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Pesticide Free? Oui!

An Analysis of Quebec's Pesticides Management Code and Recommendations for Effective Provincial Policy

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List of Acronyms

INSPQ	*Institut national de santé publique du Québec* (Quebec National Institute of Public Health)
MDDEP	*Ministère du Développement Durable, de l'Environnement et des Parcs (Department of Sustainable Development, Environment, and Parks* – Quebec)
PMRA	Pest Management Regulatory Agency – Canada
SEPA	School Environmental Protection Act – United States

Pesticide Free? Oui!

An Analysis of Quebec's Pesticides Management Code and Recommendations for Effective Provincial Policy

Executive Summary

This report analyzes the strengths and weaknesses of Quebec's Pesticides Management Code (referred to hereafter as "the Code"), the first provincial ban on the use and sale of certain cosmetic pesticides in Canada. For Quebec, this analysis serves as an evaluation of a relatively new policy and highlights opportunities to improve the Code's effectiveness. For Ontario, where the government is preparing to introduce legislation to ban cosmetic pesticides, and other provinces that may consider adopting similar measures, this report offers policy-makers a perspective on Quebec's experience and lessons learned.

The Code's strengths include its prohibition on sales of the targeted pesticides (as well as their use), and its strong basis in the precautionary principle.

However, there are also weaknesses, such as the lack of resources allocated to effectively implement the Code. Also, the Code prohibits the sale and use of only specified pesticide active ingredients – as opposed to banning the whole class of cosmetic pesticides and specifying authorized alternatives deemed to be safe.

The main recommendations for improving the Code are to improve monitoring and inspection, to expand the scope beyond lawn care to include all elements of landscaping, to require regular review of the list of prohibited active ingredients, and to encourage municipalities to adopt more restrictive by-laws that complement the Code. Key recommendations for other provinces that are considering bans on cosmetic pesticides include using the precautionary principle as the guiding rule; structuring the ban with reference to a "white list" of products authorized for sale and use; and developing a thorough and effective enforcement program.

A. Introduction

A growing body of research points to the harmful effects of pesticides on human health and the environment. A systematic review of the epidemiological literature conducted by the Ontario College of Family Physicians points to: "consistent links to serious illnesses such as cancer, reproductive problems and neurological diseases, among others. The study also shows that children are particularly vulnerable to pesticides."[1] Although the primary use of pesticides is agricultural, cosmetic use on lawns and gardens is a concern because of the unnecessary associated risks.

During the past two decades, approximately 140 towns in Canada have adopted municipal by-laws to limit the use of lawn and garden pesticides on public and private property[2]. Quebec, however, is the only province that restricts the *sale* of certain pesticides registered by the federal Pest Management Regulatory Agency (PMRA), as well as the household use of the targeted products. These provincial regulations were adopted on April 3, 2003, following many years of consultations with various concerned groups and organizations.

Five years after Quebec adopted its Pesticides Management Code (*Le Code de Gestion des Pesticides*; hereafter referred to as "the Code"), the Government of Ontario has committed to implementing new legislative measures to prohibit "the cosmetic use of pesticides."[3] The minister of the environment is expected to introduce legislation in the spring of 2008. Meanwhile, the Government of Prince Edward Island has held public consultations on a potential province-wide ban on the cosmetic use of pesticides. The legislative committee charged with studying the issue is due to issue its report in the spring of 2008, as well.

To the extent that other provinces considering cosmetic pesticide bans will look to the Quebec Code as a model, the time is right to analyze this provincial regulation. This report aims to identify the Code's strengths as well as its limitations, in particular with respect to its approach to banning the sale and use of cosmetic pesticides, and the challenges related to its implementation. For Quebec, this analysis serves as an evaluation of a relatively new policy and points to opportunities to improve the Code's effectiveness. For Ontario, where the government is preparing to introduce legislation to ban cosmetic pesticides, and Prince Edward Island, where similar measures are under consideration, this report offers policy-makers a perspective on Quebec's experience and lessons learned. Moreover, we hope that this report will inspire other Canadian provinces to take action to protect the health of their populations from the avoidable risks associated with cosmetic pesticide use.

B. Methodology

Our analysis is informed by two phases of research. First, we conducted a detailed review of available public documents related to the development and implementation of the Code. Second, we interviewed various experts impacted by the regulation (Appendix A). To this end, an interview guide was produced (Appendix B).

We also considered quantitative data, where available, to evaluate the Code's effectiveness. However, given that the Code is a relatively new regulation, quantitative data are limited. Our analysis is therefore primarily qualitative, focusing on the following elements:

- How the Code was implemented;
- Barriers to enforcing the Code; and,
- Results observed since the Code was adopted.

The basic criteria we employed in the analysis relate to an evaluation of the Code's effectiveness in terms of its stated objective: to reduce the use of pesticides that are the most harmful to human health and the environment. We also considered the coherence of the approach under the Code in relation to the broader objective of minimizing risks related to cosmetic pesticide exposure.

It should be noted that the Code sets forth minimal requirements for the use and sale of pesticides. In the process that led to the development of the Code, it was anticipated that municipal pesticide by-laws would complement the provincial regulation. Therefore, although a detailed examination of municipal pesticide by-laws in Quebec is beyond the scope of this report, our analysis does take into account the municipal context, in general terms.

C. The Pesticides Management Code

C.1. Brief History of the Code

Several factors led to the development of the Code. First, in 1987, the Government of Quebec adopted the Pesticides Act [4], which was designed to reduce and rationalize the use of pesticides, in order to reduce environmental impacts. This law authorized provincial regulation of pesticides in Quebec, including occupational use and handling, private use, and production.

