The Impact of By-Laws and Public Education Programs on Reducing the Cosmetic / Non-Essential, Residential Use of Pesticides:

A Best Practices Review

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1.0 Executive Summary

Communities throughout North America and Europe are struggling to find the best way to limit the use of pesticides for beautifying home lawns and gardens. While a few have banned outright the use of pesticides for cosmetic purposes, others are trying to achieve the same goal using voluntary measures such as public education and social marketing. The funders and steering committee for this study recognized the need for broad and in-depth research to find out what strategies have worked and what haven't, so mistakes aren't repeated and new "wheels" aren't reinvented.

This report is the product of that research. It involved the selection and in-depth study of nine communities in Canada, the United States and Europe that were leaders in reducing their pesticide use. Criteria for determining leadership included the reduction in pesticide use achieved, how easily their approaches could be replicated, and the reliability of their results. In addition, another eight communities with innovative approaches and activities were identified (see Appendix).

The impact of the various legislative and educational approaches was evaluated using as many means as possible, both quantitative and qualitative. These included sales data, registration data and surveys to measure attitudinal and behavioural changes. We would have liked more hard data than we were able to find, but in the absence of it, we backed up our findings using interviews with retailers, government staff, journalists and other people working in the field and knowledgeable of it.

Findings

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

In those communities that used the law as their primary tool, education was still vital to their ability to reduce the use of pesticides, along with effective enforcement and a permitting system that allowed people to apply to use banned pesticides. The Quebec communities we studied, along with Halifax, effectively combined enforcement and education through home patrols and/or inspections. The Quebec municipalities we studied, and Halifax (until last season) required residents to apply for their own permits, rather than rely on lawn care companies to do it for them. This proved to be an excellent opportunity for authorities to educate residents one-on-one regarding the potential hazards of pesticides and the benefits of alternative methods.

Three approaches to designing by-laws were found, all taking into consideration the fact that pesticide products routinely change. One community identified specific low-impact products as alternatives, another banned specific ingredients and a third referenced a third party list of prohibited materials that is regularly updated.

Even though by-laws carry sufficient weight to achieve results on their own, our study found that municipalities benefit by having the support of provincial and federal laws. For instance, in 1996 the national government of Denmark raised taxes on pesticides from 3% of the retail price to as much as 37%, a move that would in itself, discourage

pesticide sales. In Canada, municipalities in Quebec will have their by-laws complemented by provincial legislation in 2006 that prohibits the sale of pesticides and fertilizers containing banned ingredients. Currently, in the Quebec towns we studied, pesticides are banned from use by residents but can still be purchased in local stores.

While it may not be surprising that the stick has been more effective, at least in the short term, than the carrot, there were some unexpected lessons learned through educational initiatives. For instance, in both Seattle and Texas, program organizers had a multiple focus (reducing pesticide use as well as other "green" initiatives such as reducing water use), which proved more cost-effective and appealing to local retailers, than tackling one issue at a time.

It was also noted that public education and outreach can profit from controversy and public discussion. In Hudson, Quebec, sales of herbicides decreased by 90% before the by-law even came into effect.

The best practice programs that relied on education and outreach alone used a wide variety of tools including workshops on sustainable gardening practices, articles in newspapers, information packages, lawn signs, lawnmower decals, horticultural calendars, kiosks at special events, interviews with the media, web sites, advertisements, posters, newsletters and fact sheets.

In the vast majority of best practice communities we studied, political and/or popular support was critical, regardless of whether they had chosen to pass a by-law or use education and outreach. Pressure from the media was also instrumental in forcing some communities to move forward with pesticide reduction.

By-laws and education were more expensive than education alone. The cost to implement a by-law appears to be in the order of $0.50-$1.00 per person per year, while the cost to implement an outreach component alone appears to be in the order of $0.13 to $0.24 per person per year.

While we weren't able to obtain as strong or reliable data as we would have liked for any of the communities, we believe our findings will provide good direction to municipalities trying to decide on the best and most cost-effective approach. We recommend that the federal government implement a national pesticide sales database as soon as possible, so that progress can be monitored more accurately and easily.

It's our hope that this report will be circulated and shared as widely as possible so that stakeholders can learn from what's already been tried and implement the best practices for reducing pesticides in homes.

2.0 Introduction

2.1 Purpose

The purpose of this study was to conduct a best practices review of the impact of by-laws and public education programs on reducing the cosmetic/ non-essential, residential use of pesticides.[1] A subsequent phase of this work will involve communicating the results of the review to targeted stakeholders and engaging them in what was learned so that best practices can be implemented. This document is focused strictly on the research component.

Our work does not relate to pesticide application by farmers, foresters and other professionals who must be trained and licensed to use "commercial grade" products. It does not attempt to explore whether pesticide reduction is a good thing, though some of the authors may hold this personal point of view. Nor does it look at alternative approaches to increasing public safety. Rather, this work is focused on the impact of outreach programs and by-laws for reducing cosmetic, residential pesticide use.

2.2 Overview of Current Practices and Trends

Many Canadian municipalities are grappling with the issue of pesticide use on residential properties. Pesticides are regulated at the federal level in Canada by the Pest Management Regulatory Agency (PMRA) through a program of pre-market scientific assessment of new pesticides and re-evaluation of registered pesticides.

Provinces and territories administer pest management programs in their jurisdictions, including education and training programs developed in conjunction with the PMRA. They are also responsible for regulating the sale, transportation and disposal of pesticides.

Provinces, territories and municipalities may impose additional restrictions on the use of federally approved pesticides and, indeed, may prohibit their use.

On May 6th 1991, the Town of Hudson became the first municipality in Canada to pass a by-law regulating pesticide use on residential property. The Canadian Supreme Court decision of 2001 (Chemlawn/Spraytech vs. Hudson, Quebec) confirmed that municipalities can regulate urban pesticide use based on health considerations. More than 60 municipal by-laws have now been passed in Quebec, Ontario, New Brunswick, Nova Scotia and British Columbia[2], to limit the cosmetic (non-essential) use of residential pesticides. Many other Canadian communities offer educational support without by-laws. Quebec, in March 2003, introduced a new province-wide Pesticide Management Code, to be phased in over three years, that strictly regulates the storage, sale and use of pesticides.

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[1] For the purposes of this review, pesticide means anything that is used to control or destroy any kind of pest, including insects and plants.

[2] In British Columbia, there may be legislative issues that inhibit municipalities from passing by-laws of this nature.

2.3 Methodology

This study assessed the relative effectiveness of approaches observed in North America and Europe, for decreasing the cosmetic use of pesticides on residential properties through education and by-laws/legislation. The effectiveness of each approach was evaluated, where information was available, based on: the proportion and number of citizens reached, the proportion and amount of residential pesticides reduced, and the proportion and amount of low-impact alternatives to pesticides that were used instead.

Inventory of Potential Best Practice Communities

We first generated a "long list" of 62 potentially promising communities to represent best practice in reducing the cosmetic use of pesticides. The criteria for selecting communities to be inventoried was as follows:

- *Relevant*: Communities or regions that had reduced the cosmetic use of pesticides on residential properties through regulatory and/or voluntary and educational means.
- *Replicable*: The approaches had to be practical ones that could be easily replicated by other communities.

Ranking of Communities

We applied finer screening criteria to narrow the inventory to a short list of best practice communities based on the reliability of their findings. These included:

- Whether measurements were taken both before and after the intervention;
- Whether the results were self-reported or observed in a manner less prone to reporting bias, and
- Whether random sampling was used.

Based on the screening criteria, the communities were ranked on a scale of 1 to 4. Those ranked as 1's were recommended for in-depth study. Those ranked as 2's and 3's were considered innovative approaches that for various reasons did not have sufficient information or results (e.g. too early in the implementation process). Those ranked as 4's were deemed as not relevant to this study (e.g. scope was agricultural use, not residential).

Summary of Communities Screened	
Total number of communities considered	62
Number of communities studied in-depth	9
Number of additional communities noted for innovative approaches and activities	8

Research Template and Evaluation

A research template was developed in consultation with the project steering committee (see Appendix 5). It was used for those communities that were recommended for in-depth study. We incorporated data from the initial research into the template for each community and information gaps were identified. In order to fill in key gaps, we interviewed experts in the field. While such data are less reliable than direct measurements, they can provide reasonable estimates, particularly if corroborated by a number of independent sources.

An analysis was then conducted across the communities, in order to identify promising models that are most effective, key success factors, lessons learned and common building elements.

Program Impacts

Program impacts were evaluated using as many independent measurement methods as were readily available (see Appendix 6). The estimates of pesticide reduction achieved were derived from a combination of quantitative and qualitative / anecdotal information. Where available, third party surveys provided one indication of pesticide use. These surveys were supplemented by interviews with product distributors, local retailers, gardening editors and other expert observers.

While we asked interview participants to estimate a percentage reduction in sales and/or use, we report the findings in ranges to avoid suggesting a greater level of precision than is warranted. Each community was put into one of four categories, as follows:

- High reduction = 51-90 % reduction
- Medium reduction = 25-50 % reduction
- Low reduction =10 –24 % reduction
- Marginal reduction = <10 % reduction

2.4 Limitations of the Data

None of the communities had as strong and reliable data as we would have liked. Many, for example, relied on third party, random surveys of residents. Though one of the most practical methods currently used, experience shows such surveys are likely to over-report reductions. This is due to self-response bias (residents like to think they are doing more than they actually are). In order to corroborate such findings we conducted additional primary research as noted above. Due to the qualitative nature of this research methodology, some of the communities we studied may find our conclusions inconsistent with their own. Readers are encouraged to follow-up with key contacts for more information about a particular community's experience. It is one of our recommendations that the federal government move forward as quickly as possible with its plans to begin tracking the sale of pesticides in Canada through a national database, so progress on this issue can be monitored more easily.

3.0 Research Findings

3.1 Overview of Community Approaches

The table below summarizes the approach taken, the size of the community, program maturity, per capita budget and the pesticide reduction achieved. There were two main approaches: by-law backed up by education, or education and outreach alone.

The three communities that used by-laws each took a different approach to ensure that the by-law remains effective even when pesticide products change. The communities using education and outreach used highly individualized programs to appeal to their residents. For instance, the west coast city of Seattle and Washington State invented *Bert the Salmon* as a 'spokesfish' to deliver their green message. While the characters and the messages varied from community to community, many of the tools were the same. They included workshops on sustainable gardening practices, articles in newspapers, information packages, lawn signs, lawnmower decals, horticultural calendars, kiosks at special events, interviews with the media, web sites, advertisements, posters, newsletters and fact sheets.
Please note the limitation to the data described immediately above (section 2.4)

Table I: Summary Table –Top Nine communities

Community	Approach	Size	Program Maturity	Budget per capita	Pesticide Reduction Achieved
Canada					
Hudson/ St. Lazare/ Notre Dame, QC	Bylaw supported by education	5,000-13,000	11 years	$ .50 to 1.00	High
Halifax Regional Municipality, NS	Bylaw supported by education	360,000	3 years	$ 0.50	High
Hamilton, ON	Education/Outreach	680,000	24 months	$ 0.13	Low
City of North Vancouver, the District of North Vancouver and the District of West Vancouver, BC	Education/Outreach	180,000	8 months	$0.28	Marginal
USA					
Chesapeake Bay, PN	Education/Outreach	450,000	16 months	$0.24	Medium (Low one year later)
Seattle and King County, WS	Education/Outreach	2.2 million	10 years	$0.16	Low
North Central Texas	Education/Outreach	5.7 million	3 years	$0.01	Marginal
Europe					
Frejlev(Aalborg, Denmark)	Community agreement, Education/Outreach	2,000	3 years	$3.40 but appears to be non-comparable to the others	High
Germany/Baden-Wuerttemberg	National and State (Laender) Law	82.688 million	12 years	N/A	N/A

3.2 Summaries of Nine Community Programs

The following are highlights from the nine communities looked at in-depth.

