrologist.

In addition, stricter controls and education are necessary regarding the storage of such products.

3. Impact on Business

The impact on sales is insignificant since the market for their products are agriculture, and not consumers or large property owners such as golf courses.

"It would be very embarrassing for a company such as ours to be located in a community that bans such products. We would have to reconsider our place in the community, especially since our products are safe and are federally regulated and tested before commercialization." The impact would be felt more in the community, because an underground market would develop, since almost everybody is related to a farm family or knows somebody in the farming community. If there isn't a contact at a farm there will always be

product available in Moose Jaw and other communities. This would result in more serious problems since farm pesticides are more potent than consumer and commercial pesticides. Should an underground market develop, additional risks will result from improper storage and disposal of such chemicals, since domestic users will try to hide their use of such products. It is very hard to change consumers' habits.

"If the City were to implement such a ban, it is quite likely that we would challenge it legally."

4. Advice to Committee

- Manufacture and application of such products are done with the highest safety standards in mind.
- Today's products are not as dangerous as the older products. It is the older products that are the problem. These older products have been or are being phased out.
- The problem is the domestic user who is not using the products properly and not reading the labels properly – labels are clear, and if followed are safe for people and the environment.
- As the Council makes its decisions, it should listen to science as much as emotion. It appears that a small, vocal minority is controlling the agenda, and not wanting to hear a balanced approach.
- If Council desires more scientific information, the Corporation, industry associations and university scientists could provide such information to avoid an unsound decision.

C. Major Merchants

The three firms contacted were Canadian Tire, Home Depot and Wal-Mart. All three declined to provide specific information regarding sales but did respond to the general issue or the impact of a pesticide ban or restrictions within Regina. All indicated they could provide information on specific products.

1. Products

Pesticides do not make up a significant portion of store sales, nor even a significant portion of "Garden Centre" sales. Any ban or restriction on the sales of these products would have no major consequences for the operation so long as such a ban or such restriction applied equally to all operations in the marketplace.

2. Training and Licensing

Merchants would not take issue with a requirement to have sales staff trained and licensed to deal with these products.

Again, they would want to see any such requirement applied to all operations. Their major concern is that there be a "level playing field".

3. Other Jurisdictions

There are no indications that bans and restrictions elsewhere have had a significant impact on operations. Comparisons would have to be made on a product-by-product basis.

Inventory and stock issues are dealt with by Head Office Purchasing and generally respond to “regional” requirements rather than specific sales levels in particular outlets.

Again, neither the local operators nor those representing the firms felt that those products represented a significant portion of sales.

D. Property Managers

Contact was made with the Royal Regina Golf Club, Wascana Golf and Country Club, both the public separate school boards, Regina Airport Authority, CP Rail and CN Rail and with the RCMP, Wascana Centre Authority, and Boardwalk Equities.

The most detailed responses were obtained from the golf course operations, the RCMP and the Wascana Centre Authority. Summaries of these interviews follow.

A. Golf Courses – Royal Regina, Wascana

1. Acres / Property

The Regina operates approximately 140 acres (3 acres of tees and greens and 45 acres of fairways).

The Wascana is located in the RM of Sherwood and would not be subject to City jurisdiction, nor to a bylaw passed by City Council. The superintendent cooperated in the interview and did so as if Wascana would be impacted or bound by the regulations.

2. Number of employees at peak season involved in ground maintenance:

Regina –	13
Wascana	25

3. Pesticides Used

Both golf courses use about \$10,000 in pesticides each year. According to Wascana, the breakout is about \$6,000 to \$7,000 for winter and summer fungicides and the remainder for selective weed control – Killex, and about \$200 for Roundup.

4. Products No Longer Used

Both respondents stated that they have moved away from using significant amounts of pesticides, namely cutrizenes, and will continue to not use quintrizenes since there are better and safer products now available. They have also stopped using mercury-based products to control insects. Both stated that they know what is going on with pesticides and are acting in responsible ways.

Both operators stated that they practice Integrated Pest Management (IPM), which is the practice of irrigation management, cultivation, etc. The use of pesticides is the last resort.

Superintendents are informed about the use of pesticides and are knowledgeable about their use. They are always looking for better and safer ways to use such products. If the City has information or offers courses in this area, they would want to be aware of them.

5. Impact of a Ban on Pesticides

The impact would be negative. One stated that the value of the course would go down and the other stated that playing conditions would be greatly reduced with the loss of greens and tees and ultimately affect tourism in the City.

6. Steps That Would Be Taken If Ban Implemented

One respondent stated he would have to look for a different career, because the product (golf course) would not be available any longer, and the other stated that they would use the various golf associations to lobby the City to be able to continue to selectively use pesticides, and possibly sue the City over loss of income, etc. Superintendents are licensed pesticide applicators.

7. Recommendations to Committee

- To better manage the use of pesticides, the City should ban the sale of concentrated pesticides to domestic users, but allow the sale of small quantities of diluted pesticides.
- The sale of pesticides should only be done by licensed merchants and staff.
- The products should not be sold in general merchandise stores; instructions should be given to customers when they purchase such products – use, safety and signage.

8. Experience of Other Jurisdictions – Caledonia Ontario

- Golf courses are exempted from ban.

- Since the province did not ban the sale of pesticides, the sales of such products within the City have remained the same. The conclusion is there continues to be a lot of residential midnight spraying.
- A contact at the RCGA is Terry Amanda at (905) 849-97000. The use of pesticides is her speciality. Both contacts recommended that the Committee get her input as their decision relates to golf courses.