In 1991, the Town of Hudson adopted by-law 270 in response to citizens' concerns about the health effects of cosmetic pesticides. This by-law prohibited the use of pesticides, except in places where pesticide application was considered essential. Major lawn care companies (Spraytech, ChemLawn) contested this by-law and filed lawsuits against the town. In June 2001, the Supreme Court of Canada ruled in favour of the town of Hudson and upheld the by-law.

It should be noted that municipalities do not have the authority to prohibit the sale of pesticides; they can only regulate the use of pesticides.

Various environmental groups, including the Coalition for Alternatives to Pesticides (CAP) and the Working Group on Raising Awareness about the Urban Use of Pesticides (le Groupe de travail pour la sensibilisation sur les pesticides en milieu urbain), raised public awareness about the harmful effects of cosmetic pesticides. This paved the way for adoption of the provincial Code and municipal by-laws.

At the same time, an increasing number of studies were demonstrating both the harmful effects of pesticides on public health, and the gaps in our knowledge about the effects of pesticides. In September 2001, the Government of Quebec established the **Cousineau Commission** to examine the use of pesticides in urban environments. Various stakeholders (e.g., industry, environmental groups, professional associations, research institutes) were invited to file written submissions. The Cousineau Commission was mandated to determine ways to reduce dependence on pesticides; to reduce the risks associated with pesticides; and to encourage citizens to use pesticides more responsibly. The Cousineau Commission was guided by the precautionary principle, which states that where there are threats of serious or irreversible damage, the absence of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

The Cousineau Commission recognized that "the risks associated with exposure to pesticides are very real." The Code is based on the recommendations of the Commission. The Code officially came into effect in April 2003. Its two main objectives are to protect public health, especially children, who are the most vulnerable to the effects of pesticides, and to protect the environment, especially water resources[5].

Although human health and environmental concerns were the basis for restricting pesticides under the Code, the restrictions had to be justifiable from an economic perspective. Thus, the Code is structured around three constraints:

- It applies only to the cosmetic use of pesticides;
- It applies to lawns and turfs only; and,
- It prohibits 20 active ingredients, as listed in Schedule 1 of the Code (see Box 2).

Furthermore, the Code is particularly restrictive with regard to child-centered public places, such as daycare centres and schools. Children are particularly vulnerable to the health effects of pesticides due to their developmental, physiological, and behavioural characteristics. In order to protect children, the Cousineau Commission affirmed that their exposure to pesticides must be reduced as much as possible[6].

Box 1

The **active ingredient in a pesticide** is the substance that controls the targeted pest. The common name of the active ingredient appears on the product label under the heading "guarantee."[7]

Box 2
List of active ingredients prohibited for use in lawncare

Categories of pesticides	Active ingredients
Insecticides	Carbaryl Dicofol Malathion
Herbicides	2,4-D (present as sodium salt) 2,4-D (present as ester) 2,4-D (present as acid) 2,4-D (present as amine salt) Chlorthal dimethyl MCPA (present as ester) MCPA (present as amine salt) MCPA (present as potassium or sodium salt) Mecoprop (present as acid) Mecoprop (present as amine salt) Mecoprop (present as potassium or sodium salt)
Fungicides	Benomyl Captan Chlorothalonil Iprodione Quintozene Thiophanate-methyl

Source : Quebec Pesticides Management Code, c. P-9.3, r.0.01

Developing the Code

> "The data which are presently available, the fact that certain aspects remain poorly understood, and the increased vulnerability of certain groups provide ample reason to justify taking a prudent approach and applying the precautionary principle with respect to pesticide use."
>
> Institut national de santé publique du Québec[8]

Initially, the Quebec Department of Sustainable Development, Environment, and Parks (*le Ministère du Développement durable, de l'Environnement et des Parcs;* MDDEP) gave consideration to a broad range of risks that pesticides pose to human health, such as congenital malformations, and disruptions of the reproductive, endocrine, immune, and nervous systems. The evaluation focused on risks associated with chronic exposure. Repeated exposure to certain pesticides, even if applied according to the manufacturer's instructions, can lead to chronic poisoning.

The health of children, who are more vulnerable to chronic and degenerative diseases, was also a central consideration.

In the end, though, carcinogenity was the criterion used to determine which active ingredients would be prohibited. In keeping with the precautionary principle, where the absence of scientific certainty must not serve as a pretext for delaying measures to protect public health, pesticides considered possible carcinogens were listed for prohibition[9].

To evaluate the cancer-risk of particular pesticides, the MDDEP referenced the assessments of the International Agency for Research on Cancer, the U.S. Environmental Protection Agency, the American National Toxicology Program, the California Environmental Protection Agency, and the European Union. Each of these organizations regularly publishes and updates lists of substances considered carcinogenic.[10]

A list of lawn pesticides was established on the basis of products registered for use in Canada to control various lawn pests and diseases.

The Code's prohibitions on pesticides apply to active ingredients found on both:

- The list of registered lawn pesticides; and,
- The list of pesticides for which an additional precaution was deemed necessary in consideration of the associated cancer risks and the precautionary principle.

Active ingredients meeting these criteria are listed at Schedule 1 of the Code.

C. 2. General orientation

The Code is a series of requirements and prohibitions relating to the storage, sale, and use of pesticides in urban and agricultural areas. There are provisions governing the use and sale of pesticides by permit- and certificate-holders (*e.g.*, pesticide retailers, commercial users) and by private citizens.