- *Hudson / St. Lazare / Notre Dame, Quebec*

  Hudson, St. Lazare, and Notre Dame de L'Ile Perrot are three small communities (populations between 5,000 and 14,000 each) located just west of Montreal in the Province of Quebec. On May 6th 1991, the Town of Hudson became the first municipality in Canada to pass a by-law regulating the use of pesticides on residential property. Neighboring St. Lazare, then Notre Dame followed suit. These communities used a variety of techniques to help residents comply with their by-laws, including the use of home patrols for answering questions and providing advice on alternatives to pesticides. They put an emphasis on sustainable horticulture, providing training and support. Warning letters were sent to people who disobeyed the by-law, backed up by the threat of escalating fines for offenders. All three communities shone at building pride in being pesticide-free municipalities. For example, a pesticide-free campaign logo was used on all city paperwork for a number of years in Notre Dame and St. Lazare. Other outreach approaches included: a phone information green line, gardening talks and hands-on workshops, articles, pamphlets, pesticide-free lawn signs and a leave-behind information package. Industry players such as lawn care companies and garden centers were involved as partners. These communities have achieved a high level of pesticide reduction at a cost in the range of $.50 to 1.00 per capita per year.

  This study also documents how a local community group, the Coalition for Alternatives to Pesticides, (CAP) helped build public support for reductions throughout the entire Province of Quebec. A new province-wide law was passed in July 2002, which will provide for a phased-in reduction culminating with a ban on sales of pesticides with certain ingredients in 2006.

- *Halifax Regional Municipality, Nova Scotia*

  Halifax Regional Municipality (population 360,000) was the first of Canada's larger communities to introduce a pesticide by-law. It was phased in over two years between April 2001 and April 2003. The region contracted Clean Nova Scotia, a local non-profit organization, to process applications for pesticide permits through home visits. This allowed the opportunity to educate property owners one-on-one in sustainable maintenance practices. Other educational approaches included: giving out lawn mower decals, lawn signs, sustainable landscape maintenance calendars (sent to every household) recipe cards, posters, and seed packs; providing public workshops; and setting up a web site. The Halifax region has achieved a high level of pesticide reduction within the first full year of implementing its by-law, for about $0.50 per capita per year.

- *Hamilton, Ontario*

  The City of Hamilton has a population of about 700,000. In 2002 Green Venture, with the aid of Hamilton's Coalition on Pesticides Issues began a two-year public

awareness and information sharing campaign on healthy lawn and garden practices called “Green Lawns, Healthy Kids”. Green Venture was one of several community groups to use the Green Communities Association’s “Pesticide Free Naturally Kits” with horticultural information, pledge forms and lawn signs (see also the write-up for Quebec).

The public education program also included more than 30 promotional events using a travelling display-booth and distribution of 3,300 door hangers, and 1,200 pamphlets. Other components included a Concerned Citizen’s Registry, a Pesticide-Free Pledge Form, Discount Cards for alternative pesticide products (under development), Pesticide-Free Gardening booklets, a directory of organic lawn care companies, a website, and a media campaign. A follow-up survey to measure the success of the program is planned for February 2004. Based on interviews with garden centres and other local experts, there has been a low reduction (10-24%) in pesticide usage within Dundas, one of the areas within the city to embrace pesticide reduction initiatives most strongly. The per capita cost of their program was $0.13 per year.

- *North Shore Recycling Program – City of North Vancouver, the District of North Vancouver and the District of West Vancouver*

  The City of North Vancouver, the District of North Vancouver and the District of West Vancouver have a total population of about 180,000. In 2003 the North Shore Recycling Program (NSRP), the tri-municipal agency for residential waste reduction, worked with these three municipalities to create a five-year plan to reduce pesticide use through public education. The campaign took a community-based approach with a “Healthy Community, Healthy Environment” workshop series, programs in public schools, backyard workshops and a natural garden tour. There was also a media campaign to encourage residents to reduce pesticides which included ads, articles in the community newspaper, ongoing website updates, an information/resource package, pesticide-free lawn signs and street cards to catch people’s attention with phrases such as “Pesticide kill weeds and bugs… who’s next?” Positive relationships have been built with the local community newspaper , the local garden society, public schools, garden centres and community organizations. A baseline survey was conducted in the spring of 2003 to benchmark pesticide use on private residential lawns and gardens; a follow-up survey was conducted in October 2003. The survey revealed marginal results (< 10% reduction in pesticide use) in the first season of the program. Cost per capita in the first eight months of the program has been $0.28.

- *Chesapeake Bay, Pennsylvania (Harrisburg)*

  The Alliance for Chesapeake Bay conducted a one-year project to promote the purchase of less toxic lawn care products in the Harrisburg area of Pennsylvania (population 48,950) with a total population in the surrounding Dauphin and Cumberland Counties of about 450,000. Working with nine local retail outlets, the

Alliance trained retail staff in integrated pest management[3] and provided "shelf-talkers" and accompanying literature to help shoppers identify less toxic products. The project was promoted through public service announcements (P.S.A.s) for radio and TV, in print advertising at trade and gardening shows, and through a postcard campaign to people on mailing lists of supporting organizations. At the end of the season, the participating stores reported a medium reduction (25-50%) in the number of pesticide products sold. Follow-up phone calls later in the same season for our analysis revealed that the reductions had fallen to a low level (10-24%). Even though the project had some success, the Alliance learned that in order to have a lasting impact a longer-term project would be needed with more partners in order to reduce costs and reach more people. Cost per capita was $0.24.

- *Seattle and King County, Washington*

Seattle and King County in the Puget Sound area of Washington State, have a combined population of approximately 2.2 million people. In the early 90's the city and the county began collaborating on programs to change a number of yard and garden practices by residents, including a reduction in pesticide use. Their Green Gardening program was aimed at educating the population about alternative methods of gardening, while the Natural Lawn Care program and its successor, Natural Yard Care, sought to change peoples attitudes and practices. Through radio and television advertising, community outreach programs, targeting of neighbourhoods and publicizing reports and declarations from other government organizations and research institutions, the city and county were able to generate a change in public attitudes and purchasing practices. Polling data suggest a low decline between 1997 and 2003 in the use of Weed-n-Feed type products. Sales data for the period 2001-2002 show a decrease of over 20% per store on average of the active ingredients 2,4-D and MCCP, the main active ingredient in Weed-n-Feed type products. The cost per capita over the entire ten years that we looked at are not readily available, but in the latter part of the period, it worked out to about $0.21 CDN per year.

- *North Central Texas*

North Central Texas is a metropolitan region with 16 counties surrounding the urban centres of Dallas and Fort Worth. Approximately 5.7 million people live in the region. The Texas SmartScape program uses an educational CD and website to teach residents about native vegetation that uses less water, pesticides and fertilizer. The free CDs are given out at garden and lawn care centres, and to interested community organizations and residents. Planning kits are available for local governments to co-ordinate outreach activities. Community displays and demonstrations are also part of the education program. Since its inception in 2001,

[3] Integrated pest management is defined as a decision making process that is based upon, and assumes that proper horticulture and plant health care has been utilized in the first place. It provides a framework for making rational pest control decisions based upon an understanding and close observation (monitoring) of living systems. IPM considers the wide range of available measures to suppress pests effectively, economically and in an environmentally sound manner to sustain healthy landscapes. Note that in this definition, pest management itself kicks in when pests appear – it is assumed that a broader program addresses the maintenance of optimum plant health through cultural methods.

32 cities and organizations have participated in SmartScape. Based on a small sample of organizations, participants and area garden centres, there has been a marginal decrease (<10 %) in pesticide usage at a cost per capita of $0.01.

- *Frejlev Aalborg, Denmark)*

  The Drastrup project in Denmark was managed by the Aalborg municipal government as part of a countrywide pesticide reduction plan to prevent groundwater contamination and meet European Union drinking water standards. A groundwater recharge area near Aalborg includes Frejlev, population 2000, one of 30 villages in the area. Land was purchased or agreements made with farmers to relocate outside the catchment area. Residents of Frejlev were given information about the consequences of pesticide contamination of groundwater and then asked to develop a strategy for reducing or eliminating their pesticide use. The initial meeting of 100 householders resulted in an immediate 50% declaring to go pesticide-free. Aalborg provided support people, free propane burners for weed control, worked with local media, dispensed information through a website and a quarterly newsletter and put up a sign at the edge of town declaring Frejlev as working towards pesticide reduction. The Pesticide Free Village concept has spread to at least three other villages. Through follow-up surveys and telephone interviews, it was determined that Frejlev has achieved a high level (51-90%) of residential pesticide reduction.

- Baden-Wuerttemberg, *Germany*

  Germany's national pesticide regulations used to be administered by the individual states or Laender. The states were also allowed to pass more restrictive regulations. In 1990 the state of Baden-Wuerttemberg passed legislation that banned herbicides and many other pesticides for lawn and garden allotment use. Herbicides were banned on hard surfaces due to run-off and potential groundwater contamination. In 1991 the regulations were changed again, this time to limit the available products, require permits for use and levy fines for non-compliance. New countrywide regulations in 2001 replaced the state regulations (a directive of the European Union to harmonize pesticide regulations throughout the Union). Now, a limited number of pesticides are allowed on private property (called amateur use) and are available in small packages. All products must be ready to use with no mixing required. The 16 states or Laender are responsible for administering these regulations but can no longer pass their own more restrictive legislation. Professional evaluations of the success of this legislation range from very effective, because so few products are available for purchase, to not effective because the regulations are not enforced. In Baden-Wuerttemberg itself, personal pride, interest in health, and a heightened citizen consciousness from having passed its own legislation earlier, have maintained lower levels of pesticide use for lawn and garden use than in other parts of the country. Several European Union pesticide reduction initiatives have been led by Germany and are included in this review. No financial information is available.

3.3 Success Factors, Lessons Learned and Common Building Elements

Based on the data collected, the following are the key success factors, lessons learned and common building elements exhibited by the in-depth study of nine communities that have by-laws and/or public education programs on reducing the cosmetic / non-essential, residential use of pesticides.

Bylaws

- ***Bylaws / Legislation supported with public education result in greater reduction in residential pesticide use than education programs alone.***

All of the municipalities that have achieved a high level of pesticide reduction have by-laws in place, except for the villages in Denmark, where the reductions were achieved based on a community-wide decision. It should be noted that Denmark has a strong and supportive regulatory framework with timeframes for national pesticide reduction. A report by the UK Department of the Environment, Transport and the Regions made a similar observation. Titled "The Potential Cost and Effectiveness of Voluntary Measures in Reducing the Environmental Impact Of Pesticides", its scan of Canadian reduction measures ends with the comment, "Most provinces indicate that their most successful programs were those that were mandatory. Those that were voluntary were not as successful."

- ***The by-law is only as good as its enforcement/education and permitting systems.***

Two critical areas of by-law / legislative design and implementation were identified: enforcement/education and permitting.

Enforcement /education

Aside from fines, the main method of ensuring compliance with municipal by-laws was to educate residents on how to solve their pest problems without using the banned pesticides. Halifax and the Quebec communities combined enforcement and education effectively through home patrols and/or inspections. This enabled them to provide face-to-face assistance, tailored to the needs of individual residents. It also required putting in place inspectors with sufficient technical training and coaching skills to be able to help residents find the appropriate horticultural solutions. Halifax and the Quebec municipalities that were studied all prided themselves on a maximum response time to inquiries of 24-hours.

Permits

Permitting systems allow for the use of pesticides in exceptional situations. This requires that permits not be issued for routine situations. Otherwise, too many residents will simply apply for permits rather than use alternative techniques.

The experience in St. Lazare highlights the value of requiring residents to apply for their own permits – rather than allowing lawn care companies and other third parties to apply on their behalf. Requiring residents to apply for permits themselves reduced the number of permits requested. It also provided a valuable personalized, one-on-one, educational opportunity at the time they were making their decisions about pesticide use. When St. Lazare first introduced its by-law, lawn care companies could apply directly to get pesticide application permits. When this procedure changed in 2001, the municipality deemed that many of the permit applications submitted by the lawn care companies had not been necessary, and in some cases had not even been requested by their customers.

In the communities of Hudson, St. Lazare and Notre Dame de L'lle Perrot, permits to use banned pesticides were allowed only when inspectors were convinced there was a major infestation that was a menace to the survival of the plant, and all non-toxic alternatives had been exhausted.

In Halifax a decision was made to allow lawn care companies to apply for permits on behalf of their customers during an outbreak of chinch bugs, in August 2003. Up until then, Clean Nova Scotia was responding to about 50 requests for permits each day at the peak of the chinch bug season. By the end of the summer they had made almost 4,000 permit application visits with an average of two days between visiting a home and issuing a permit. Note that although this was a large increase, 4,000 households represent only 2% to 4% of the City's population.