B. RCMP, Wascana Centre

1. Number of Properties

The RCMP care for 600 acres of property, 100 of which are the responsibility of the RCMP staff, the remainder is the responsibility of PFRA. The RCMP has three qualified people to apply pesticides. Wascana operates 2,300 acres, employing 104 people.

2. Compounds Used by the RCMP on Their 100 Acres

Dipel™ (organic insecticide) – 12 cans, Methoxychlor – 2 litres, 2,4-D – 10 tins, Roundup – 8 to 10 litres, Benemel – 4 gallons.

3. Wascana employs Killex, Roundup, Vectobac, insecticidal soap, Banvel, Lynarun and Methoxychlor. The contact did not have any information on the quantities of each.

4. Substituted Products

RCMP no longer uses soil sterilants such as gremoxze, rematol, malathion and diazinon. The one product they believe is necessary is Killex (2-4-D) to control dandelions.

Wascana no longer used RegloneA for weed control of the lake. They now harvest the weeds. Others not used are Gramoxone, Diazinon and Cygon. Wascana is always trying to find new ways to reduce the amount of pesticide use, such as “weed burning”, which did not work.

5. Impact of Ban

RCMP – Dandelions will take over the property. If Killex is not available, the RCMP would have to “water the heck out of the lawns – dandelions don’t grow in wet soil.”

If pesticides were completely banned we would have a very dirty City, and the use and safety of the park would be reduced. If a ban is put in place, Wascana would have to find alternatives, more along the lines of more oil-based products, promote the planting of grass, with lots of watering, and

employ more labour-intensive practices which require a larger budget.

6. Other Comments

- To control dandelions, the RCMP spot sprays only.
- Would hate to see a ban on Killex and Roundup. Roundup is a very safe product.
- Can't understand how the big box stores can sell pesticides, it seems to contravene the Canada Food and Drug Act.
- Should ban Weed and Feed, since the application of the Killex component is a general application, rather than a selective application.
- Have to avoid a total ban. Some pesticides are needed not only for aesthetics, but for safety. Gophers are a problem in the park. Gophers are a safety issue for those using the park for sport activities.
- A ban may be acceptable for people who are under 30 years of age, but for those who are older and have lived through the depression, or who have been influenced by the effects of the depression are very conscious about aesthetics of lawns, trees, and may not support the ban.
- The Wascana Park has 70,000 trees, many of which require a degree of pesticide control to continue as a park attraction. Some could be lost.
- Trained applicators that are employed in Wascana Park use less and less pesticides all the time – progress is being made but pesticides are necessary until alternatives are found.
- The Wascana Park could band all trees for canker worms, but it is very labour-intensive. The problem is that not all people band their trees against canker worms, therefore, the Park and citizens' efforts to control canker worms through banding is less effective than it could be.

7. Other Jurisdiction Experience

Ottawa banned the use of Killex but had to reverse decision, because dandelions took over the Parliament Hill property.

The Wascana Park respondent previously worked in Alberta where he successfully employed more environmental-friendly practices. He tried to implement such practices in Regina but was unsuccessful, since the environment and climate are quite different. Weeds which are common and not well controlled in the surrounding farmland and other pests move into the City and require more aggressive control with pesticides.

C. Regina Board of Education

Practices

The Board manages approximately 300 acres at 670 properties around the City. There are some 65 staff (out of a total staff of 220) who are involved at have at least some responsibility for groundskeeping.

The principal pesticide used is Killex with very rare use made of Roundup

Alternatives

There are no particular pesticides that the Board used at one time but discontinued due to concerns of health or the environment. They do however, now rely more on physical removal (hand, weed eaters, etc.) than in past in order to use less pesticides.

The Board would be interested in information or education on alternative products and practices and is constantly looking for these alternatives on their own.

Impact

There would be no impact on the Board if a ban or severe restrictions on pesticide use were to be introduced. The quality of education provided would not be affected whatsoever. The only repercussion for the Board would be the incidence of complaints that would come from those resident near Board property.

The only remedial action they would see needed in the event of a ban or restrictions would be extensive education of the public to accept the results.

D. Other Jurisdiction Experience

The Regina Airport Authority responded in writing to our enquiries.

The Authority manages approximately 800 acres at one location. They employ 4 person in grounds keeping positions.

The Authority uses 2-4D (50 litres/year), KRISAR (2 bags), Roundup (40 litres) and Cygon (1 litre/year).

There have been no specific changes made to avoid pesticide use but the Authority would be interested in information on alternatives that would be effective.

The Authority envisions an increase in labour costs should bans or restrictions be put in place.

The Regina Separate School Board representative declined to provide comments.

APPENDIX "J"

Focus Group Meeting Sessions

Group Characteristics

The first session involved primarily those involved primarily those individuals who have a personal interest in the issue of pesticide use. There was also a representative of the Regina Horticultural Society, an employee of Regina Health District and another from Regina Garden Associates.

There were three males and seven females in the session ranging in age from a 43-year-old programmer to an 82-year-old retired real estate broker.

Only two participants had been resident in Regina for less than 30 years. Only one of those who gave their annual household income indicated less than \$50,000 per annum.

The initial questionnaire also asked participants to rate the job that the City of Regina does in managing environmental issues and protecting the environment of the City. One indicated an “excellent” job, one “good”, and two provided a “fair” rating. Three others wrote, “no opinion”, “adequate” and “don’t know”.

The business group was comprised of representatives of 11 operators. All were male and they ranged in age from 28 to 64 years.

These operators employ from 3 to 30 employees with the group representing a total of 90 employees. Three of the operators have been in business for two to three years, while the rest have been operating for more than 10 years. Eight operate from a single location, while three operate from multiple locations across Canada.