In general terms, the Code bans the use and residential sales of the most hazardous pesticides. The 20 prohibited active ingredients listed in Schedule 1 of the Code are found in approximately 200 lawn pesticides registered for use by the Pest Management Regulatory Agency (PMRA). The Code was phased-in over three years, such that the ban on the use of lawn pesticides on public, semi-public, and municipal properties first came into effect in April 2003. The ban on residential sales of pesticide-fertilizer mixtures and mixed packages (*e.g.*, herbicides and insecticides) was implemented a year later, in April 2004. The commercial display of pesticide products containing active ingredients listed in Schedule 1 of the Code has been prohibited since April 2005. Finally, in April 2006, the full ban on residential sales of all pesticides listed in Schedule 1 and their use on private and commercial lawns came into effect.

The Code is even more restrictive in the use of pesticides in child-centred public places, such as childcare centres, daycare centres, kindergartens, home childcare services, preschools, primary, and secondary schools. Only biopesticides* and other products listed at Schedule 2 of the Code are permitted – that is, those least likely to cause toxic effects (see Box 3). This applies to both indoor and outdoor use.

* A biopesticide's mechanism of action is based on specific biological effects and not on chemical poisons. The active ingredient in a biopesticide is a virus, fungus, or bacteria, or a natural product derived from a plant source.

Box 3
Process for establishing the list of authorized active ingredients (Schedule 2 of the Code)

The list of authorized active ingredients in Quebec schools and daycare centres was based on similar restrictions on insecticide use in the American School Environmental Protection Act (SEPA). In order to minimize the exposure risk to school children, authorized active ingredients were limited to those ingredients listed in Section 7 of SEPA, and also registered in Canada.

Other low-risk or reduced-risk lawn care products (herbicides and fungicides), as well as indoor and outdoor insecticides considered lower risk, were added to the list.

All biological organisms approved as insecticides, fungicides, or herbicides are permitted in schools and daycares since they are automatically classified as reduced-risk pesticides by the PMRA.

The pests controlled by each active ingredient and the availability of these products were then verified. This involved an analysis of product labels for every pesticide sold in Canada containing the identified active ingredients (according to PMRA's 2002 registry).

The Code exempts golf courses from the sale and use restrictions. However, since April 2006, the Code requires golf course managers to submit a three year plan outlining their reductions in pesticide use to the MDDEP.

Appendix C summarizes other provisions of the Code, which include for example requirements for the storage and labelling of pesticides, signage and warning obligations, and penal provisions.

C. 3. Implementation

The MDDEP is responsible for implementing the Code, which involves both information and public education campaigns, and monitoring and enforcement programs. To date, the MDDEP has primarily focused its efforts on the former.

In 2003 and 2004, the MDDEP prioritized training, information programs and awareness raising activities for departmental personnel and external stakeholders affected by the Code. These activities were staged to correspond with the phase-in of the different provisions of the Code.[11] The MDDEP produced educational brochures and other informational materials and circulated newsletters to inform stakeholders of the new requirements. The department also organized forums and meetings at which it presented the new legislation to various organizations and associations. The MDDEP also mandated the Distance Learning Association of Quebec School Boards (*la Société de formation à distance des commissions scolaires du Québec*; SOFAD) to offer distance education and training to individuals who had permits to sell and use pesticides.

An enforcement program has been in place for the past three years. The MDDEP hires students during the summer months as inspectors. This program has carried out between 1,600 and 2,000 inspections, verifications, awareness campaigns, and follow up visits annually. Each year, the MDDEP has targeted a different sector:

- In 2005, retail stores, golf courses, and lawn maintenance companies;
- In 2006, daycare centres, schools, and playgrounds; and,
- In 2007, lawn care companies and agricultural areas.[12]

The MDDEP has processed approximately 200 pesticide-related complaints since the Code came into effect and has issued notices of violations. However, as of the summer of 2007, no fines had been levied for the use of pesticides that are prohibited by the Code.

D. Analysis of the Code

The adoption of the Code, combined with the public awareness and education efforts of the government, municipalities, and environmental groups, has yielded positive results. Changes have been observed in Quebec's ornamental horticulture industry, in citizens' general gardening habits, and in the public's views on pesticides. According to Statistics Canada's Household and Environment Survey, which was conducted in 2006 and published in 2007, the number of Quebec households using pesticides dropped by 50 per cent between 1994 and 2005. During this same period, the proportion of households reporting pesticide use elsewhere in Canada remained relatively constant.[13]

This is a step in the right direction, but our analysis shows that there is still room for improvement. Key findings are discussed below.

1. The precautionary principle was a compelling starting point for development of the Code

The Cousineau Commission recognized the precautionary principle as the basis for adopting the Code and heard many precautionary arguments against the cosmetic use of pesticides. The arguments presented left little room for industry opposition to the regulation. In this context, the main policy debate centred constructively on *how* to prohibit household pesticide use.

2. Banning the sale of pesticides is key and delivers tangible results.

The Code's intervention in commercial activities has proven very beneficial, compared to municipal by-laws that prohibit the cosmetic use of pesticides but not the sale of the products in question. Banning both the sales and use of the targeted pesticides sends a more consistent message to citizens and also facilitates enforcement. Indeed, the possibilities for active enforcement of the Code are largely related to provisions governing sales.