- ***The by-law provisions should be designed to accommodate changing products.***

When designing a by-law, consideration must be given to the fact that pesticide products frequently change. Three approaches were observed in this study: identification of specific low-impact products, banning specific additive ingredients, and referencing a third party's prohibited materials list. Notre Dame de L'lle Perrot defined a low impact pesticide and offered a list of the types of low-impact products that could be used without a permit. The Province of Quebec is banning specific active ingredients rather than pesticide products in general. Halifax has addressed this issue by referencing the Organic Materials Review Institute list of prohibited materials and products. The Institute's list is updated quarterly.

- ***Municipal efforts benefit from provincial and federal efforts.***

Municipal efforts to reduce pesticide use benefit from complementary efforts at higher levels of government. In Canada for example, while municipal by-laws can regulate the *use* of pesticides, local retail stores can continue to *sell* the banned pesticides. However, in the Province of Quebec, that will soon change; the province has legislated that pesticides and fertilizers containing banned ingredients will no longer be available for sale after 2006. In addition, the province provides for a series of permits and certificates of competency that ensure that the sellers and users of restricted pesticides have the proper training and other qualifications, and that enable tracking of pesticide sales. The provincial regulations complement and support the municipal by-laws.

In Denmark, there is zero tolerance across the country for pesticide residues in drinking water (98% of Denmark's drinking water is from groundwater) and clear objectives towards pesticide reduction. National legislation requires the immediate ban of all pesticides found in groundwater above acceptable levels. Further, municipalities are required to chemically treat their water to remove pesticides if they are found in local groundwater. This federal policy has complemented and strongly supported local efforts.

Public Education Programs

- ***Engage residents in the process***

It is helpful to engage citizens in designing the solution and driving the process of pesticide reduction. In Aalborg, Denmark, homeowners were approached with information about pesticides contaminating the groundwater and were asked to help the community define, develop and implement an action plan. The success of the project became a source of pride, pesticide use has become a "shamed" behaviour and the concept has spread to other villages. The result was a greater reduction in pesticide use than observed in any other community without a pesticide by-law.

- ***Profit From – Don't Avoid – Controversy and Public Discussion***

Controversy and public discussion around the decision to have a by-law can have a great and long lasting impact on public support and behavior. Pesticide reduction campaigns can benefit greatly from the discussion and associated free publicity. For example, Centre-Do-It in Hudson, Quebec, said its sales of herbicides decreased to 10% of previous levels even before the municipality's by-law came into effect and have stayed at that level since, despite low-key education and enforcement. The Centre attributes this enduring reduction to education and changes in attitude achieved through the public debates leading up to the by-law.

- ***Bundle pesticide reduction with other landscaping issues***

Multiple benefits can be achieved more cost-effectively by having an education program that focuses on a range of inter-related landscaping issues rather than just pesticide reduction. For example, the City of Seattle's green gardening program targeted three specific behaviours: reducing the amount of grass clippings going to landfill through the use of mulching mowers, reducing the use of chemical fertilizers and pesticides, and reducing water use.

As another example, the "Smartscape" program in Texas concentrated on promoting native vegetation that needs less water, pesticides and fertilizer. This broad focus enabled organizers to promote a wide range of plants and plant-care products – which helped gain the support of local retailers (see point on retailers below).

- ***Establish baseline information in order to measure change.***

It's important to determine current levels of pesticide use before putting a public education program in place. This establishes a baseline, which can then be used as a reference point for measuring success.

- ***Tie Into Hot Issues and Lever Third Party Reports***

Advertising and outreach programs have some effectiveness in changing attitudes and practices. When combined with media coverage of third party reports, they have greater impact. This was exhibited in King County and Seattle where the declaration by the U.S. Environmental Protection Agency that salmon were endangered, and the release of other newsworthy federal government reports helped sway public opinion and generated additional free media coverage for the pesticide reduction program itself. Bert the Salmon, King County's 'spokesfish', was designed to tie the concern over endangered salmon to the need to keep pesticides out of the groundwater. Bert continues to play a key role in public education and has a high recognition factor.

- ***Develop Municipal Pride Around Being Pesticide-Free***

St. Lazare and Notre Dame de L'Ile Perrot exemplify how to build municipal pride associated with being pesticide-free. For example, a pesticide-free logo / campaign identity was used on all city paperwork for a number of years in Notre Dame and St. Lazare. In Saint Lazare a big sign was erected in the park in the middle of the community, highlighting how natural the city was without pesticides.

- ***Develop strong retailer involvement***

Retailers have the potential to be 'ambassadors' for a pesticide reduction education initiative. The key for getting them on side is to provide – and then emphasize - possible sales benefits.

In most parts of Canada, the experience of retailers has been the opposite - the sales value of the alternatives has been far below the revenue lost from pesticide sales. As one retailer put it, "Once you've bought a hand weeder, it lasts a long time."

However, bundling pesticide reduction with other landscaping issues helps compensate retailers for lost income from fewer pesticide sales. For example, the "Smartscape" program in Texas promoted a wide range of native vegetation that needed less water, pesticides and fertilizer, as well as related plant-care products. Local retailers/garden centres became willing partners once the economic benefits of that program were emphasized.

It's been noted that more people shop for organic lawn care products/services when there are weekly newspaper ads promoting pesticide reduction. Most successful marketing campaigns partner with local retailers to promote alternatives products and services through newspaper ads, posters, etc. In addition, in Chesapeake Bay store employees were trained, less toxic products were labeled as such, and information and advertising was provided at point-of-purchase.

- ***Involve Landscape professionals***

King County and Seattle officials found the involvement of landscape professionals critical. In many cases residents don't apply the pesticides themselves, but hire professionals to do the job. Working with landscape professionals and involving them in the development of practices produces a greater likelihood of success than imposing standards where there is no consensus.

- ***Design clear and vivid messages***

Many lawn care companies and garden centres indicated the need for more information to be communicated about health impacts, the benefits of non-monoculture lawns, and the lack of a chemical-free "quick fix" to help their lawns.

The North Shore Recycling Program undertook a street message campaign with tell-it-like-it-is messages that captured attention.

- ***Use social marketing techniques to create effective education and outreach campaigns***

New knowledge in itself does not always translate into changed behaviour. Social marketing techniques can help target the specific behaviour that needs changing, identify the barriers that need to be overcome and provide the tools to support the desired behaviour.

Other Findings

Pesticide reduction may lead to exercise increase:

Evidence from Quebec suggests a slight increase in gardening activity as a result of the pesticide by-laws there, as more and more people use manual and cultural methods rather than chemical ones to reduce weeds such as dandelions. However, many local residents now simply accept a less than perfect lawn. No change was noticed elsewhere.

Political and Community Readiness

The most successful programs we studied all had popular and/or political support, though the reasons for that support varied.

- *Protection of public health*: In a vast majority of the best practice communities, municipalities had recognized the need to reduce residential pesticide use in order to protect public health.

- *Protection of surface and ground water quality:* Communities with a strong dependence on surface and ground water used this to leverage the importance of

a pesticide reduction program. For example, in Aalborg, Denmark ground water is essential to the livelihood of the community and protecting it is vital.

- *Media attention*: The public pressure to act on the pesticide issue, fuelled by strong media attention, was evident in some communities. In North Vancouver for example, the media helped force municipal officials to move forward.

Role of Different Levels of Government

- Canada's federal government, provinces and municipalities all have a role to play in managing residential pesticide use. The Supreme Court of Canada, in upholding Hudson's Bylaw said, "These laws establish a tri-level regulatory regime."

  Health Canada's ongoing re-evaluation program has resulted in the phase out of some uses of lawn care pesticides. The Province of Quebec is now banning the sale of pesticides containing prohibited active ingredients. Senior levels of government have also in the past provided:

  - Ready-to-order brochures or brochure templates;
  - Seed money for local public awareness activities;
  - Seed money / requirements for regional land use / water quality initiatives that engage local stakeholders in setting targets and taking action to improve local water quality;
  - Capacity building support to help municipalities share costs and pool resources; and
  - Media / public relations support, including conferences and the release of scientific reports about related health and/or environmental risks and the need to reduce pesticide use.

  Some municipalities have decided to take an even stronger position against pesticide ***use*** within their boundaries. They have established and enforced bans on pesticide use, and/or educate gardeners to solve their landscaping problems with practical low impact alternatives.

  The federal government is currently implementing an Action Plan on Urban Use Pesticides. One of the key elements in this plan is the Healthy Lawns Strategy, which promotes a reduced reliance on pesticides through integrated pest management, and places a large focus on educational materials for homeowners.

4.0 Conclusions and Recommendations

4.1 Conclusions

- Bylaws / laws have achieved greater reductions in pesticide use than education programs alone. All of the communities that have reached a high level of reduction have had a by-law in place and/or a community-wide decision to reduce pesticide use.
    - It's helpful to require residents to apply for their own permits when they wish to use pesticides that have been banned. Not only does this help reduce the number of permits requested, it also provides an opportunity to educate applicants in a personalized, one-on-one manner. Such systems have been shown to work well in the small communities in Quebec, but it is not yet clear how practical they are for larger communities. This is an area that deserves further research in the future.
    - A combination of public education and enforcement is required to ensure compliance with by-laws and legislation. The education must have a strong horticultural component.
- Where possible, public education and outreach campaigns to reduce residential pesticide use should, at the same time, promote other sustainable landscaping practices such as grass-cycling, naturalization and xeriscaping. This makes them more cost-effective and also more attractive to potential retail partners.
- The cost to implement a by-law appears to be in the order of $0.50-$1.00 per person per year.
- The cost to implement an outreach component alone appears to be in the order of $0.13 to $0.24 per person per year.
- This is a relatively new area of study. Bylaw and outreach approaches are being tested and refined. Mechanisms for providing timely, reliable impact data are still being worked out. The Canadian municipalities that are making decisions today are in need of current information about costs per capita, best practices, and what isn't working and why.

4.2 Recommendations

- The federal government should implement its national pesticide sales database as quickly as possible, so that progress can be monitored more easily.
- This project's research findings should be shared immediately with municipalities and regions that are currently planning outreach projects, including our three sponsoring municipalities.
- It's time to move forward with phase two of this project: dissemination of the research findings across North America to further capacity-building activities.

- The information in this report should be updated within a few years.

5.0 Next Steps

Next steps for the project team will likely include:

- Engaging targeted stakeholders in learning from and implementing the best practices; and
- Updating the impacts achieved and approaches used by the communities we studied, and adding new best practice examples. If you are interested in workshops, updates, helping shape the work and/or contributing financially, please contact:

- Chris Wolnik at the Canadian Centre for Pollution Prevention. chris@c2p2online.com (519) 337-3429

- Jay Kassirer at CULLBRIDGE™ Marketing and Communications. kassirer@cullbridge.com (613) 224-3800

6.0 Appendices

Appendix 1: Community Templates

Limitations of the Data

Note that none of the communities had as strong and reliable data as we would have liked on reductions in pesticide use. Many, for example, relied on third party, random surveys of residents – one of the best practical methods currently available. However, based on past research experience, such surveys are likely to over-report reductions. This is due to self-response bias (residents like to think they are doing more than they actually are). In order to corroborate such findings we conducted additional primary research as noted below. Due to the qualitative nature of this research methodology, some study communities may not be able to support our conclusions on the basis of their own research to date. Readers are encouraged to follow-up with key community contacts in the future, once better data are available, for a more reliable estimate of their program's impact on pesticide use.

A1.1 The Communities of Hudson, St. Lazare, and Notre Dame de L'Ile Perrot; and the Province of Quebec

1. Program Overview

- **Date Outreach began:**

    1. *Hudson:* Outreach has always been low-key.

    2. *St. Lazare:* Outreach was low-key until 2001, when the firm Alternative Solutions was hired to implement outreach including articles, conferences, visits to homeowners, etc.

    3. *Notre Dame de L'Ile Perrot:* A strong outreach component with patrolling / home visits began in the spring of 2002, the year the by-law came into effect.

    4. *The Province of Quebec:* Outreach is just beginning. Two pamphlets have been produced, and golf courses and garden centers have received a letter informing the golf superintendents and garden center owners of the new code.