The businesses represented in the group were:

- Weed Man
- AAA Weed Sprayer
- Enviromasters
- Poulins
- No. 1 Lawn Care
- Combat Tree Spraying
- TurfPro
- PermaGreen
- TLC
- Lawn Butler
- Other

These participants were also asked to indicate what percentage of their business is dependent on their ability to apply pesticides. Three would be relatively unaffected (less than 10%) and one felt 100% of their business would be impacted. The remainder indicated between 40% and 75% of business was dependent on the use of pesticides.

Discussions

The moderator opened each of these sessions by welcoming participants, thanking them for their time and briefly explaining the purpose of focus groups. He developed a seating plan and had participants complete a brief written questionnaire designed to gather basic demographic data and introduce the topic.

The moderator explained the purpose of the group session and provided some background. In each session, he stressed that there will be opportunity for public consultation following the presentation of the Working Committee report and that the discussions are part of the input required to develop that report and determine a process for the public consultation.

He began the discussion by asking how participants felt the City of Regina was doing in terms of handling environmental issues and protecting the environment of the City.

While the interested parties had been less than positive in their written rating of City performance, the discussion generally indicated they feel the City is doing reasonably well and is improving in this area.

“I think we need clean air. We should get back to digging rather than spraying weeds.”

“I think they might be moving in the right direction.”

“I have been in many cities and I think this is the best city for quality of air ... this is a beautiful city and I am against pesticide use in general, but I do think it has to be used sometimes, such as for the Dutch Elm Beetle.”

“I think their allergy list and the advance phone calls are great ... the signage in the parks when spraying and their Dutch Elm disease program are good as well.”

“I think the City represents its citizens and I think the push on pesticides has to come from the citizens. It is only recently that information has come to light on the health impacts of pesticides and although the push has to come from citizens, the City has to use the new information to provide leadership.”

“I have lived here all my life and I don't think that the City has always had the expertise within its workforce to handle many of the environmental issues.”

“I think as more information becomes widely available, it is easier for citizens to speak up.”

“The City set up an environmental advisory group to be proactive, but unfortunately, they have become reactive. They have tried to be more environmentally conscious.”

“I think the City needs to look at becoming a model city for environmental issues.”

They were hard pressed to identify either areas where the City does particularly well or particularly poorly in terms of the environment. There were a few who recognized the City's efforts in CO₂ emission reduction when prompted by the moderator.

Participants were then asked to explain their or their organization's interest in this issue. Most had developed a personal interest in pesticides often based on personal or family health issues.

"It's a personal issue ... concerned individual ... I have been tracking this issue, following various court cases."

"I don't represent any organization but I do a lot of networking, pass along information and receive information.... I used to live in Halifax which was the first city to control the use of pesticides because they had a high rate of child asthma, as did I while I lived there, but since coming to Saskatchewan, I am virtually cured.... The other thing which galvanized me was David Suzuki's TV show."

"I am here on my own, although I am a volunteer for Regina Garden Associates."

"I am interested in the issue of pesticides and the effects on health. I have got information on various House of Commons debates which recommended banning but to date, nothing has been done."

"I have been personally made sick by pesticides to the point of nerve damage and vomiting.... I started working some 14 years ago to get the city to use alternative products."

"I came on my own.... I have lived in Regina for over 30 years and I am interested in the pesticide issue.... In my neighbourhood there is one person who used pesticides heavily and within the block there have been four cases of cancer and two deaths. ... I don't know exactly whether there is a connection, but I do feel that there is."

"I am here as a member of the Horticulture Society. My hobby is gardening."

"I have had arthritis for 18 years and my brother-in-law farmed using chemicals heavily. He now has MS and I feel that many of our long-term illnesses are directly related to chemical use."

"I work for the Regina Health District – Health Inspection."

"I'm here as a concerned mother and grandmother and I have been very concerned about this issue ever since I read *Silent Spring*.... I think the chemical companies are responsible for most of our problems as they convince people they need their products."

Business participants were first asked to talk about the use of pesticides in their business, the nature of their clientele, and the impact that a ban on pesticide use or restrictions on the use of pesticides might have on their operation.

Most of the participants rely primarily on residential customers although there were companies concentrating on commercial customers and one whose business is primarily outside of the city of Regina.

While in their written response to the question as to the percentage of business dependent on pesticide application varied, all agreed that the possibility of a bylaw in Regina would be the start of a serious threat to their existence. A ban or restrictions in this municipality was described as the “camel’s nose under the tent” which would ultimately lead to collapse.

“We are a multi-faceted company because we apply herbicides, we mow the lawns and we do landscaping ... we have 10 employees. ... If pesticides were banned, it would affect at least 50% of our business.”

“We specialize in application of pesticides for over 3,000 customers. ... I would have to close shop if pesticides are banned.”

“We do general broad spectrum pest control, but do not use herbicides and we do tree spraying ... we can see the clouds forming ... you start with the banning of chemicals for aesthetics and then the environmental terrorists take over to get the banning of more and more chemicals. The City of Regina currently has an allergy list and even though we only can use a biological spray which you can’t be allergic to, we still have to phone them when we are spraying. ... The other irony of the list is that although there are over 400 names on the list through the various zones, there are in fact only 72 people who are driving this issue.”

“I get a number of calls all the time from people who see my signs on their neighbours’ yards and have immediately developed symptoms. They phone to find out what I used and in many cases, all I have done is to aerate. Thus, because of media bombardment, they assume they should feel something. It’s like a placebo.”