The MDDEP and the Retail Sales Council of Quebec (le *Conseil québécois du commerce de détail)* have undertaken an evaluation of pesticide sales in Quebec since adoption of the Code. The Code has reportedly impacted pesticides sales, in general terms. However, exact numbers are not yet available.[14]

With respect to the sale of ornamental horticulture products and services, the Retail Sales

Council of Quebec (*le Conseil québécois du commerce de detail*) has noted a reduction in pesticide sales and an increase in services employing alternative and pesticide-free methods (*e.g.*, weeding, aerating, and tilling), since the Code was adopted in 2003.[15] The sale of tools to pull dandelions and the sale of corn gluten meal (an anti-sprouting agent that is a natural alternative to chemical herbicides) have also increased. Other types of non-toxic horticultural products have appeared on the market as retailers sell fewer pesticides and reserve shelf space for alternative products.[16]

3. Prohibiting certain active pesticide ingredients while permitting the use of other toxic lawn chemicals is inconsistent

The Code prohibits only 20 active ingredients, which means that certain products which may pose health and environmental risks are still authorized for sale and use in Quebec. For example, Merit (Imidacloprid), a product used against white grubs, is widely used in Quebec, while several countries, including France, have severely restricted its use after it was found to be linked to the disappearance of bee colonies and other pollinators which are essential to apiculture. The process for adding a product to the list of prohibited active ingredients (Schedule 1 of the Code) is long and complex.

The Code is also inconsistent with regard to the protection of children. Some pesticides that are prohibited in child-centred public spaces are still permitted on families' lawns because they are not listed at Schedule 1 of the Code.

Moreover, since the Code prohibits 20 ingredients only, many other pesticide products remain on the market, and this complicates the inspection and enforcement process. Ideally, the province should adopt a "white list" of products authorized for sale and use, similar to the lists created by some municipalities. By-laws adopted by these municipalities could serve as an example. The province should prohibit the use of all pesticides for cosmetic purposes, except for reduced-risk pesticides and biopesticides. This approach would not only facilitate enforcement, but it would also expedite a change in citizens' habits.

4. Prohibiting the use of pesticides on lawns only is an artificial distinction and renders the Code less effective.

In its current form, the Code applies to lawns only, because epidemiological studies have shown that pesticides on lawns pose the highest risk of exposure, especially for children. The Code excludes shrubs and other plants that are an integral part of landscaping. Thus, certain active ingredients that are prohibited on lawns, such as insecticides, are also found in products used on trees and shrubs. In order to more effectively minimize exposures, it would then be appropriate to completely prohibit the cosmetic use of pesticides (including their use on flowerbeds, trees and shrubs).

5. Evaluating long-term results would be useful, though complex. The government must improve data collection to permit robust evaluation of the Code's effectiveness.

It is too early to evaluate the impact of the Code on public health. The ban on the sale of lawn pesticides listed in Schedule 1 of the Code has only been in effect since April 3, 2006.

Although it would be highly relevant to study the long-term effects of the restrictions on cosmetic pesticide use under the Code, such an examination is nearly impossible because there are no baseline studies from the period immediately before the Code came into effect. On the other hand, it would be possible for the government to assess the Code in terms of its impact on acute pesticide poisoning, based on the number of cases registered by the provincial poison control centre before and after the Code was implemented.[17]

The lack of historical data on pesticides sales makes it difficult to monitor and evaluate the Code's impact. There are major gaps in data collection and statistics on pesticide sales. The most recent numbers available for pesticide sales date back to 2003. The provincial government should update pesticide sales data so that the ban can be fairly evaluated.

6. Although public awareness campaigns have had positive results, citizens feel that they lack information about alternatives to pesticides.

Provincial and municipal public awareness campaigns, combined with enforcement programs, appear to have stimulated a significant change in Quebecers' gardening practices, especially compared to gardeners in other provinces. An October 2007 survey conducted by

Équiterre and CROP Inc., for Industry Canada, examined the views of 1,311 Canadians. The survey found that Quebecers are more tolerant of "weeds" and rely more on environmentally-friendly gardening practices, compared to residents of other provinces. The survey also showed that Quebecers were more tolerant of "less-than-perfect" lawns.[18]

Nevertheless, the problem most frequently cited by the experts we interviewed was that citizens still feel that there are few alternatives to pesticides – despite the new products and practices that have appeared on the market (*e.g.*, corn gluten meal), and the increasing number of landscaping companies that offer pesticide-free lawn care services. Citizens expect that alternatives will deliver the same instantaneous results as chemical pesticides when, in fact, the transition to pesticide-free lawn care must be accompanied by a series of changes in practices.

The distribution of information on alternatives to pesticides could be improved. Public education campaigns are essential in informing citizens about the Code, about the benefits of pesticide-free alternatives, and about the dangers associated with chemical pesticides. However, a vast majority of people who are interested in ecological gardening practices feel that the information available is insufficient.[19]

The provincial government should work closely with the PMRA to accelerate and facilitate the approval process for biopesticides and reduced-risk pesticides. Currently, the relatively slow and onerous product approval process allows for only a limited number of alternative products to be released onto the market. However, scientific rigor in demonstrating product safety must not be compromised.

Finally, it is important to increase funding for research and development into safer alternatives to cosmetic pesticides.

7. Resources allocated to implementation and enforcement are insufficient to ensure that the Code's objectives are attained.

To date, the provincial government has focused primarily on public education campaigns. But the Code's objectives around reducing pesticide use will not be attained through communication efforts alone, since certain segments of the population are not open to the information provided. Education campaigns must therefore be accompanied by measures to

enforce compliance by both citizens and professionals (*e.g.*, stores, landscaping companies).

The experts interviewed unanimously agreed that the government must allocate more resources for implementation and enforcement of the Code.

Since MDDEP has focused on raising public awareness about the Code and, to a lesser extent, monitoring retailers' compliance with sales restrictions, little has been done to date to ensure that lawn care companies comply with the Code. There are indications that many lawn care operations do not currently comply with the Code.[20] For instance, municipalities that conducted unscheduled inspections or sampling of lawn care companies' products found that some companies were using prohibited pesticides. For example, the City of Boisbriand won a lawsuit against lawn care companies that were applying pesticides prohibited by the Code (the products in question were authorized for agricultural use or unrestricted in other provinces). However, the municipality had to pay for the analyses of the pesticides used by these companies.