- **Date by-law / restriction came into effect:**

    1. *Hudson:* On May 6th 1991, the Town of Hudson became the first municipality in Canada with a by-law regulating pesticide use on residential property.

    2. *St. Lazare:* The neighbouring town of St. Lazare followed suit one year later.

    3. *Notre Dame de L'Ile Perrot:* This municipality's by-law came into effect February 2002.

    4. *The Province of Quebec:* The provincial regulations are being phased in, starting April 3, 2003

- **Population:**

    1. *Hudson:* 4,800
    2. *St. Lazar:* 13,000
    3. *Notre Dame de L'Ile Perrot:* 9,000
    4. *The Province of Quebec:* 7,500,000

- **Location:** This study covers by-laws in several small communities located to the South West of Montreal, as well as the affect they have had on new Provincial regulations. St. Lazare and Hudson are neighbouring communities located about 50 km away from Notre Dame de L'Ile Perrot.

2. Overview of Bylaw / Restriction

- **Date enacted:**

    1. *Hudson:* May 6th 1991
    2. *St. Lazar:* 1992
    3. *Notre Dame de L'Ile Perrot:* 2001, to be applied January 1, 2002
    4. *The Province of Quebec:* April 3, 2003

- **Requirements:**

    1. *Hudson:* By-law No. 270 prohibits the spreading and use of landscaping pesticides on residential properties without a permit. A permit can be applied for on the grounds of danger to health or insect infestations of buildings, and must be substantiated in writing by a qualified individual.
    2. *St. Lazare:* St. Lazare has a by-law similar to Hudson's
    3. *Notre Dame de L'Ile Perrot:* There is a ban on the spreading and use of synthetic pesticides. Only "low impact pesticides" as defined in the by-law can be used without a permit. Permits are provided only when there is a major infestation that is a menace to the survival of the plant or to human health, and all alternatives that are better for health and the environment have been exhausted, including low impact ones.
    4. *The Province of Quebec:* There will be a ban on the sale of pesticides containing banned active ingredients. See below for more details. In addition, the province provides for a series of permits and certificates of competency that ensure that the sellers and users of restricted pesticides have the proper training and other qualifications, and that enable tracking of pesticide sales.

- **Fines:**

    1. *Hudson:* Hudon has enforced its by-law on a complaints basis only. The By-law provides fines for first offenders ($300 - $1,000 for individuals and up to $2,000 for corporations), and increased fines for repeat offenders ($600 - $2,000 for individuals and up to $4,000 for corporations)
    2. *St. Lazare:* St. Lazare enforced its by-law on a complaints basis only from 1992 to 2001, then as per *Notre Dame de L'Ile Perrot*, below. First offenders $300 to $1,000 for individuals and from

$500 to $2,000 fro corporations. For repeat offenders $500 to $2000 for individuals and $1,000 to $4,000 for corporations.

3. *Notre Dame de L'Ile Perrot:* Compliance with the municipal by-laws was encouraged through a combination of education (see below), warnings and fines, sustained over several years. In 2002, the community had a full time educator / inspectors on foot and car patrol, including Saturday between May and September. In 2003, the building inspector and the program manager handled complaints and permit requests only through a contract with the firm Alternative Solutions. The firm sent its staff to evaluate each situation and the damage involved, identify the source of the problem, offer practical alternatives to pesticides, and educate the resident about the potential dangers of using pesticides. When staff saw people gardening they would stop and talk with them and provide free horticultural advice. They also had information to leave behind with the people they visited. If they saw evidence of pesticide use, they would take an educational approach followed up a by a letter (for the record) but no fine unless the person was obviously aware of the by-law and had decided to ignore it. Repeat offenders were fined. Fines are $100 - $1,000 for individuals plus court fees and $500 to $2,000 for corporations. An increased fine applies to repeat offenders ($200 - $2,000 for individuals and $1,000 -$3,000 for corporations.) For a third offence the fine is $500 to $3,000 and $3,000 to $10,000. In 2003 only one person was fined, and 10-15 warning letters were sent out - down from about 30 the year before.

4. *The Province of Quebec:* To date there have been no fines laid. The process of doing so is reported to be complicated.

- **Phase-In**

1. *Hudson, St. Lazare, and Notre Dame de L'Ile Perrot:* The municipal by-laws were not phased in. The communities took the perspective that "People don't listen until they have to." They put the by-law in place immediately, and were lenient at first "unless people displayed a bad attitude."

   In St. Lazare, the by-law had not been enforced strongly before 2002, when the firm Alternative Solutions (AS) was hired to assist. Almost all requests for permits had been coming from lawn care companies or extermination companies, and few if any were refused. That year the municipality decided to change its procedures and start enforcement activities. Municipal staff was trained to handle permit requests, and permits were only issued when deemed necessary. The city sent a letter to local lawn care and extermination companies advising them ahead of time of the changes. The staff of AS also followed up by phone and spoke with the owners or directors of all the major lawn care and extermination companies to create a new standard of cooperation. This was well received by most companies.

2. *The Province of Quebec:* The new provincial legislation is being phased in, which is helpful when so many stakeholders are affected. The timing is as follows:

   2003 Pesticides containing banned ingredients can no longer be used on public and municipal properties

   2004 Garden products that mix fertilizers and pesticides can no longer be sold

   2005 Pesticides containing banned ingredients must be kept "behind the counter" so that buyers must ask for them. This provides a face-to-face opportunity to educate the buyer. Vendors will need a permit to sell the pesticides

   2006 Pesticides containing banned ingredients can no longer be sold in Quebec

- **Permits**

    1. *Hudson, St. Lazare, Notre Dame de L'Ile Perrot:* Permits to use banned pesticides were allowed only when inspectors were convinced there was a major infestation that was a menace to the survival of the plant, and all alternatives that were better for health and the environment had been exhausted, including low impact ones. Staff were trained how to recognize and identify insect, disease and weed problems, how to say no, and how to help permit applicants solve their pest problems through low impact alternatives and cultural practices.

       In Notre Dame, no permits were given out in 2002, all request where solved with low impact pesticides. In 2003, there were about 10 applications and 2 permits granted.

       When people applied for permits, they received a visit and a response within 24 hours (usually within 2-3 hours. When St. Lazare first introduced its by-law, lawn care companies could apply directly to get pesticide application permits. That procedure was changed in 2001. Based on follow-up calls at that time, the experts hired by the municipality (Alternative Solutions) deemed that most of the permit applications submitted by the lawn care companies had not been necessary, and in some cases had not even been asked for by the residents. Now both St. Lazare and Notre Dame require residents to apply for their own permits. Not only does this help reduce the number of permits that are requested, it also provides an opportunity to educate applicants in a personalized, one-on-one manner.

- **Budget**

  The budget for developing and enforcing the by-law was around $10,000 per community. Alternative Solutions, the external consultant, estimated that for small communities such as these, it takes one full time person from May to August for every 40,000 to 50,000 residents. That equates to about $0.50 to $1.00 per person depending on the extent of the outreach.

  For more information: http://www.menv.gouv.qc.ca/pesticides/permis-en/index.htm

3. Overview of Education / Outreach Program

- **Date Outreach began:**

    1. *Hudson:* Outreach has always been low-key.

    2. *St. Lazare:* Outreach was low-key until 2001.

    3. *Notre Dame de L'Ile Perrot:* A strong outreach component with patrolling / home visits began with passage of the by-law in 2002

    4. *The Province of Quebec:* It is just beginning and is low-key.

- Aside from the fines, the main method of ensuring compliance with the municipal by-laws was to educate residents about how to solve their pest problems without the banned pesticides. This was done through patrolling / home visits as described above, and through horticultural counselling by telephone. That required putting in place inspectors with sufficient technical training and/or coaching skills to be able to help residents find the appropriate horticultural solutions.

- Some of the communication approaches used were:

    1. Two-hour gardening talks by agronomists, entomologists and other experts, held on weekday evenings
    2. Weekend workshops with some outdoors activities

3. Articles in the municipal bulletin and newspaper. Notre Dame and St. Lazare partnered with another municiaplité to save on the cost of hiring AS to write and publish technical horticultural articles to help citizens replace pesticides with low impact methods.
4. A leave-behind information package for everyone who was visited - to help them remember the information they had learned
5. A focus on creating municipal pride in being pesticide-free. For example, in Saint Lazare a big sign was erected in the park in the middle of the community, talking about how natural the city was with no pesticides. A pesticide-free campaign identity was used on all city paperwork for a number of years in Notre Dame and St. Lazare. In St-Lazare, it featured a child with a flower and a *no pesticides* symbol.

- There was no incremental cost for the education part of the program, because the same staff that did the home patrols carried out the education as well.

4. Political and Community Readiness

- On May 6th 1991, the Town of Hudson became the first municipality in Canada with a by-law regulating pesticide use on residential property. By 1999 there were a number of communities in the southwestern part of Quebec with municipal by-laws banning cosmetic use on residential properties. A concerned citizen enlisted others in the region that had been affected by pesticide spraying in their vicinity to start a group to build on this success. It was called the Coalition for Alternatives to Pesticides (CAP).

- In 2001, CAP launched a public awareness campaign "Pesticide Free Naturally" to reduce the use of pesticides in lawn care in the province of Quebec.

- It formed partnerships with ten Quebec organizations and municipalities to distribute a free Action Kit, based on a kit developed by the Green Communities Association, that was funded by Fonds d'Action Québécois pour le Développement Durable. Each of the ten partners received 500 kits. The public either downloaded the Action Kit from CAP's website or purchased it for Cdn$8.50. The Action Kit contained information such as:

    1. Information on biodiversity and how it began with homeowners' lawns
    2. How to have a beautiful lawn without pesticides
    3. What to do in case of pesticide poisoning
    4. Controlling weeds and insects

5. Activities for children and their parents, and lawn signs
6. Horticultural calendar
7. "What God must be thinking".

The partners distributed the kit in their regions in various ways, such as:

8. Official launches, attended by media to ensure good press coverage
9. Conferences
10. Kiosks at special events, in particular those events related to the environment.
11. Some partners distributed the kits door-to-door.

In all, ten thousand (10,000) Action Kits including lawn signs were distributed to Quebec households, 5,000 of them through CAP's partners.

- CAP supported their partners through presentations, attendance at launches, loan of kiosks, and translation of newspaper articles or municipal bulletins.

- **Workshops**

  CAP gave free workshops to their partners covering sustainable lawn care and how best to spread this information to their regions including:

  1. Ready-to-use press releases and news articles
  2. Information on community-based marketing
  3. Ideas for the launch
  4. How to give a workshop or conference.

- **Website**

  CAP had an extensive website featuring numerous resources, events, news, newsletters, and other information. The site included a sample letter that the public could use to send to organizations to elicit their support. The site also depicted a beautiful poster of an endearing child in a field of that the public could order for a small charge (Cdn$5.00).

- **Membership**

  One technique CAP used to bring people together was a membership at a low cost of Cdn. $10.00. Membership included the Action Kit. In 2002, membership doubled to 700 members including 60 organizations.

- **Reaching people started with youth**

  In 2002, Nature-Action Québec and CAP created an animation project that children participated in while at a day camp during the summer and at school in the fall. Facilitators encouraged children to talk about their drawings. Children were encouraged to bring home their projects and discuss them with their parents to learn about their lawn care habits. This allowed CAP to create awareness directly among children and indirectly among parents.

  In 2002, CAP also created a web page for children on their website including activities, and information for children, parents, and educators, and an art contest as a tool to make children and parents aware of the

dangers of pesticide use. In addition, CAP created a fun but educational fact sheet on pesticides to reach children.

- **Media**

  CAP and its partners worked with the mass media through:

  1. Press releases and press conferences at the start of the season's campaign
  2. Articles in different newspapers
  3. Radio interviews
  4. Television interviews in the partners' municipalities.

- **Kiosks & Events**

  CAP staffed kiosks at numerous events, for example:

  In November 2002, at their kiosk at the Colloque annuel sur l'Éducation à l'Environnement at a local school, CAP distributed information on alternatives to pesticides. Many teachers from the secondary high school boards, environmental groups, government bodies, as well as publishing houses attended.

  An ecological lawn was the "guest of honor" at the CAP kiosk of the 24th Salon National d'Habitation 2003 in Montreal thanks to CAP's partners. Different types of ecologically grown grass, and natural garden and lawn care products were demonstrated to thousands of visitors at the kiosk.