“I do not do any residential ... it is all commercial ... we do very little in the city and thus a ban would not have a major impact. ... Rather than banning outright, the City should get various groups together to work on the problem. You can, through integrated pest management, significantly reduce the use of chemicals, but unfortunately, most people don’t know what I mean so they aren’t interested.”

“I do landscaping, trees, etc. but I don’t do much residential, so a ban wouldn’t have much of an impact on me.”

“We do a little bit of everything ... we use Dipel on all trees. ... We try to use alternatives like soaps more and more.”

“We use organic products ... we advocate education because it is our view that if a ban happens, the harder you push the door closed, the harder the impact will be on our asses as the door swings the other way ... you can end up having far greater negative impacts on the environment through total banning than you get from effective, but properly controlled used of chemicals.”

“You are going to have black market chemicals as well as midnight applications in a careless manner.”

“Their lawns will become weed infested and they will say why pay for this?”

“Their lawns will die and they won’t need us.”

“In those cities which stopped using chemicals in their parks – their grass dies.”

“We need the tools to do the job ... proper integration of the tools goes far beyond the simple weed eradication ... there’s insect control, balanced soil nutrients, etc.”

“One of the things which happens is the City has a habit of going through knee jerk reactions to situations. As an example, about two years ago, the federal government’s PMRA (Pest Management Review Agency) informed everybody that Dursiban was under review and the City, in its infinite wisdom, said we better stop using it. They had used it for elm bark beetles, but in the year they quit using it, they had to take out 11 trees. The PMRA finished their review and approved it, the City went back to using it and the problem was reduced.”

Both groups exhibited strong feelings on this issue. There was difficulty in addressing specific questions without having the various pros and cons of conditional use or a ban raised.

There were three individuals in the interested parties session who had obviously researched the issue extensively and who would cite “evidence” and “scientific” studies in support of their position but most rely on anecdotal evidence and have come to their position as an emotional response.

Similarly, the three businesses which represent national firms or franchises have access to extensive studies, “scientific” evidence and reports that support their position. The others though have also spent considerable time considering the issue and developing the supporting arguments for their position.

I think the public is bombarded with advertising of chemicals, but nowhere do they learn what its side effects may be, let alone how to safely handle it. I think the province needs to enact legislation so that only licensed handlers can sell the products and only under prescribed conditions.”

“Why (trees different)? Trees are aesthetic unless you talk about scrubbing the air and producing oxygen and then most lawns are far more efficient than trees anyways. ... It depends on who gets to define what is aesthetic.”

“In the locations where they stopped using them, take Ottawa, they saved \$45,000 on chemicals but are now spending over \$.45 million to rejuvenate their playing fields as a result.”

“It’s also an issue of private property and as the products are approved and safe, how can we ban them? it’s like cigarettes: even the Canadian Cancer Society’s report on the harm cigarettes are doing states that no link to chemicals can be found. ... if we ban them, then we better ban smoking in our back yards and as well, barbequing.”

“The City has a role to play in this but it’s education. Cannot arbitrarily decide what products are toxic and what are not.”

“You know that if we are inundated with weeds what happens to the hay fever sufferers, etc.? In fact, the City of Montreal is being sued right now by hay fever sufferers over their bans.”

“You can regulate usage, but you can’t regulate the sale of it and by banning it you are going to turn a lot of homeowners into criminals just like what is going on in Halifax and how much is it going to cost to enforce the by-law? I have no problem with the City requiring all businesses in the city to prove that they are licensed to handle and use the chemicals, that we are training our staff and that we are following an approved Pest Control Management Program and if they want to charge me \$50 and give me a sticker for my truck that’s fine. They can then use the money to educate the public.”

“I think that if we sit down and talk about the issue we’ll come to a reasonable solution.”

“How many complaints does the City get about weeds and how many complaints about our operations?”

“There are many cities in the east which have adopted an attitude not to spray for dandelions.... They believe they are naturally occurring and do not create health hazards.”

“If you are looking at an issue as a health issue, you have to act regardless of the economics ... like seat belts and smoking.”

“Health must be a priority ... I am concerned that this issue has been referred to the Parks Department which are the big users of pesticides and which will be the hardest to sell on any movement away from pesticides.”

“The only businesses which will lose in a move away from pesticides are those that have no vision. The largest landscaper in Halifax has gone completely pesticide-free and has found other ways to do their business.”

“If the City puts any by-law in place they don’t have the manpower or finances to enforce it and they don’t have the manpower or finances to implement alternatives, let alone prove the alternatives will work.”

The moderator attempted to initiate a discussion on use in Regina by suggesting that his own experience and brief discussions indicated that use of pesticides was fairly minimal.

Both groups took issue with this statement and both would argue that the worst incidents of overuse or misapplication occur among individual homeowners who are unfamiliar with the

products and procedures and make little effort to become familiar with correct practices. The evidence of this was again anecdotal in both cases and the businesses added a concern for small, unlicensed operators who similarly employ bad practices.

“The Environmental Society in Saskatchewan did a survey and found that I think 80% used some form of pesticides. A lot of people don’t know that herbicides are pesticides.”

“Homeowners use four times as much chemicals to do a job as we would.”

“We follow the handling procedures on the labels, but the average homeowner doesn’t.”

“We do a variety of jobs and try to educate our customers on IPM (Integrated Pest Management).”

“... people put weed and feed on their lawns and have no understanding of what they are doing.”