The MDDEP should increase its workforce and conduct unscheduled inspections of commercial lawn care operations to ensure compliance with the Code. For the time being, the MDDEP relies primarily on complaints to trigger enforcement actions.

Furthermore, inspectors lack the tools that they need to effectively enforce the Code. The inspectors interviewed, most of whom were hired by municipalities, indicated that they do not receive adequate training on the proper procedure for collecting samples that can legally be used as evidence. Other inspectors do not even have the authority to collect samples.

The MDDEP should also dedicate resources for ongoing monitoring of developments in the science and practise of pesticide-free landscaping, to ensure that the department's approach to implementing the Code is up-to-date.

Finally, the MDDEP must monitor more closely suppliers' remaining stocks of pesticides listed on Schedule 1 of the Code.

8. In practice, relying on municipal by-laws to compliment the Code has left gaps.

The Cousineau Commission recommended that the Code be complimented by municipal

pesticide by laws. Although there is no specific provision in the Code that requires or encourages municipalities to adopt by-laws prohibiting the use of pesticide use, many municipalities have followed the example of the town of Hudson. About a dozen municipalities in Quebec had passed municipal pesticide by-law before the Code came into effect in 2003. Today, 91 municipalities have pesticide by-laws in place. Nonetheless, this approach is not perfect and presents certain problems. Many municipalities have not adopted pesticide by-laws, while others do not allocate sufficient resources for enforcement.

In its current form, the Code is designed to ensure a minimum standard of protection for human health and the environment. Municipal by-laws can impose additional use restrictions but cannot weaken the provisions of the Code. In reality, though, the Code's has not encouraged municipalities to adopt more stringent by-laws. Note that only 91 out of Quebec's 1,475 municipalities have adopted a by-law to limit the cosmetic use of pesticides. Many municipalities now view cosmetic pesticide regulation as a provincial responsibility. [21]

As such, the fact that the provincial standard is not more stringent has proved problematic. Ideally, provincial regulation would ban all cosmetic pesticides except authorized reduced-risk products (i.e. those listed at Schedule 2 of the Code). There would then be only one list of authorized products for sale and use, and pesticides not included on this list would be prohibited province-wide. Provincial regulation to this effect could include a ban on the sale of unauthorized products, whereas municipal by-laws can only prohibit their use.

Nevertheless, given the current context in which provincial regulation is incomplete and considered a minimum requirement, it is important that municipalities have the power to adopt complementary by-laws.

In Quebec, most citizens live in municipalities that have adopted a by-law that is more restrictive than the Code. According to MDDEP estimates, 40 per cent of the population of Quebec lives in Montreal, Sherbrooke, and Rimouski—all cities with by laws much more restrictive than the Code.[22]

For example, Montreal (with more than 1 million residents) has prohibited the use of cosmetic pesticides except in cases of infestations, for which a pesticide application permit must be obtained (this applies to private citizens and lawn care professionals alike). The municipality clearly defines infestation, for the purpose of this exemption, as the presence of insects, mildew or other toxic agents (except noxious weeds) on more than 50 per cent of a lawn area or on more than 5 m^2 of a plant bed area; *or* where the presence of noxious

weeds, insects, mildew or other toxic agents, whatever their extent, constitutes a safety hazard, a health hazard, a tree or shrub hazard, or an animal health hazard.

The Code has reinforced municipal efforts to prohibit the cosmetic use of pesticides. In particular, the provincial sales ban facilitates enforcement of municipal pesticide by-laws. Municipalities have charged dozens of lawn care companies for use of pesticides that have been prohibited throughout Quebec since 2004. Meanwhile, during this same period, the MDDEP has not charged any lawn care companies with infractions.

Compliance among lawn care companies is improving in those municipalities that have allocated adequate resources to by-law enforcement as evidenced by the fact that the number of fines issued has declined over time.[23] Moreover, municipal environmental officers have noticed that citizens are more receptive to learning about alternatives to pesticides, even when there is limited selection.[24] Despite these efforts, municipal by-laws cannot compensate for the lack of resources for enforcement at the provincial level. Indeed, apart from a few cities, most municipalities lack the human and financial resources to effectively enforce their pesticide by laws. Furthermore, in Quebec, municipal by-laws still allow for the use of pesticides as a means to control infestations. The definition of what constitutes an infestation is not universal and where this is not clearly defined, it can undermine enforcement of the by-law.

Although many municipalities have adopted by-laws to prohibit the use of all chemical pesticides, products not banned by the Code are still available for sale and can be accessed by citizens. This situation makes the task of municipal enforcement all the more painstaking. Because the Code and municipal by-laws prohibit different pesticides, citizens are often confused about which pesticides they can buy and use.

E. Conclusion and Recommendations

Quebec's Pesticide Management Code, adopted in 2003, marks a historic step towards reducing pesticide use and thereby protecting human health and the environment.

The Code's strengths include its strong basis in the precautionary principle and the sales ban.

However, there are also weaknesses, particularly the lack of adequate resources allocated to enforcement of the Code. Certain inconsistencies have also been noted, in particular the prohibition of only certain active ingredients, while other pesticides continue to be sold and used.