  CAP also participated at the annual Salon Fleurs, Plantes et Jardins and Rendez-vous Horticole 2003 in Montreal.

- **Provincial Legislation**

  In the summer of 2001, a week or two after the Supreme Court upheld Hudson's right to pass its pesticide by-law, CAP approached Quebec's Minister of the Environment. He had previously made a comment to the press about wanting to introduce legislation to restrict the sale of pesticides in the province. The Province set up a "Group de Reflection" to investigate the matter, because that was a quicker process than a full fledged "commission." Many environmental groups wanted to present at the hearings, and most of the briefs that were heard supported a province-wide ban. The new law was passed in July 2002.

5. Partnerships

- Notre Dame and St. Lazare saved money by splitting the cost of developing shared newspaper articles. They also both partnered with AS for training staff, and patrolling /educating residents. In addition, the Notre-Dame by-law was developed by Micheline Lévesque of AS.

- CAP extended its reach by partnering with ten Quebec organizations and municipalities to distribute its free action kit, which was itself adapted from the kit developed by the Green Communities Association. Half of the kits were distributed through CAP's partners. They were funded by the Fonds d'Action Québécois pour le Développement Durable.

6. Impacts

6.1 Sales

While we were not able to gain access to sales figures for the pesticides in question, we were able to obtain a relatively clear and consistent picture of purchases in the three municipalities. This picture was provided through two main sources of data:

1. Intercept interviews with 40-50 lawn care service providers at the St. Hyacinthe Horticultural Trade show in November 2003; and

2. Ten independent estimates from local experts (please refer to the list of community contacts in section 10, and the list of additional experts in Appendix 4).

Lawn Care Services

- In the three communities being studied, lawn care services are almost universally complying with the by-law and are only selling services that make use of the banned pesticides when a permit has been obtained by the resident – and this seldom happens. Overall, in the region the demand for services that do not rely on synthetic pesticides appears to be growing quickly – perhaps by as much as 10-30 % a year. Because few companies offer the full spectrum of cultural practices (aeration, topdressing, seeding, etc.) an increasing number of people are apparently doing it themselves.

Do-it Yourself Products

- Banned pesticides: Almost all local stores continue to sell the banned pesticides. There appears to have been reductions to one third of previous sales levels immediately after the by-laws were put in place, dropping again to about 10% of previous sales levels in the following years. Throughout the rest of Quebec there does not appear to have been much effect yet on the purchase of synthetic pesticides. If anything, it would appear that sales have been marginally up. AS attributes this to recent droughts and a lack of good soil preparation, which make lawns more susceptible to insect problems.
- Low Impact alternatives: Sales of low-impact pesticide alternatives have been growing quickly overall in Quebec, roughly doubling every year for the companies we interviewed. This increase has been most marked in the study area. Sales to garden centres in the Southern part of the province west of Montreal - where the three study municipalities are located, appear to have been growing – on average- at over twice the rate of sales to other parts of the province. The products are apparently being given better shelf space by retailers; they are usually displayed 'up front' now, rather than in the back corner - as they had often been before. Further, their shelf space has doubled each year over the past few years. The greatest increase in shelf space has been in the study area, and those stores are ordering farther ahead and asking for a broader selection of products.

  A garden centre in the Quebec City area, which is east of the area that has been experiencing this most rapid growth, reported that only about 5% of sales were for natural products and that two years ago that would have been less than 1%. Unsolicited inquiries for natural lawn care franchises are reported to be 10 times more frequent from companies that operate or plan to operate in the region west of Montreal, compared with other parts of the province. Inquirers from the study region who had been using traditional pesticide practices serviced a number of local municipalities – some of which had bans and some of which did not. They reported having lost about 25% of their overall sales, and were calling to investigate adding or switching to natural lawn care services.

6.2 Use

Our estimates for reduction in use are based on two main sources of data: the experts mentioned above, and

follow-up surveys conducted by CAP. The expert opinions suggest there was an immediate 70-90% reduction in use the first year that the by-laws came into effect where outreach programs where dynamic and elaborate, and ongoing compliance levels above 80 to 90 %. The results of the CAP survey are included at the end of this template.

6.3 Exercise

The expert opinions suggest that, because of the pesticide bans, there has been a slight increase in gardening activity. On the one hand, more and more people are using manual and cultural rather than chemical methods to reduce weeds such as dandelions. However, many local residents now simply accept a less than perfect lawn.

6.4 Other indications of success

- Among the participating municipalities, groups of citizens or organizations asked their city councilor to regulate the cosmetic use of pesticides. Several municipalities went a step further and were actively studying proposed pesticide regulation.
- The Quebec horticultural association submitted a report to the Cousineau Commission recognizing the risk of pesticide use and presented their agreement on the reduction of pesticides.
- A major grocery chain publicly announced in 2003 that they would no longer sell pesticide products in their stores.
- Numerous garden and lawn care businesses responded to the invitation to join in a workshop on sustainable maintenance practices in garden and lawn care.
- A local college together with different experts developed a new program covering sustainable maintenance practices in garden and lawn care.

7. Costs

- Between $5,000 to $15, 000 per year, depending on the size of the community for the first few years
- Total cost per capita: About $0.50 to $1.00 per capita per year

8. Cost effectiveness

- There was an 80 to 90% reduction in the three communities, at about $0.50 to $1.00 per capita
- Keeping expenses to a minimum
  - Smaller communities can combine enforcement and education effectively through home patrols and inspections
  - Communities can contract out these services during the early years when by-laws are being introduced, then scale back to a lower maintenance level using trained city staff

9. Other Lessons Learned

- Controversy and public discussion around the decision to have a by-law can have a great and long lasting impact on public support and behavior. Centre-Do-It said its sales of herbicides decreased to 10% of previous levels even before Hudson's by-law came into effect, and have stayed at that level since, despite low-key education and enforcement.
- It can take time to change people's minds and habits. CAP and AS currently advise prospective municipalities to allow three years to achieve high levels of compliance. The first year is mostly education – letting people know there is a ban. The second year involves continued education, and stronger enforcement. The third year should be the target for high compliance rates. Companies must comply from the start.
- In the beginning consumers are confused and uninformed. They want to know what the difference is

between products that are allowed vs. those that area not allowed. This is both a tremendous learning challenge and opportunity.

- To ensure high levels of compliance, a dedicated, consistent education / enforcement effort is required that is firm with local gardeners and lawn care companies, and at the same time helps them find practical alternatives to the banned pesticides they know how to use.
- People in Quebec are less familiar with the Organic Materials Review Institute (OMRI) tools. There are so few low impact alternatives available that it is simpler to just list them rather than use a long list like OMRI's. That way the stores know what to buy.
- The people who do the home patrols / education should be motivated, have a horticultural background, good communications skills and a love for people.
- Municipalities would benefit from ready-to-order brochures or brochure templates, and a public media campaign.
- Municipalities would benefit from expert advice on by-laws that work and how to apply them from expert sources that are not linked to the industry. Application and decision making in the process of giving out permits cannot and should not be handed over to anyone linked in any manner to the industry (lawn care companies, extermination companies, agronomists that sell products such as pesticides and fertilizers, tree service companies, etc.)

10. Community and expert contacts:

- St. Lazare: Claude Larue, (450) 424-8000 x 226
- Notre Dame de L'Ile Perrot: Anne-Marie D'Aoust (514) 453-6567
- Nature Action Québec (450) 441-2138
- Micheline Lévesque, President, Alternative Solutions, which specializes in municipal turnkey systems for by-law development and implementation (514) 453-2500, sae@videotron.ca

11. Other Interviews:

- Centre Do-it (450) 458-2001
- Environmental Factor (1-888-820-9992)
- Floralies Jouvence (418) 972-0869
- Hollandia Garden Centre (450) 455-1110
- Labon (1-800-565-8877)
- Michel Gaudet (President of CAP)
- Olga Prim
- Pierre Gigras, La Presse, (514) 285-7070
- Safers, Yves Godin (514) 888-7062

Results of surveys by the Coalition for Alternatives to Pesticides (CAP)

Year	Question (Translated)	Affirmative Reply1	Negative Reply1	Number of Replies
2001	The kit included a lawn sign; did you place it on your front lawn or did you have this intention?	29%	62%	1696
	During the last 3 years, have you used pesticides on the interior or exterior of your home?	50%	47%	1744
	Now that you have read the contents of the kit, according to you, has pesticide use been reduced on the exterior or interior of your home?	66%	26%	1503
	According to you, do you consider this reduction weak, medium, high or total?	26% - 38% replied high or totally		1145
2002	The kit included a lawn sign; did you place it on your front lawn or did you have this intention?	42%	42%	1157
	During the last 3 years, have you used pesticides on the interior or exterior of your home?	47%	48%	1157
	Now that you have read the contents of the kit, according to you, has pesticide use been reduced on the exterior or interior of your home?	53%	8%	1157
	According to you, do you consider this reduction weak, medium, high or total?	13% - 19% replied high or totally		1157

The percentages were rounded up and did not necessarily total 100.

A1.2 The Halifax Regional Municipality (HRM)

1. Overview

- **Date outreach began:** December 2000
- **Date by-law / restriction came into effect** (phased in) April 2001 to April 2003
- **Population:** 360,000 (40 percent of Nova Scotia's residential properties are situated within HRM's municipal boundaries.)
- **Location:** The Halifax Regional Municipality (HRM) is the capital of the Province of Nova Scotia.

2. Overview of Bylaw / Restriction

- **Date enacted**: August, 2000
- Since April 1, 2003, a general ban on the use of pesticides has applied to all properties in HRM. Under the provincial Municipal Government Act, the by-law applies to all residential and municipal properties in HRM, and applies to the outdoor use of pesticides for maintenance of plants and turf. The by-law does not apply to property used for agriculture or forestry, and does not apply to commercial or institutional properties. The by-law does not apply to indoor use of pesticides, or to outdoor use for other than plant and turf maintenance.
- Permits can be obtained to use otherwise banned pesticides in special cases, specifically 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. Such use requires a permit in advance from HRM, and is subject to terms and conditions as provided for in the by-law
- A list of pesticide products that are permissible for use under the by-law has been created under Administrative Order 23. These products are excluded from the provisions of the by-law and may be used at any time.
- In both 2001 and 2002, by-law enforcement services ran seven days a week from April to November. From April to November 2001, pesticide enforcement officers responded to approximately 400 complaints/queries received by the Call Centre. During this first season, the approach to by-law violations was through education, mediation, and persuasion of alleged violators. Repeat violators were ticketed and/or prosecuted – a total of fourteen tickets were issued. The number of pesticide complaints received in the second year of enforcement was reduced to 111 from 400 the previous year.
- Pesticide use was phased out over several years, as follows:

  August 19, 2000: Ban of pesticide use on municipal properties.

  April 2001-March 2003: Ban of pesticide use on:

  - Residential properties in close proximity to medically registered properties i.e. properties whose occupants suffer from the effects of pesticides
  - Properties that border schools, day care centres, playgrounds, parks, churches, seniors' residences, universities, and hospitals.

  April 1, 2003: General ban on the cosmetic use of pesticides on all residential and municipal properties.

The phased approach immediately provided increased protection for individuals suffering from severe effects of exposure to pesticides, herbicides, and insecticides, while providing the community and landscape industry a two-year transition period to adapt to more sustainable maintenance practices.

In the transition period, April 2001 to March 2003, the by-law was enforced only in the buffered zone – i.e. properties that were within a 50-metre radius of medically registered properties, or that bordered schools, day care centres, playgrounds, parks, churches, seniors' residences, universities, or hospitals.

During the transition, the By-law Enforcement section partially contracted out by-law enforcement with the Canadian Corps of Commissionaires, the largest security organization in Atlantic Canada. All HRM employees involved with by-law enforcement were sworn in as special constables of HRM and wore the uniform of the Canadian Corps of Commissionaires. All by-law personnel received training in pesticides and by-law enforcement.

- In January 2001 HRM eliminated fees for pesticide application permits – removing a potential cost deterrent to complying with the application process. Starting in April 2001, all residents required a permit to use the banned chemicals. Clean Nova Scotia (CNS) reviewed these permit applications and conducted on-site evaluations before granting them. While visiting the home, they also educated the residents and responded to related questions, for example regarding the by-law, natural landscaping alternatives, and permitted pest control methods and products.