A suggestion was made in the individuals’ session that those who sell these products should be licensed (and trained). The moderator raised this in the business group as a possibility. Such a step, and likely any similar type of move or effort, would not likely be acceptable to these businesses as they maintain the position that the products are safe (safer than many other common products) and they cannot justify this position with conditions or restrictions that would distinguish these products or might again be the “leading edge” of more serious restrictions.

Both groups, however, would be strongly in favour of public information and education programs concerning the proper use, application and storage of pesticides. The “environmentalists” would extend this to include education about alternative products and methods and while the businesses would not necessarily oppose this they have considerable scepticism about some of the alternatives presented as “effective” and even question the environmental impact of some of these alternatives in comparison to common pesticides.

“I would like to see landscaping companies who actively promote environmentally safe approaches in their business receive tax breaks which in turn would further assist in educating the public.”

“I just started to dig all my weeds out.”

“Companion growing which helps to control insects and weeds naturally.”

“I use soapy dishwater to control insects.”

“I think there are new products like corn gluten which assists in stopping new weed growth, as well as improve nitrogen content. ... There are other natural products available as well.”

“It’s easy for individuals to use the alternatives, but I don’t see how golf courses and Wascana Centre could do it without pesticides”

“I think education is most important and when you can’t educate fast enough, you have to legislate.”

“You have to come up with alternatives which are just as fast and cheaper than pesticides.”

“I think it’s a question of education ... and people will take the time to do the right thing once they are educated.”

“I think the City has to take the lead in educating the public. Use the same approach as the stop smoking campaigns.”

“The City could start with school grounds and make them pesticide free. They could also have test plots throughout the city to demonstrate various alternatives and publicize their progress.”

“You look at corn gluten, which has not been proven: it costs \$150 to cover the same area that \$39 of chemical covers, plus I am putting down 50 pounds of mouse feed around your house.”

“The only legal alternatives to chemicals right now are a salt gun which is four times more toxic than 2-4-D and a propane torch which not only makes your lawn look a mess, but as well, is far more dangerous with all the propane compressors.”

“You need to educate people about pesticides.”

Both groups had difficulty both in addressing the question of process without diverting to the issue and also in suggesting activities, steps or procedures that they felt would be appropriate for the public consultation phase that will follow the report of the Committee.

The groups recognize that this public input will be important (in the case of individuals) or is unavoidable (in the case of businesses).

The principal concern of environmentalists is that the process be open and transparent and that the decision is not subject to undue influence by industry or arrived at “behind closed doors”.

The principal concern for businesses is that the process be one which will not be overwhelmed by emotion but will be one based on an examination of evidence.

One individual did raise a concern over the fact that the report had been placed under the auspices of the Parks Department (an applicator/user) rather than being treated as a health issue. The concern seemed to be alleviated by the fact that the Committee is broadly based (includes RUEAC, Health District, etc.).

Both groups have concerns over traditional “public meetings” or “open forums”. Both groups independently suggested “conference(s)” that would bring together knowledgeable, acknowledged experts to present the case for and against continued, unrestricted pesticide application.

“Another bit of information is that the City’s Xeri-scape program has led to people using more water, not less, and I use more chemicals on Xeriscape yards because of the weeds than I do on normal yards.”

“I think that in the education process it must be pointed out that the best weed control is healthy grass.”

“I don’t know what the best way is, but they have to keep emotions under control.”

“I would like to see a round table approach so that all the facts get out on the table.”

“I understand the position of the politicians but what’s the point of canvassing a room full of people who have no experience with the chemicals ... we have the best pest management control program in the world ... with the federal agency ... there are lots of chemicals which we can’t use in Canada which are being used in the States because of the role the agency plays in controlling the use of pesticides.”

“We need to address the concerns of the people in a non-emotional manner ... they have a right to be informed ... we have to deal with facts.”

“Maybe they need to have a referendum.”

“You have to advertise and get the people behind them before you legislate a ban.”

“I think they should have an every home survey to get the citizens’ reaction and should phase in the decision over three to five years.”

“I think the process has to be open to the public to ensure the chemical companies don’t have undue influence ... local people must be involved. They also must ensure that all positions are held in balance.”

“Openness is critical and the same rules and process must be followed for all interested parties to this issue.”

“I think they need to find out from places like Halifax how they did it and what the impact has been.”

“I think they should also use the Internet to do an electronic survey because lots of people will participate electronically, but not the traditional mail-back method.”

“The process will determine the issue ... the process should not polarize the issue ... I think that it must be one of education so that whatever the decision, it can be easily understood.”

“I would also like to see a city-wide televised debate on the issue, with the various professional individuals and then use a survey as a follow up.”

“I wouldn’t want to see an outright ban ... it has to be phased in with the right amount of education.”

“I think that the City also has to work with business to educate them as well as to show them on how they can seize upon the new opportunities to make money.”

“I think the City needs to use e-mail as a method to communicate and any information distributed this way does reach beyond because people do network and share information.”

“I think maybe the City needs to get out to various groups, into their workplaces and hold information seminars at noon.”

“The process must be user friendly and open. The present approach used by the city is very complicated and doesn’t allow for adequate input.”

“I think the problem with the existing process is that many people feel that they are not included.”

It became clear over the course of the discussion that the environmentalists do not have high expectations that the result of this process will be any immediate ban on the use of pesticides. Most would likely expect some “phasing out” period which they believe has been adopted in other municipalities. While businesses accept that the issue is unavoidable, they have difficulty accepting that these products should be treated differently than any other common commodity.