For optimal implementation of the Code in Quebec, and the development of provincial bans on cosmetic pesticides in other provinces, Équiterre and the David Suzuki Foundation offer the following recommendations:

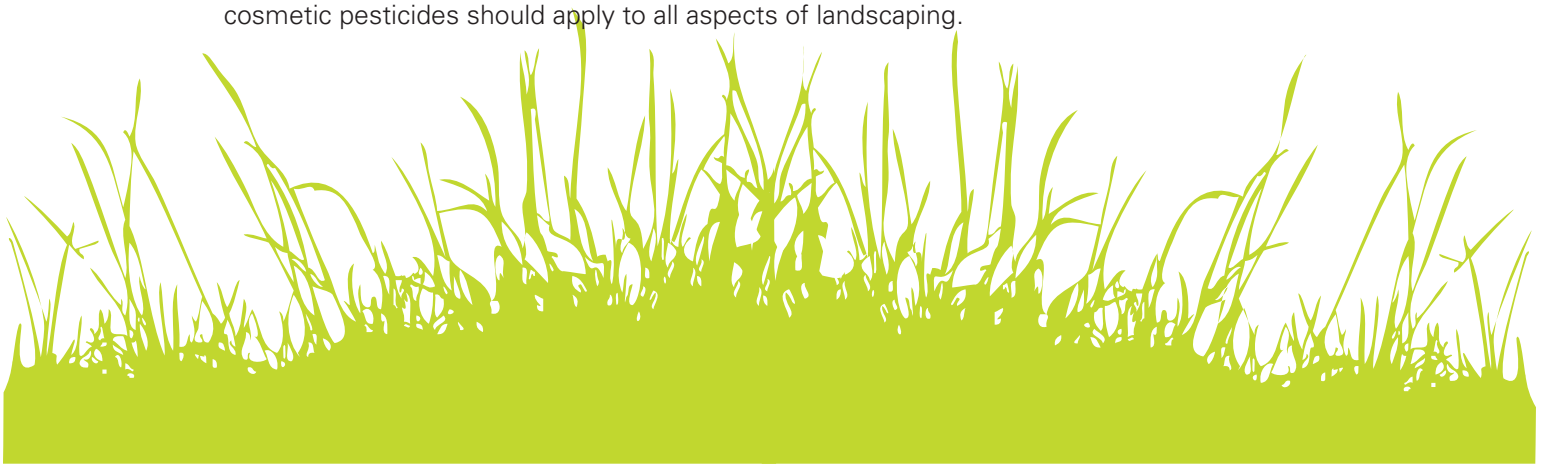
E. 1. Recommendations for improving the Quebec Code

Recommendation 1
Modify the Code's approach and widen its scope.

Quebec should modify the current approach under the Code to prohibit the sale and use of all cosmetic pesticides on public and private properties, other than a specified list of reduced-risk products. This would be in keeping with the current requirements for child-centred public places and could draw on the list of authorized products at Schedule 2 of the Code.

If the government refuses to take this step, then it should add a specific provision to the Code requiring a systematic review of the Schedule 1 list of prohibited ingredients.

The scope of the Code should also be widened to include all cosmetic uses of pesticides. The Code currently applies only to lawn care; it excludes shrubs, trees, and other plants that are an integral part of landscaping. Yet, certain active ingredients that are prohibited on lawns are also found in other pesticide products used on trees and shrubs. In order to minimize the sources of potential exposure, the Code's restrictions on the sale and use of cosmetic pesticides should apply to all aspects of landscaping.



Recommendation 2
Sponsor public education and awareness-raising programs on an ongoing basis.

It's important to show citizens that alternatives to pesticides work. Conferences, lectures, workshops, demonstration sites, and television advertising can help to communicate this message. Citizens are increasingly receptive to alternative solutions and some are willing to change their practices as long as alternatives are practical and easily accessible.

It is equally important that citizens adjust their expectations about the appearance of their lawns. The kind of impeccable turf found on the golf course is virtually impossible to achieve at home using environmentally friendly methods. As well, many expect the same instantaneous results with non-toxic alternatives as they would with chemical pesticides. It is difficult for some residential pesticide users to imagine a beautiful lawn using only ecologically friendly alternatives. Continued public education campaigns are necessary to change people's attitudes and confront the "cult of the perfect lawn."

It would also be useful to develop guides for lawn care professions, outlining best practices for maintaining lawns and gardens without pesticides. Currently, information on this subject is sparse and is not keyed to the requirements of the Code.

Recommendation 3
Develop an effective monitoring and inspection program.

The provincial government must actively enforce the Code by charging individuals and businesses that are not in compliance and issuing fines – as provided for in the Code's enforcement provisions. The Code's objectives will not be attained through communication efforts alone, since certain segments of the population are not open to the information provided.

The government should allocate more resources to enforcement activities, including unscheduled inspections and regular patrols to monitor the operations of landscaping companies. This method has proven to be effective in some Quebec municipalities where many notices of infraction have been issued since 2003, in contrast to the passive approach

to enforcement at the provincial level.

Municipal and provincial inspectors need adequate training in order to be effectively and consistently enforce pesticide bans, especially with respect to the legal requirements for collecting samples.

At present, the provincial government continues to focus its efforts on raising public awareness about the Code and providing information to retail stores and facilities subject to the Schedule 2 restrictions (e.g., childcare facilities). The provincial government should put greater emphasis on enforcing compliance by lawn care companies.

Recommendation 4
Fund research and development of alternatives to pesticides.

The provincial government should invest in research and development of alternatives to pesticides. Citizens expect a greater choice of effective substitute products.

Recommendation 5
Encourage municipalities to adopt by-laws that are more restrictive than the Code.

Municipalities that adopt pesticide by-laws need resources to properly implement and enforce them. Some municipalities have decided not to adopt pesticide by-laws because they believe that the provincial government is responsible for pesticide management. The government should support municipalities by providing them with the expertise they need to draft by-laws or to hire and train inspectors.