  HRM trained CNS staff members in natural landscaping alternatives, types of pesticide products, and an overview of the by-law. In addition a local agricultural college trained staff in weed identification and control.

  Pesticide Application Review Process

  The steps involved in the Pesticide Application review process were:

  1. HRM Business Centres received permit requests.
  2. The Centres faxed the pesticide permit applications to CNS offices each morning.
  3. Upon receipt, CNS made appointments, in advance where possible, and created a schedule for site visits on the same day (home visits). To maintain a desired 24-hour turnaround, CNS made no advance appointments during the very peak season, mid to late July.

  Normally, two assessors visited the affected property to evaluate the conditions described in the homeowner's application including:

  - Type of pest
  - Threat to human health
  - Likelihood of the infestation spreading to neighbouring properties
  - Extent of damage
  - Whether the condition was treatable.

  CNS staff provided the resident with applicable "Sustainable Maintenance Tips" outlining natural alternatives to controlling and preventing weed and pest problems, and the Naturally Green Pesticide "Reducing Pesticide Use" pamphlet.

  In many neighbourhoods there was a "follow the leader" effect. Analysis of 2001 data showed clusters on streets where people had applied for pesticide permits within a one to two week period.

  Through their inquiries, CNS educated Halifax homeowners:

  - With solutions to specific weed and pest problems ranging from dandelions to chinch bugs;
  - By answering questions about the by-law such as affected properties, and signage and notification requirements, and permitted pesticide products; and
  - By handling complaints about the permit application process, the by-law, and neighbouring properties that had applied pesticides.

In the summer of 2003 - the first year that the full ban went into effect - HRM and its residents were still adjusting to the new by-law. Challenges in that year included a blight of chinch bugs and a change of policy allowing lawn care companies to apply for permits on behalf of their clients. The number of permits issued rose to around 3,600 (1% of the City's population and 2.4% of its households), almost all of which had been applied for by lawn care companies.

- ***(this repeated above)*** Although Council allocated $200,000 for start up and roll out costs in 2000-2001, HRM only used $120,000.

- The by-law enforcement budget in 2001/2002 was:

Permit Review Process and Education Program	$ 35,000
Administration, Support and Related	$ 45,000
By-law Enforcement	$ 32,000
Total	**$112,000**

- **Web link:**

  Follow the Naturally Green and Pesticide By-law links at: http://www.region.halifax.ns.ca/

3. Overview of Education / Outreach Program

- Since the pesticide policy was under the HRM "Naturally Green" umbrella of a sustainable community, the by-law was promoted in conjunction with it. Promotional tools such as decals and fact sheets were printed in the tens of thousands and distributed, for example at home shows and workshops.

- Outreach started in December 2000, using a combination of the following approaches:
  - Internal staff training
  - Radio, television and newspaper ads and PSAs, newsletters sent to residents, facts sheets, brochures, web site, home shows and workshops
  - Sustainable landscape maintenance calendar sent to all HRM households, recipe cards, posters, and seed packs
  - Lawn mower decals and lawn signs. HRM suggested placing the decals on lawn mowers as a visible reminder of healthy landscaping practices.
  - The web site also provided community feedback through yearly reports and public opinion survey results.

- Approaches in 2000-2001 included:
  - Recipe cards, posters, decals, and seed packs. The wildflower seed packs had fundamental maintenance practices printed on the inside.
  - Series of radio advertisements in April-May
  - Series of newspaper advertisements in spring, summer, and fall
  - Major articles in three Naturally Green newsletters, sent to all HRM households
  - Several dozen newspaper, radio, and TV interviews – locally, regionally, and internationally
  - Educational posters in the Daily News and National Post
  - Clean Nova Scotia newsletters
  - PSAs on major initiatives
  - Pesticide By-law web site with links to resources and information on sustainable maintenance practices.
  - The web site also provided community feedback through yearly reports and public opinion survey results.
  - Pesticide By-law brochure

- Display unit for trade shows and public displays; participation at major home shows in HRM
- Various Naturally Green "Maintenance Tips" fact sheets on topics such as:
  - Sustainable Turf Maintenance (natural /organic techniques for healthy lawns and lawn care and soil conditioning)
  - Permitted Pesticides
  - Fall Practices for Taking Care of the Soil
  - Chinch Bug, White Grub and European Crane Fly

- In 2002, HRM used these approaches:
  - Sustainable landscape maintenance calendar sent to all HRM households
  - Family-oriented TV commercials on a local family TV station
  - Recyclable lawn signs, one of which had the motto "I Garden Sustainably".
  - Fact sheet on permitted pesticides
  - Information flyer sent to all households regarding by-law
  - Various small scale community events

- In 2003, HRM:
  - Ran another series of public workshops
  - Created more fact sheets
  - Focused their key messaging on the full ban that became effective April 1, 2003

- **About the public workshops**

  Feedback to staff and a survey pointed out a need for information about alternatives to synthetic pesticides. HRM addressed this with a series of public workshops given by volunteers from the region. The first step was to train the volunteers, so in 2001, a local radio garden personality led over 110 volunteers in train-the-trainer technical workshops on sustainable gardening and landscape maintenance. In 2002, a lecturer from the local agricultural college and a renowned author with expertise in environmental law led the workshops. During the transition years, the volunteers together with the HRM partners, the Regional Library, Landscape Nova Scotia, and Nova Scotia Agricultural College offered numerous free public workshops highlighting for example "Healthy Soil" and "Energy Cycling in Your Garden". Upon request, the volunteers and HRM staff also gave these popular and well-attended workshops to garden clubs, PTAs, and community groups.

- **About the posters**

  HRM distributed colourful 8" x 11" Naturally Green posters with the slogan Think Globally Act Locally. The "Healthy properties-through sustainable lawn care" poster had a calendar with lawn care activities for each season.

- **About the newspaper posters**

  HRM included several posters in local newspapers. Some had themes such as:

  "Each of us can practice fundamental principles of Sustainable Maintenance which include:
  Take Care of the Soil – If the soil is healthy, plants will be healthy. A soil that is cared for is deep enough for the plants, is loose and porous for healthy root growth, contains enough organic matter, nutrients and moisture, and is covered at all times of the year by plants or mulch."

- **Property Registry**

  During the transition years, HRM maintained a registry of properties whose residents reacted severely to pesticide exposure and required advance notice of spraying. When the full ban came into effect April 1, 2003, notice was required for approved spraying on all residential and municipal properties.

  HRM Business Centres handled the free property registration. There were 182 properties registered in 2001, and

200 in 2002. In accordance with the by-law, HRM provided monthly updates of the registered properties to commercial pesticide applicators in the Halifax municipality.

- **Call Centre**

  In the summer of 2001, the existing Call Centre processed around 4500 general pesticide enquiries. The Centre also entered pesticide complaints into the by-law complaint-tracking database.

- **Outreach budget:**

  Although Council allocated $200,000 for by-law start up and roll out costs in 2000-2001, HRM only used $120,000. Staff achieved these savings to taxpayers of approximately 45 percent by maximizing existing internal resources and through cost-effective partnerships with external agencies.

  The 2002-2003 operating budget was:

Public Education and Awareness	$ 40,000
Communications Plan, Advertising, Promotion, etc.	$ 40,000
Research, Education and Related	$ 5,000
Total	**$ 85,000**

4. Political and Community Readiness

- HRM residents and their politicians were particularly receptive to taking this historic step, partially because of previous experience with environmental health issues, and a generally elevated incidence of illnesses such as asthma and cancers. An independent citizen had previously petitioned a City Council (unsuccessfully) for protection from urban pesticide exposures, and the Ecology Action Centre had carried out a "Get Your Lawn Off Drugs" campaign that had publicized the possible link between the use of pesticides and cancer, among other illness. In addition, local air pollution levels had been consistently high because of industry upwind; some people had been calling the area "the tailpipe of North America." Further, many of the doctors and other health care practitioners who had worked at the newly constructed local Camp Hill Hospital had developed heightened sensitivity to chemical contaminants due to an indoor air quality problem. Pesticides had become a personal issue for them, their colleagues, and their families, and something that the community thought it could do something about.

  A group of concerned citizens got together to take action. They thought that enough people were getting ill, losing their pets and/or losing their livelihoods. They were concerned about their children's health, and rising rates of asthma. They thought they had a right to be safe in their own homes from involuntary pesticide exposures. They called their group RATE (Real Alternatives to Toxins in the Environment). Now that there was a focus for local interest, many citizens came forward wanting to join in.

  The group approached a local municipal Councillor, who was also a lawyer and law professor. He advised them that there was no law to protect them and that they would therefore have to create one. The group did extensive research into the subject, and was guided by the book "Pesticide Bylaws- Why We Need Them and How to Get Them," which was based on the recent experience of Hudson and other Quebec municipalities.

- **Building Local Support**

  To have enough municipal Councillors pass a new By-law regulating pesticides, they needed to demonstrate sufficient public support - especially in the years leading up to, as well as during, the By-law Hearings. They collected as much scientific research as they could find linking pesticides to negative health impacts. They included it in repeated mailings to HRM Regional Council and displayed educational information on health risks, natural gardening methods, etc., at places where people gathered, such as at local health fairs and shopping malls.

They showed the information to many special interest organizations such as labour groups, the CNIB, the Postal Workers, and the manager of a local grocery chain - who arranged for them to be able to place notices in all of the local stores on an ongoing basis. They often preferred talking with policy makers and the public individually, saying, "they are more candid and you can find out what their special concerns are and where they are coming from." That way they also avoided the potential influence in a group setting of others with a negative outlook.

RATE focused both on the risks to the pesticide-sensitive and also to the entire community, especially children's health, "because it brought home the very real risks to the general population." They also focused on the fact that dogs are particularly sensitive to pesticides, because so many residents were concerned about their pets.

RATE joined ranks with those who shared its concerns. The group engaged local dog handlers, some of whom had dogs that had been "put down" or suffered health problems, clearly as a result of pesticide exposures. They approached the Health and Safety Committee of CUPW since letter carriers had been getting ill delivering the mail. This resulted in the mailing of hundreds of postcards to Council. They enlisted the support of the local Lung Association, Cancer Society, school for the blind (CNIB), hospital and poison control centre, and other organizations.

To balance the necessary "negative" information on health risks with positive recommendations, they assembled a large volume of information on non-toxic sustainable landscape alternatives. They ensured that all of the recommendations were effective, economical, and produced excellent results even in high traffic areas, then publicized these widely. They highlighted the difference between these methods - which did not use pesticides - and most IPM (Integrated Pest Management) approaches which did. They spoke directly with many in the landscape industry to assess their needs, be helpful and provide information where they could.

As they reached out to engage other members of their community, they first asked for a relatively small commitment - a phone call or letter of support. When arranging for that, they also asked if the person would eventually be willing to speak at future Hearings when Council would decide on the By-law. They asked many doctors to write letters of support. They put these letters in a binder along with their research, and loaned the collection to other physicians for 3-7 days, with a request that the new doctors add their own letters of support.

- **Changing the Provincial Municipal Government Act**

  In Canada, municipal powers are defined by provincial jurisdiction. For HRM to be able to pass the new by-law, the provincial government had to change its Municipal Government Act. HRM asked for the change, but progress on this was repeatedly delayed at the NS Legislature. RATE organized numerous demonstrations in front of the provincial Legislature and ongoing mailings to Members of the Legislative Assembly continued. These sometimes concentrated on the opposition parties. A real effort was made to keep cosmetic and agricultural pesticide issues separate.

  Eventually the Municipal Government Act had to be revised by the legislature for a number of other reasons - one of these being that the municipality wanted other changes to the HRM Act, such as increased control over rooming houses. During this campaign, the municipality reversed its request for jurisdiction over pesticides so other changes could be obtained in the HRM Act (including rooming houses). Sudden changes to the draft of the Act would have blocked all municipalities in the province from regulating or prohibiting pesticides. RATE met again with as many MLA's as it could. In the ensuing debate, members of the non-ruling parties spoke on the floor of the Legislature in favour of the need to regulate urban pesticides. RATE brought speaker after speaker before the Law Amendments Committee, and indicated they would be unable to stem the flow of speakers until the law was changed. In the end, the opposition parties collaborated on a compromise with the reluctant government, and an amendment was passed (Dec. 4, 1998; s. 533, p. 225, 226) that gave HRM only (i.e. no other region in Nova Scotia) the right to regulate pesticides used for landscaping. Now Halifax had the right to pass the new by-law.