While it is clear that there is no compromise position available to the City that will satisfy the divergent interests of these two groups, there is considerable common ground and common concerns:

Both identify careless and uninformed application of pesticides by individuals and unqualified operators as the most pressing issue

Both recognize a need for public education and public information campaigns

Both have concerns over the effectiveness of traditional public meetings as a method of obtaining productive public input

Both, for very different reasons, believe it is important that the City examine carefully the experience of other municipalities which have adopted some form of ban or restriction, and

Both would regard a public conference or symposium or series of such events as an appropriate step in addressing this issue.

Participants were given an opportunity to raise any other points related to this issue as well. Two other points arose over the course of the discussions:

Practitioners expressed a willingness to see pesticide application handled by the City in a similar manner to that currently in place for tree spraying.

There needs to be easier or improved methods for disposal of old, unused product and containers.

“The City already has the skeleton of a program. Every year Wade Morrow phones and tells me if I want to spray trees, I have to come down to a city seminar and they check my license ... there’s nothing wrong with this.”

“They could then publish a list of approved applicators in the paper. It would be worth a \$50 fee. In fact, you can take the money I am getting for this and use it right now.”

“I would like to see a program to dispose of unused chemicals from around the home ... I also think something has to be done about how retailers (Canadian Tire was cited as an example) ... you can’t walk down the aisles in their garden sections without smelling all the chemicals.”

“I would like to see a chemical swap where people could come in and swap chemicals for alternatives.”

“Anything that will make homeowners more confident in the products and those who are applying them would be good and if it means licensing, fine.”

“If the City wants to license us and use the revenue to educate the public, that’s fine ... we need to get the fly-by-nights out of the business and if licensing does that, fine.”

The moderator closed each session by again thanking participants for their time and distributing honorariums.

APPENDIX "K"

Public Attitudinal Survey

VI. PUBLIC ATTITUDINAL SURVEY

Summary

The survey was conducted by telephone during the period of March 22nd to March 30th, 2002. A survey with a sample of this size will have a precision (range of error factor) of ± 4.7 percent at a 95 percent level of confidence (19 out of 20 times).

There was considerable public exposure for the issue of pesticide use at the time of the survey including the Federal Government's introduction of new regulations governing pesticides.

Respondents were first asked to identify what they felt was the most important issue facing Regina in terms of the environment.

ENVIRONMENTAL ISSUES		
Air Quality / Refinery / Upgrader		48 mentions
Garbage	General / Litter	35 mentions
	Landfill	26 mentions
Water	Quality / General	37 mentions
	Drought	8 mentions
Recycling		16 mentions
Global Warming		11 mentions
Dutch Elm Disease		9 mentions
Wascana		8 mentions
Weeds / Mosquitoes		3 mentions
Other		14 mentions
Pesticides	Pesticides	5 mentions
	Chemicals	3 mentions
	Spraying	7 mentions

There were 8 individuals (2%) of the sample who specifically referred to pesticides or use of chemicals and another 7 whose reference to spraying of trees, mosquitoes and gophers are assumed to express concern over the practice.

Respondents were then asked to rate the job that the City of Regina does in protecting the environment in our city. A large majority give the City high marks.

CITY PERFORMANCE ON ENVIRONMENT			
Excellent	–	15	(4.1%)
Good	–	242	(66.5%)
Fair	–	42	(11.5%)
Poor	–	30	(8.2%)
Very Poor	–	7	(1.9%)

Those younger respondents and those with middle incomes were most positive in their assessment of the City. Reasons for giving poor ratings varied including garbage, recycling, and weed control.

Reasons for giving the City a positive assessment also varied widely including references to parks and green spaces, efforts to promote recycling, natural gas vehicles, CO₂ emission reductions, and the cleanliness of the city.

Highlights

- Eight individuals identified pesticides as the most important environmental issue (2%) and another 7 referred to spraying of mosquitoes, weeds and gophers.
- 70.6 percent rate the City of Regina as excellent or good in their performance in protecting the environment.
- 78 percent of those with yards and gardens use pesticides, 63 percent of the City’s population. The most commonly used form is Weed & Feed.
- 17 percent of Reginans believe the City should stop using pesticides to control weeds and pests, while 72 percent find the current practice acceptable and 6 percent would favour the City increasing its use of pesticides.
- One-third of Reginans (33%) would like homeowners to stop using pesticides to control weeds and pests while 56 percent find current practice acceptable and 3 percent would favour increased use of pesticides by homeowners.
- 27 percent would favour professional commercial operations cease using pesticides, 60 percent find current practices acceptable and 4 percent would favour increased pesticide use by these organizations.
- 24 percent of the sample indicated they are very concerned about pesticide use and another 48 percent are somewhat concerned with 27 percent being not concerned. A majority would favour some restrictions or reductions in the use of pesticides by the City (51%), by

commercial operators (57%) and by homeowners (54%).

- While there is support for reductions or restrictions in pesticide use, there is considerable strong opposition to an outright ban on the use of these products for cosmetic purposes. 36 percent would favour such a ban on homeowners, while 58 percent would oppose a ban.
- A majority of residents (58%) would support a City of Regina public information campaign and education programs regarding the appropriate and proper use of pesticides. Those opposed feel it is unnecessary, not the City’s job or express concern over the impact on taxes.
- 71 percent would support a campaign to increase awareness for alternative methods and practices to reduce the need for pesticides. Most opposed were concerned about the cost/tax implications.

Pesticide Use

There were 291 respondents to the survey who have a yard or garden and of these, 229 or 78.7 percent use at least one pesticide product. There were few who use these products more than twice in a normal year.

The most commonly used product containing pesticide was Weed & Feed. The number who indicated that they use particular pesticides, the percentage of those with yards or gardens this represents and the number of applications made in a normal or average year are shown in the following chart.