E. 2. Recommendations for cosmetic pesticide bans in other provinces

Recommendation 1
Adopt the precautionary principale as the guiding principle.

The precautionary principle served as the starting point for development of the Code. This principle states that the absence of scientific certainty must not serve as a pretext for delaying effective measures intended to protect public health. Precaution is all the more important when pesticides are used in urban areas where large segments of the population may be involuntarily exposed, including high-risk groups such as children and individuals with chemical sensitivities. It is important to emphasize, however, that the precautionary principle calls for a demonstration of potential risks; efforts must therefore be made to continue documenting the health risks associated with pesticide exposure.

Recommendation 2
Structure the ban in reference to a "white list" of reduced-risk products and biopesticides authorized for sale and use.

We recommend structuring provincial bans in reference to a "white list" that specifies reduced-risk products and biopesticides authorized for sale and use – and prohibiting all other cosmetic pesticides. This is in contrast to Quebec's approach which specifies a list of prohibited products, in this case the 20 active ingredients listed at Schedule 1 of the Code. As a result, other products harmful to public health are still available for sale and use in Quebec. The "black list" approach also complicates inspection and enforcement and inhibits behavioural and attitudinal changes with respect to pesticide use.

Other provinces, such as Ontario, have the opportunity to surpass the Quebec Code, with cosmetic pesticide bans that do more to reduce the health risks associated with pesticide exposure. A "white list" approach must still be accompanied by effective enforcement measures.

Recommendation 3
Ensure that the province-wide ban is sufficiently stringent so that its effectiveness does not hinge on complementary municipal by-laws.

Although we recommend strong provincial legislation or regulations, the province should not interfere with municipal powers to adopt complementary by-laws, as long as they are consistent with the overarching provincial policy. The provincial ban may, for example, allow for certain exceptions (*e.g.*, golf courses), but it should not prevent municipalities from imposing more stringent requirements.

Recommendation 4
Prohibit all cosmetic use of pesticides in landscaping – not only lawn applications.

One of the Code's weaknesses is that it applies to lawns only, to the exclusion of shrubs and other plants that are integral part of landscaping. Certain active ingredients prohibited on lawns are also found in products used on trees and shrubs. To minimize sources of potential exposure the ban should apply to all cosmetic uses of pesticides.

Recommendation 5
Provide citizens with practical tools and encourage them to adopt new standards for their lawns.

It's important to show citizens that alternatives to pesticides work. Conferences, lectures, workshops, demonstration sites, and television advertising can help to communicate this message and persuade citizens to adopt new gardening techniques.

Public education campaigns must also seek to adjust popular perceptions of what constitutes a "beautiful lawn," since the impeccable turf found on golf courses is virtually impossible to achieve at home using environmentally-friendly methods.

Recommendation 6
Plan a thorough monitoring and enforcement program.

Public education must be accompanied by an active enforcement program, phased in alongside the ban, to ensure compliance by professionals (e.g. lawn care companies, garden stores, etc.) as well as private citizens.

It is important to conduct unscheduled inspections to ensure full compliance with the ban. Inspectors require appropriate training in order to monitor pesticide use and to effectively enforce the ban, especially with respect to the legal requirements for collecting pesticide samples. In Quebec, the court has thrown out many cases involving serious offences because of inconsistent sampling procedures. Enforcement provisions should also allow for the effective monitoring of lawn care companies since they are one of the biggest pesticide users. For example, inspectors must be able to investigate the tanks used by lawn care companies to apply lawn treatments.

Recommendation 7
Fund research and development of alternatives to pesticides.

Governments should invest in research and development of alternatives to pesticides. Citizens expect a greater selection of effective substitute products.

Appendix A
List of experts interviewed for this report

Organization	Name	Title
Allergy & Environmental Health Association of Quebec (AEHAQ)	Rohini Peris Michel Gaudet	President Vice-president
Coalition for Alternatives to Pesticides (CAP)	Edith Smeesters Michel Gaudet	Founder Former president
Ministère du Développement Durable, de l'Environnement et des Parcs -Service des pesticides -Direction des politiques en milieu terrestre	Isabelle Gorse Gaétan Roy Lucie Bouchard	Service des pesticides Service des pesticides Service Manager
Institut national de santé publique du Québec	Onil Samuel Mathieu Valcke	Planning, Programming and Research Officer Researcher
Union des municipalités du Québec	Marisol Rioux-Hebert	Environmental Consultant Policy Directorate
Conseil québécois du commerce de détail	Françoise Paquet	Environmental Consultant
Lajemmerais	Annie Daudelin	Environmental Technician
Ville de Saint-Bruno-de-Montarville	Marie-Claude Blanchette	Project Manager, Environment
Ville de Vaudreuil	Marie-Josée Perron	Environmental Inspector
Ville de St-Hilaire	Mireille Tremblay	Environmental Officer

Apendix B
Expert Interview Guide

Before and during the Code
- History of the Code
- Methodology in designing the Code
- Challenges related to the Code's implementation

Enforcement
- Limitations related to enforcement
- Systematic pesticides inspection program
- Enforcement program for the years to come
- Means for enforcing the Code (education budget, training, number of inspectors, etc.)
- Issue of sanctions or violations after on-site monitoring