- **Introducing the Bylaw**

  The next challenge was to get sufficient citizen input into the development of the by-law. RATE put forward a list of names for the creation of a Pesticide By-law Advisory Committee. The Committee that was formed included several people from this list, and also many who had a business interest in pesticide use and sales. There was a lot

of internal discussion on issues, which made for slow movement.

The Committee came to the realization that its members did not agree on very much. The Committee produced three separate reports: a Committee Report, a Majority Report (signed by 7 broadly representative members, including a physician, an Environment Canada toxics expert, an environmental health lawyer, a landscaper, an environmental studies professor, and two citizens), and a Minority Report (signed by 4 pesticide applicators or vendors).

The conclusions of these reports were non-binding on Council - just advice. Therefore RATE devoted at least half of its focus outside the committee and on campaigns directed at both the public and Council. It continued to meet with Councillors individually and mailed news packets to them every two weeks, describing new research and what other communities were doing. To ensure that materials really reached the Councillors, they sometimes placed the materials directly on each of their desks just five minutes before a council session was due to begin, or included them in weekly courier packages.

The municipal hearings required a great deal of organization. RATE went back to enlist the help of those people who had signed letters of support and who had said they would speak at the hearings. Although the group lined up well over 100 people, many other parents, residents and professionals came forward independently to support the by-law. Each person had five minutes to speak.

RATE ensured that there were physicians presenting at every hearing. The President of the Nova Scotia College of Family Physicians, for example, tabled a joint report released by the Canadian Environmental Law Association (CELA) and the Ontario College of Family Physicians ("The Children's Health Project - Environmental Standard Setting and Children's Health") with 83 pages of documented pesticide health risks to Canadian children, saying "I'm speaking on behalf of 500 of this province's family physicians." RATE arranged for three-minute videos to be shown - for example one was shown of a pesticide applicator who became sensitive to pesticides himself and expressed regret over harming others.

Volunteers came early to reserve speaking positions. "Some weren't willing to speak but would sit for those who would." Other volunteers used their speaking time to show the videos. The assembled supporters wore lapel stickers to demonstrate their support for the by-law. RATE came with press releases, backgrounders, and research findings for the media. Faxes and letters poured in from all over Canada encouraging Halifax Regional Council to heed the advice of physicians and listen to the wishes of the public and pass a by-law that would remove pesticides from the community.

During this time, RATE continued its information campaign for municipal Councillors. For example, it ordered many copies of the just released federal government report "Pesticides: Making the Right Choice for the Protection of Health and the Environment" - one copy for each Councillor - highlighted and tabbed the pertinent sections, put on a covering note and then personally drove the packages to each Councillor's house.

During the Hearings, RATE countered various arguments. For example, one man claimed pesticides were necessary because he was allergic to bees; RATE consulted an entomologist who wrote an 'expert opinion' discounting the man's assertion. During the bee-allergy publicity, the group was concerned about media response to the man's personal story. To provide perspective, it focused on the human story of a child with life-threatening anaphylaxis to pesticides and who could not find out each time her area was to be sprayed, and whose immune system was further damaged with each pesticide exposure - this is a risk to the entire community as well. She spoke before Council, presenting a speech that she had written all by herself, saying simply "I want to be safe in my home and I believe I have the right to be so." The story made the National news.

The by-law was passed August 15, 2000

5. Partnerships

- **Internal Partners**

Environmental Management Services, through the Strategic and Sustainable Resource Management section, led the by-law implementation. In October and November 2000, they organized a series of facilitated process mapping

workshops to determine responsibilities, roles, budgets, etc. of all effected business units. Beginning in December 2000, HRM forwarded five project management updates to all involved to keep staff abreast of progress and critical updates.

HRM effectively used existing internal resources and external partnerships to keep the project on schedule and the costs low. A table outlining the role each played is available at the end of this template.

- **External Partners**

Key external partners included Clean Nova Scotia, Dalhousie University, Nova Scotia Agricultural College, the Regional Library, and Landscape Nova Scotia.

Clean Nova Scotia (CNS) was one of the many external partners HRM worked closely with. CNS, a non-profit organization, had worked for over 14 years with households, schools, and other organizations in Nova Scotia and the Maritimes, affecting behaviour change towards the environment. While under contract to HRM, CNS' objectives were to:

- Provide personal service and support regarding the new by-law;
- Educate HRM property owners one-on-one in sustainable maintenance practices; and
- Process pesticide permit applications within 24 hours.

6. Impacts

While we were not able to gain access to sales figures for the pesticides in question, we were able to obtain a relatively clear and consistent picture of purchases in HRM. This picture was provided through 15 independent estimates from local experts. (see section 10 and Appendix 4)

6.1 Sales

- **Lawn Care Services**

The sale of pesticide applications by lawn care companies appears to have dropped by 90% or more at the beginning of 2003, when the full ban came into effect. However this was followed by an increase later in the season in response to a blight of cinch bugs and Lily beetles, once the lawn care companies were able to apply for permits on their clients' behalf. The number of permits issued rose to around 3,600 (1% of the City's population and 2.4% of its households), almost all of which had been applied for by lawn care companies.

- **Do-it Yourself Products**

Banned pesticides

Many local stores with gardening sections (e.g. Atlantic Superstores and Zellers) have discontinued the sale of the banned pesticides such as Weed and Feed and Diazinon. However, staff at those stores said they understood that about half of their customers were now buying these products elsewhere. Those stores still selling the banned pesticides reported quite a range in sales trends, averaging a reduction of about 50% from the previous year. Some even reported experiencing a slight increase in sales, likely due to a number of convergent factors:

- The transfer of pesticide purchases from stores that did carry the banned pesticides to those that did;
- Blights of cinch bugs and Lily beetles that residents felt ill-prepared to control through low-impact methods;
- Some continued, illegal use of the banned pesticides by do-it-yourself gardeners (see below, under use); and
- "Stockpiling" by consumers of pesticides like Diazinon, which were about to be banned by Health Canada.

Low Impact alternatives

Sales of low-impact pesticide alternatives have been growing quickly in the Maritimes overall over the past eight years. One national wholesaler said that sales to that region had increased by about 35% last year alone – and that they have increased by about 45% in Halifax.

6.2 Use

Our estimates for reduction in use are based on two main sources of data: the experts mentioned above, and polls conducted by Corporate Research Associates Inc. for HRM to test awareness and how many residents were complying. HRM also kept track of the number of complaints and repeat permit applications.

- In 2001, 92 percent of homeowners said they were aware of the by-law; only 7 percent said they still used pesticides as their main method of weed and pest control, and 90 percent said they had used pesticide alternatives.
- Our panel of exerts, however, suggests that while many residents might not have been using pesticides as their main method of weed and pest control, they did continue to use them. In 2003, in response to insect infestations, it appears that about three out of five do-it-yourself gardeners used the banned pesticides without permits.
- The overall picture is summed up by the experience of those who were particularly sensitive to pesticide use. According to the head physician at the Environmental Clinic, prior to and during phase-in of the By-law, patients across the province were having problems with reactions to pesticides and were restricted as to where they could walk. Only those in HRM reported far fewer reactions at the beginning of the 2003 season – when the HRM Bylaw came fully into effect. Then at the middle and end of the season, many patients from HRM complained they had lost their newfound freedom.

6.3 Exercise

Our panel of experts agreed that the By-laws have had no significant effect on physical activity levels through active gardening.

6.4 Other indications of success

For the 2002 growing season, only 15% of pesticide permit applications were repeats – i.e. properties that had received permits to spray in the previous season.

From April to November 2001, pesticide enforcement officers responded to approximately 400 complaints/queries received by the Call Centre. The number of pesticide complaints received in the second year of enforcement was reduced to 111 from 400 the previous year.

7. Costs

- The 2002-2003 operating budget was: 197,000 (.55 per capita)
- In 2000-2001, HRM used $120,000 (.33 per capita)

8. Cost effectiveness

- Immediate reduction in the 50-70% range, in the first full year of the by-law, for about 50 cents per capita per year

9. Other Lessons Learned

- Citizens found it confusing that it was relatively easy to get permits to use the banned pesticides. They wondered "if the product is so bad, why can you be allowed to use it with a permit?"
- There is a need for a standard for developers so that they provide a depth of soil that will support good plant growth without fertilizers and pesticides.
- Gardening retailers would like to have better information for the public - more in the media and brochures for the stores.
- All three types of properties – residential, commercial and municipal should be included (i.e. also commercial).
- Citizens should not need to have a medical letter to benefit from the feature of a pesticide by-law.
- It would be helpful to have a wellhead protection program like Oregon (pesticides can't be used within a certain distance of a well-head).
- Regarding definitions of what is an allowable pesticide, RATE suggests:

  1. "Have your municipality buy a membership in the Organic Materials Review Institute (OMRI - contacts are provided at the bottom).

  2. Recognize and adopt OMRI's three categories in your by-law ("A" - allowed, "P" - prohibited, "R" - allowed with restrictions).

  3. Write your by-law so that if OMRI prohibits a material or product, then so does your municipal by-law. (This includes materials or products that CONTAIN any prohibited ingredient also.)

  4. Allow everything else (but explicitly include any needed restrictions or cautions in category "R"), unless the product in question contains unlisted ingredients and/or hasn't been reviewed or listed by OMRI. In this case, the material or product should be prohibited (since it is legal in the U.S. and Canada for pesticides and other toxics to be concealed in unlisted ingredients), or, at the request of your municipality, the material or product may be reviewed on an ad hoc basis (for a small fee) by OMRI and the results forwarded for your consideration.

  Advantages

  - OMRI Brand Name and Generic Materials lists are updated quarterly.
  - Any claims that the municipality doesn't have the expertise to make these decisions are simply referred to this highly qualified body and their panel of expert consultants.
  - Fees for service and membership in OMRI are very reasonable.
  - No exclusion list, such as Halifax's Administrative Order 23 (or the need to update it), is then needed at all.

10. Community contacts:

For more technical information on the Halifax Regional Municipality pesticide initiatives, contact:

Stephen King
Manager-Senior Advisor
Strategic and Sustainable Resource Mgt., Environmental Management Services
Halifax Regional Municipality
Tel: (902) 490-6188
Email: Pestby-law@region.halifax.ns.ca

For more information on the Clean Nova Scotia programs, contact:

Donald Dodge
Programs Officer
Clean Nova Scotia
126 Portland St.
Dartmouth, NS B2Y 1H8
Tel.: (902) 420-3474
Fax: (902) 424-5334
http://www.clean.ns.ca/

For more information about RATE contact:

Helen Johns and Maureen Reynolds
Real Alternatives to Toxins in the Environment
P.O. Box 25188, Halifax NS B3M 4H4
rate@chebucto.ns.ca
http://www.chebucto.ns.ca/Environment/RATE

11. Other Interviews

- Atlantic Gardens (902) 835-9551
- Atlantic Superstore, Lower Sackville (902) 864-2666
- Dr. Roy Fox NS Environmental Health Centre
- Environmental Factor (1-888-820-9992)
- Farmer Clems – Hammonds Plains Road (902) 835-5646
- Farmer Clems - Bedford Highway (902) 443-4291
- Home Hardware, Sackville (902) 864-0000
- Kent - Home Improvement Warehouse (902) 450-2000
- Lakeland Plant World (902) 435-1983
- Lockwood Water Gardens (902) 865-2676
- Rick Howe, (902) 493-2765
- Safers (514) 888-7062
- Zellers – Bayers Road (902) 454-5801
- Zellers – Bayers Lake Power Center (902) 450 5333

Internal Partnerships

HRM effectively used existing internal resources and external partnerships to keep the project on schedule and the costs low. A table outlining the role each played is available at the end of this template. Here's how their departments worked together:

HRM Business	Activity
Environmental Management Services	Lead business unit.
Shared Services	• Call Centre & Business Centres – administrative support, tier one calls, etc. • Geographic Information Services in conjunction with Information Services – developed and put in place a complex record management and geographic mapping links for the Property Registry System. • Marketing, design and communications staff – assisted with the: o Design, advertising, displays, brochures, fact sheets and other collateral materials o Overall communications plan and corporate logo and word mark.
Strategic and Sustainable Resource Management Unit	Pesticide By-law and related Public Education and Awareness Programs
By-law Enforcement section of Community Projects	Oversaw enforcement related matters.
Legal Services	Provided timely legal advice.
Solid Waste Management	Partnered on sustainable maintenance research trials.
Environmental Initiatives Committee	Assisted with the promotion of sustainable practices, particularly through the Naturally Green newsletters.