PESTICIDE USE						
Product	Use		Once	Twice	Three	More
Weed & Feed	101	(34.7%)	48	41	8	4
Killex	93	(32.0%)	41	33	11	9
Roundup	81	(27.8%)	36	27	8	10
Ant / Slug Bait	82	(28.0%)	39	25	7	11
Malathion	51	(17.5%)	37	11	3	–
Dandelion Bars	44	(15.0%)	21	17	2	5
Diazanone	32	(11.0%)	24	7	1	1
Rose Dust	32	(11.0%)	10	13	4	5

Respondents were also asked if there were any other pesticides that they use. Those mentioned included: Raid (16), Potato dust (7), WASP bomb (3) and single mentions for warfarin, trillium, killer cane, dipel, Ambush, gnat destroyer and two who simply said a commercial operation handles this on their behalf.

Pesticide use is lower among younger homeowners. There is little difference in use based on the household income of the respondent.

Respondents were also asked if there were any pesticide products that they used at one time but no longer purchase due to concerns for the impact of the product on health or the environment and 87 specified a type of product (or more than one).

PESTICIDE PRODUCTS USED		
Roundup	–	20
Killex	–	19
Malathion	–	19
DDT	–	11
Weed Bars	–	6
Diazanone	–	5
Weed & Feed	–	5
2-4-D	–	5
Ragon	–	4
Cygon	–	2
Dust / Powders	–	4

They were also asked if there are products that they would never purchase because of concern for how safe they are. Roundup and Killex were again the most often mentioned products.

Respondents who use pesticides were also asked if they feel that homeowners generally have a good understanding of the proper and appropriate use of these pesticides. A majority do not feel that this is the case.

HOMEOWNERS UNDERSTAND PESTICIDE USE			
Yes	–	110	(38.2%)
No	–	159	(55.2%)
NS / Don't Know	–	19	(6.6%)

While those who do not use pesticides are much less likely to believe homeowners understand the appropriate use of these products, even among those who do use pesticides a majority (52%) do not feel there is generally a good understanding for these products' proper application.

This sentiment was common among both men and women and across all age groups and income categories.

The survey also asked those with yards or gardens if they are using any non-chemical products or alternative methods and procedures to reduce or replace pesticides, if they are aware of these alternatives and if they would be interested in using non-chemical alternatives if they were effective.

**NON-CHEMICAL PRODUCTS AND
ALTERNATIVE PRACTICES**

Currently Using	–	130	(44.7%)
Aware of	–	166	(57.0%)
Interested In	–	262	(90.3%)

There is a high level of interest among both those who currently use pesticides and those who do not in adopting these practices and employing these products if they are effective. Respondents were then advised that there may be a cost involved in using alternative products or practices to replace pesticides. They were asked how much more they would be willing to pay to employ an alternative assuming that it would be equally effective.

**INCREASED COST FOR
ALTERNATIVE PRODUCT/PRACTICE**

None / No More	–	66
Up to 10% more	–	23
10% to 50% more	–	29
50% to 100% More (Twice)	–	132
More than Twice as Much	–	16
Don't Know / Not Sure	–	18

Over one-half of these homeowners indicated that they would pay twice as much or more for an effective alternative product or practice that would reduce their use of pesticides.

Restrictions

All respondents were asked to respond to the balance of the questionnaire which dealt with pesticide use in Regina and possible restrictions in the application of these products.

They were presented with a series of statements concerning the use of pesticides to control weeds and pests by the City of Regina, by Regina homeowners and by professional commercial operations or those who manage large tracts of land.

This question, applied strictly to the application of herbicides to control weeds by the City of Regina, has appeared in regular City Omnibus Surveys and the results of recent studies are detailed in Section III of this report. The responses when the question is expanded to pesticides do not differ greatly for the City.

The first statements were specific to the City of Regina. Respondents were asked which of these statements was closest to their belief.

“The City should stop applying pesticides to control weeds and pests in consideration of public health and the environment.”	
Closest to Belief	63 (17.3%)

“The City’s present use of pesticides seems acceptable and reasonable.”	
Closest to Belief	263 (72.3%)

“The City should increase its use of pesticides to improve weed and pest control in our city.”	
Closest to Belief	23 (6.3%)

These statements were then presented as they related to pesticide use by homeowners.

“Homeowners should stop applying pesticides to control weeds and pests in consideration of public health and the environment.”	
Closest to Belief	120 (33.0%)

“The present use of pesticides by homeowners seems acceptable and reasonable.”	
Closest to Belief	202 (55.5%)

“Homeowners should increase their use of pesticides to increase weed and pest control.”	
Closest to Belief	10 (2.7%)

They were then asked to consider pesticide use by professional commercial operations or those who manage large tracts of land and property.

“Commercial operations should stop applying pesticides to control weeds and pests in consideration of public health and the environment.”	
Closest to Belief	97 (26.6%)

“The present use of pesticides by commercial operations seems acceptable and reasonable.”	
Closest to Belief	218 (59.9%)

“Commercial operations should increase their use of pesticides to improve weed and pest control in our city.”	
Closest to Belief	13 (3.6%)

The number of respondents not responding to these questions were 4 percent in the case of the City of Regina, 9 percent in the case of homeowners and 10 percent in the case of commercial operations.

Among those who do not personally use any pesticides, the numbers believing that application should stop were slightly higher in all cases – 20 percent for the City of Regina, 35 percent for homeowners and 30 percent for commercial operations.

The incidence of preferring to see a stop to the application of pesticides was much higher in all cases among those over the age of 55 years. Females also had a higher percentage in favour of stopping than was the case among males.