Assessing results and possible improvements
- Overview of pesticide quantities applied to Quebec lawns since the Code took effect
- Overview of pesticide sales after the adoption of the Code
- Changes perceived after the adoption of the Code
- Procedures to follow to amend the Code
- Process for re-assessing dangerous pesticides
- Improvements for awareness-raising campaigns and training
- Development of alternative methods and products
- Changes in citizens' habits
- Is more coercive regulation more effective in changing people's acceptance of non desirable lawns and gardens?
- Number of municipalities with by-laws on pesticides
- Possibility of requiring all municipalities to draft a by-law. How?
- Specific training for environmental consultants
- Alternative products, biopesticides: were sales affected by the adoption of the Code?
- Points in the Code to improve

Appendix C
Specific Requirements of the Code

a. Pesticide use rules:

- It is prohibited to use the most toxic pesticides on the lawns of public, semi-public and municipal properties and, since April 2006, on the lawns of private and commercial properties, except for golf courses
- It is prohibited for commercial users to apply on lawn spaces pesticides that are impregnated or mixed with a fertilizer, unless these products are stored in separate containers
- Specified distances from bodies of water and inhabited areas will also have to be observed in the case of equipment causing significant aerial drift (in orchards for example), during aerial spraying and when pesticides are used in high-traffic vehicle, train or energy corridors
- Minimal distances must be observed when using pesticides or when preparing pesticide mixtures near bodies of water, streams or rivers and water intakes, for all types of equipment used
- Golf courses are required to submit triennial plans for the reduced use of pesticides to the *Ministère du Développement durable, de l'Environnement et des Parcs*, since April 2006
- Application of information modalities for the public and the *Ministère du Développement durable, de l'Environnement et des Parcs* when certain pesticides are used in forests and high-traffic vehicle, train or energy corridors
- Adequate signage and pesticide warnings when pesticides are used in urban areas and on golf courses; posting wherever pesticides have been applied: lawn surfaces, pavement, trees, ornamental or amenity shrubs
- Specific rules apply during fumigation (aeration, schedule, posting of warnings);
- It is prohibited for all persons, including citizens, to use strychnine and DDT

b. Sale rules:

- It is prohibited to sell fertilizer-pesticide mixtures and mixed packages (*e.g.,* herbicide and insecticide), since April 2004
- It is prohibited to display products intended for domestic use in a way which makes these products accessible to the public, since April 2005

- It is prohibited to sell Class 4 or 5 pesticides that contain one of the active ingredients listed in Schedule 1 when intended for application on lawns, since April 2006
- Category A or B pesticides must be locked or behind a counter, except Class 4 pesticides intended for wood conservation or antifouling paint

Box 4

Permit for Category A: Wholesale of Class 1-5 pesticides
Permit for Category B: Retail sale of Class 1-4 pesticides
- Sub-category B1: Retail sale of Class 1-4 pesticides
- Sub-category B2: Retail sale of Class 4 pesticides

Class 1
Class 1 includes all pesticides composed of a mixture which includes one or more of the following active ingredients: aldrin, aldicarb, chlordane, dieldrin, endrin, and heptachlor, as well as all pesticides whose registration is not required under the Pest Control Products Act (used for experimental purposes).

Class 2
Class 2 covers all pesticides considered to be for restricted use by the federal Pest Control Products Act, except those designated as Class 1 and certain Bacillus thuringiensis Berliner var. kurstaki (B.t.k.) formulations. The main part of the label on a Class 2 pesticide container bears an indication to the effect that the product is for restricted use.

Class 3
Most pesticides considered to be for commercial, agricultural or industrial use by the Pest Control Products Act are grouped in Class 3. This class also includes pesticides composed of B.t.k. intended for restricted use in a forest or on a wooded lot, as well as mixtures composed of fertilizers and pesticides of Class 3 prepared by individual users.

Class 4
Class 4 comprises all pesticides considered to be for domestic use by the Pest Control Products Act, generally presented in the form of concentrates and not included in Class 5. This class also includes all mixtures of fertilizers and pesticides for lawns, except those included in Class 3.

Class 5

Class 5 covers any pesticide for domestic use sold in the form of a ready-to-use preparation, with a volume or weight equal to or less than one litre or one kilogram and intended solely for one or more of the following purposes:

- fabric protection, if the product is para-dichlorobenzene or naphtalene-based; moth ball type;
- use as bait for ants, cockroaches or earwigs if there is no risk of contact with the product; this usually corresponds to ant or cockroach bait boxes with openings big enough for insects only to enter;
- use as animal repellents that do not contain polymerized butylene or thirame;
- use in flea-repellent collars or tags for cats and dogs;
- insect repellents to be applied on human beings (mosquito repellents); and,
- herbicides for localized spraying, that is applied directly on the weed (trigger-released products, herbicidal sticks, etc.), and which does not contain any of the active ingredients mentioned in Schedule I of the Code.

Class 5 also covers any pesticide for domestic use sold in the form of a ready-to-use preparation, with a volume or weight equal to or less than one litre or one kilogram, and it is composed of a mixture that contains one or more of the following active ingredients exclusively: d-trans-allethrin, tetramethrin, resmethrin, pyrethrin, piperonyl butoxide, methoprene, n-octyl bicycloheptene dicarboximide, di-n-propyle isocinchomeronate, n-octyl hydroxyethyl-2-sulphide, D-cis trans allethrin, permethrin, diatomaceous earth, soap, D-phenothrin, boric acid, disodium octaborate tetrahydrate, sulfur, calcium sulphide or calcium polysulphide, ferric phosphate, spinosad, acetamipride or borax.

Class 5 also includes any pesticide for domestic use made of a mixture containing exclusively one or more of the following active ingredients: *Bacillus thuringiensis kurstaki* (B.t.k.), diatomaceous earth or soap, regardless of container size and product formulation (concentrated or ready-to-use).

c. Penal provisions:

Citizens and legal entities may be sanctioned, as foreseen in the Pesticides Act.

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