The public, including homeowners and those who use pesticides, clearly see use by individual homeowners as a cause for greater concern than is the application of these products by the City, professionals or property managers.

While the use of pesticides does not rank highly as a top-of-mind concern for Regina, there is a concern for this issue. Respondents were asked how concerned they were personally about the impact that pesticide use has on public health and the environment.

CONCERN REGARDING THE IMPACT OF PESTICIDES ON PUBLIC HEALTH AND THE ENVIRONMENT			
	Very Concerned	Somewhat Concerned	Not Really Concerned
Totals	89 (24.5%)	176 (48.5%)	97 (26.6%)
Males	40 (23.4%)	77 (45.0%)	54 (31.6%)
Females	49 (25.4%)	99 (51.3%)	43 (22.3%)
18 to 34 Years	21 (22.3%)	46 (48.9%)	27 (28.7%)
35 to 54 Years	28 (18.8%)	80 (53.7%)	41 (27.5%)
55 to 69 years	24 (28.2%)	39 (45.9%)	21 (24.7%)
70 or Over	16 (44.4%)	11 (30.6%)	8 (22.2%)
Use Pesticides	45 (19.7%)	117 (51.1%)	65 (28.4%)
Don't Use	44 (32.6%)	59 (43.7%)	32 (23.7%)

The population also shows support for restrictions in or reductions in the amount of pesticide used at all levels.

SUPPORT REDUCTIONS IN PESTICIDE USE			
By the City of Regina	–	187	(51.4%)
By Homeowners	–	195	(53.6%)
By Commercial Operators	–	208	(57.1%)

The same demographic differences which were present among the level of concern show in support levels for restrictions or reductions in use of pesticides.

While a majority of residents support restrictions in the amount of pesticides used or reduction in the amount of these products used, there is considerable opposition to an outright ban in the use of these products for cosmetic purposes. The public would oppose a bylaw banning this use applied to homeowners and would also oppose a ban on the use of these products for cosmetic purposes by the City of Regina.

BAN PESTICIDE USE FOR COSMETIC PURPOSES BY HOMEOWNERS			
Strongly Support	–	61	(16.8%)
Somewhat Support	–	70	(19.2%)
Somewhat Oppose	–	113	(31.0%)
Strongly Oppose	–	97	(26.6%)

BAN PESTICIDE USE FOR COSMETIC PURPOSES BY CITY OF REGINA			
Strongly Support	–	55	(15.1%)
Somewhat Support	–	84	(23.1%)
Somewhat Oppose	–	120	(33.0%)
Strongly Oppose	–	85	(23.4%)

Among those who do not use any pesticides themselves, support for a ban in use by homeowners was only slightly higher at 39 percent with a majority, 53 percent opposed.

Support for these bans was much higher among those over the age of 70 years. Within this age group an equal number (16) both favoured a ban in use by homeowners and opposed such a bylaw.

Opposition to bans was much higher among those who do not have a yard or garden than was the case among homeowners themselves. Of this group, 63 percent, primarily renters or condominium dwellers, oppose a ban on homeowners.

Support for a ban on pesticide use was much higher among female respondents than among males. Of women, 41 percent support such a bylaw compared to 30 percent of men.

All respondents were asked if they would accept an increase in the population of weeds such as dandelions in public places as a consequence of such a ban or restriction on the City.

There were 178 who would accept this possibility or believe it will not happen and there were 175 who would not find this acceptable.

Information Campaign

In other discussions detailed earlier in this report it was noted that there is broad-based concern that individual homeowners are often not aware of the proper and appropriate use of pesticide products and also do not have access to information on alternatives to pesticide use.

This survey confirms that the public sees both of these areas of concern as legitimate as a majority do not feel that homeowners are generally aware of proper practices and 90 percent express interest in alternative products and alternative practices.

The survey asked if respondents would support the City of Regina spending tax dollars on public information campaigns and education programs to increase awareness for the appropriate and proper use of pesticides.

SUPPORT INFORMATION / EDUCATION REGARDING PESTICIDE USE			
Yes	–	211	(58.0%)
No	–	141	(38.7%)
Not Sure	–	12	(3.3%)

Both those in favour and those opposed were asked if there was a particular reason they felt that way.

Those in favour just generally felt it was necessary and would be positive. Those opposed were concerned about taxes/cost (60 mentions), people don't need this (38 mentions) or won't pay attention (9 mentions), felt it was not the City's job (12 mentions) or just want these products banned entirely (3 mentions).

They were also asked if they would support the City of Regina spending tax dollars on a public information campaign and education programs to increase awareness of alternative methods and practices that would reduce the need for pesticides. Support for efforts of this nature would be considerably higher than for those targeted at proper and appropriate methods of use.

SUPPORT INFORMATION / EDUCATION REGARDING ALTERNATIVE METHODS			
Yes	–	259	(71.2%)
No	–	89	(24.5%)
Not Sure	–	12	(3.3%)

Again, the major concern among those opposed to these efforts was the cost or tax implications (43 mentions).

References

- Government Response to the Report of the House of Commons Standing Committee on the Environment and Sustainable Development, *Pesticides: Making the Right Choice for the Protection of Health and the Environment*
- A Public Health Approach to Pesticide Use in Canada-Canadian Public Health Association, April 25, 2002
- Pest Management Regulatory Agency; www.hc-sc.gc.ca/PMRA-arla
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- Halifax Regional Municipality
- City of Mississauga
- City of Westmount
- City of Hamilton
- City of Waterloo
- City of Calgary