A1.3 City of Hamilton

1. Program Overview

- Date Outreach began: 2002
- Population: 680, 600
- Location: Hamilton, Ontario

2. Overview of Bylaw / Restriction

- Not applicable

3. Overview of Education / Outreach Program

- In 2002 Green Venture and the Hamilton Coalition on Pesticide Issues developed a 2 year program called “Green Lawn, Healthy Kids” to help the residents of Hamilton reduce pesticides. Green Venture used the Green Communities Association’s “Pesticide Free Naturally Action Kits” to aid their program and has gone to over 30 events to promote the program with a travelling display-booth. 3,300 door hangers, and 1,200 pamphlets have been distributed as well as Pesticide Free Gardening booklets with the names of organic lawn care companies. 576 people have registered on a Concerned Citizen’s Registry and 115 people have signed a Pesticide-Free Pledge Form [received pledge certificate, lawn sign, Discount Card for alternative pesticide products (under development)]. There has also been the creation of a website and media program. Green Venture is planning a follow-up survey in February 2004 to measure the success of the program.
- Outreach budget: $90,100 plus in-kind contributions and donations
- Outreach budget per capita: 0.13 cents
- Web link: www.hcpi.ca

4. Political and Community Readiness

- In April 2001, representatives from 16 citizens' groups met and formed the 'Hamilton Coalition on Pesticide Issues'. Due to a concern for public health, everyone present was interested in reducing or eliminating cosmetic pesticide use on lawns and gardens in the Hamilton area. It was agreed that the main focus of the coalition would be to work with various Hamilton City Departments and Councilors on developing public education campaigns and a possible phase-out by-law. An Education Committee was formed to coordinate a public awareness and information sharing campaign on healthy lawn and garden practices, resulting in the public outreach program called Green Lawns, Healthy Kids. The same committee also helped to organize the very successful, First Annual Green Gardening Forum at the Royal Botanical Gardens. Over 500 people attended a full day's activities. The coalition also became part of a Working Group chaired by the city's Medical Officer of Health. This group, including representatives from the lawn care industry, looked at options for the city in dealing with the pesticide issue. Public education and by-law enactment were discussed. The Coalition is currently awaiting the City's establishment of a Pesticide Advisory Committee.

- In 2002, two surveys conducted by the City of Hamilton revealed that 42.6% of residents (N=662) felt that pesticides had a negative effect on human health and 44.6% said pesticides had a negative effect on the environment. 56.5% (N=316) said they Strongly/Somewhat support a ban on the use of pesticides on private/residential property while 68.4% said they would support a ban of pesticides on municipal property.

5. Partnerships

- Partnerships were formed with the Ontario Trillium Foundation, TD Friends of the Environment, Shell Environment Fund, EcoAction Environment Canada, Green Venture.

6. Impacts

- A 2001 survey conducted by Green Venture revealed that 71% (N=84) of people had reduced or eliminated pesticide use around their home. 39% said they have never used pesticides or have not used pesticides in years. 37% said they had noticed a change in neighbourhood attitudes towards pesticides; 37% recognized more chemical free yards in their neighbourhood.
- In a phone follow with two organic lawn care companies in the Hamilton area, it was revealed that there has been an increase in organic lawn care products by approximately 15%-20%.
- In an effort to capture pesticide reduction results with the highest probability, the C2P2 research team focused its efforts on the part of Hamilton that has been most receptive to participating in pesticide reduction education programs. In consultation with the Green Lawns Healthy Kids Project Coordinator it was determined that the Dundas area has had a long history of support for green garden awards program and a strong interest in pesticide reduction education programs. As a result, we focused our phone follow-up with garden centres in the Dundas area. Interviews with three garden centres in and around Dundas revealed mixed opinions as to the level of pesticide reduction. One store reported a 50 % decrease in pesticide products over the last seven years that may or may not be related or attributable to the public education program. Another pointed to a minimal increase in organic lawn care products and one store pointed to a 15-20 % increase in organic lawn care products. Shelf space has increased (minimal) for organic products. One garden centre said they have seen a decrease in pesticide sales by 10% over 8 years, but it has really picked up to a decrease in sales by 20%. He feels that there is such a sharp decrease because people can buy these pesticides at larger stores for a cheaper price. One garden centre said there has been a decrease in pesticides by about 25% over the last eight years and the same decrease over the last 2 years. However, there has been a decrease because there has been wet summer, and fewer infestations. They do sell alternatives, but more in the "city" stores – people who live in the country are more resistant to try the alternatives. Two more garden centres have said they have seen a 0-5% reduction in pesticide sales.
- After analyzing the postal codes of those who have committed to reducing pesticides through the Concerned Citizens Registry, and the Pesticide Pledge Form, it was revealed that the greatest support and commitment to reduce pesticides was in the Dundas and Ancaster areas of Hamilton.

- Web links for evaluation data: www.hcpi.ca

7. Costs

- Total cost from sections 4 and 5: $ 90,100.00, plus in-kind contributions and donations
- Total cost per capita: $0.13 per year

8. Cost effectiveness

Low level of reduction for $0.13 per year

9. Other Lessons Learned

10. Community contact:

Cecilia Irazuzta
Green Lawns Healthy Kids Project Coordinator
Green Venture
22 Veevers, Hamilton, On L8K 5P5
905-540-8787 ext. 18

Lewinda Knowles
City of Hamilton
Public Health and Social Services Department
905-546-2424 ex. 4854

Research Contacts:

ORGANICARE LAWN SERVICES
Joe McLaughlin
131 Glen Rd. Hamilton, ON L8S 3M8
905-546-0532

Creative Organics Lawn & Garden
Paul Fiorentino/Greg Burghall
3472 Hannibal Rd.
Burlington, ON
L7M 1Z6
905-975-9143 (Hamilton)

Harper's Gardening Centre, Ancaster

905-648-2457

Ideal Landscape & Design Ltd., Dundas

905-689-6151

Paterno Nurseries, Dundas
905-689-6035

Fiddlers Green, Ancaster
905-648-0033

William Dam Seeds
Box 8400, Dundas

Kastrau Landscaping & Nurseries Ltd. 905-529-9323

Terra Greenhouses Ltd. 905-689-1999

Satelite Garden Centre
(905) 574-8188

White Rose Nurseries (905) 389-3363

A1.4 North Central Texas

Participating Communities:
City of Addison
City of Arlington
City of Carrollton
City of Cleburne
City of Coppell
City of Denison
City of Denton
City of Farmers Branch
City of Flower Mound
City of Fort Worth
City of Frisco
City of Garland
City of Grapevine
City of Haltom City
City of Irving
City of Keller
City of Lewisville
City of North Richland Hills
City of Plano
City of Richardson City of Rowlett
City of Sherman
City of Southlake Collin County Master Gardeners
DART (Dallas Area Rapid Transit)
Keep Coppell Beautiful
Keep Denison Beautiful
Keep North Richland Hills Beautiful Sherwood Forest Neighborhood Assoc. (Irving)
Tarrant County Public Health Department
Texas Coop. Extension – Denton & Tarrant Counties
TxDOT-Fort Worth

1. Program Overview

- Date Outreach began: 2001
- Date by-law / restriction came into effect : N/A
- Population: 5.7 million
- Location: North Central Texas, USA North Central Texas is a 16-county metropolitan region centred around Dallas and Fort Worth. Currently, NCTCOG has 232 members, including 16 counties, 164 cities, 26 school districts, and 26 special districts. The area of the region is approximately 12,800 square miles.

2. Overview of Bylaw / Restriction (N/A)

- There are no by-laws restricting pesticide usage in North Central Texas.

3. Overview of Education / Outreach Program

- The “SmartScaping” program (2001) concentrates on educating and encouraging residents to plant

native vegetation that needs less water, pesticides and fertilizer, through an educational CD and website. The goal of the *Texas SmartScape* is to address pollutants in urban storm water run-off. Pollution prevention and water conservation are the *SmartScape* main themes. Additional information promoted includes wildlife attraction; money savings on water bills, stress relief, and beautification of property. In the first six months of its release, there was a positive response from the public and media - people wanted this CD. NCTCOG used their website (www.dfwstormwater.com) (currently 54, 882 website visits) to post availability information for people in North Texas wanting copies. In the first year alone **84,105** copies were ordered/distributed by 91 entities (over 143, 000 CDs distributed to date). In its second year, "March is SmartScape Month" was established to promote the water conservation and pollution prevention principles on an annual basis. "SmartScape Month" planning kits were made available for local governments to co-ordinate outreach. Information about SmartScape continues to be disseminated region-wide by over 32 participating cities and organizations. In addition SmartScape CDs, community displays and demonstrations continue to be part of the cities' storm water education programs.

- The CD includes information on the benefits of SmartScapes, explains how to plan, design, select plants and care for your SmartScape, and gives information on expert contacts, resources and demonstrations gardens that you can visit. The CD has now been made into a more accessible website.

- There have been over 600 e-mail inquires to-date about the SmartScape program. This year 32 area cities, counties and organizations celebrated the 2nd Annual March is Texas SmartScape™ Month. In addition, several cities and TxDOT-Fort Worth joined with DART in a month-long campaign to educate approximately 4.7 million riders about SmartScaping.

  Outreach budget: Total cost of creating the CD excluding staff time included: $1,000 CD authoring software; $2,400 materials and services; $600 sound studio; $57,902 for duplicating the initial 84,105 CDs and cases. The participating local governments, businesses and other groups paid the duplication costs. Approximately 2,000 hours of work by team members and others was volunteered. No specific budget allocated, program is very flexible. Outreach is carried out by participating cities within their outreach budgets. Cities are given the option to participate in SmartScape based on their available resources. To further encourage the widest distribution possible at the lowest cost, *Texas SmartScape* has a unique copyright use agreement. Anyone can copy and distribute the CD, provided that it is copied in its original form and that it is provided to others at little (duplication costs only) or no cost. In addition, NCTCOG conducts co-operative bulk purchases to lower CD distribution costs that cities, counties, nurseries, businesses, agencies and others can participate in. The cost of the interactive CD (case, professional artwork, label and CD) averaged $0.73 apiece, which is comparable to the cost of a colour brochure. SmartScape is being distributed with little or no charge to the public. It is a non-profit project.

- Outreach budget per capita: Difficult to quantify since the program is flexible and based on who participates and what they elect to do as far as outreach. Some cities only provide a link to the web site, others conduct outdoor festivals and SmartScape workshops. Examples of some of the communities' outreach activities conducted in 2002 include:

  - Keep Allen Beautiful (KAB) provided Texas Smartscape CDs to participants at the grand opening of the Smithsonian exhibit "Listen to the Prairie," which was on display at the Allen Public Library during the month of March 2002.
  - The City of Frisco gave CDs to new residents who used their Recycling Center and to residents who use the Household Hazardous Waste Collection Center.
  - Irving hosted a free two-day Master Composter Class. This two-part course included extensive study of backyard composting, a tour of Irving's landfill, class time at North Lake College Biology Lab to study the biological aspects of composting, hands-on experience building backyard compost bins, a free compost bin, thermometer, T-Shirt, and the Texas SmartScape CD.

- The City of Plano hosted a Texas Smartscape Lawn & Garden Showcase featuring specialty areas of composting, household hazardous waste, and water education.

- Web link: www.txsmartscape.com

4. Political and Community Readiness

- Increasing population growth in urbanized areas has an impact on Texas' natural resources and environment. One consequence of this growth is changes to urban storm water runoff quality (and quantity). An example is pesticides, nutrients and herbicides going into urban storm drainage. When homes (and many businesses) are built, new landscape plants are selected, planted and then maintained, typically by applying or over-applying chemicals and water. Monitoring of storm water runoff confirms that pesticides, fertilizers and herbicides are being discharged into local waterways from residential runoff. The Texas Commission on Environmental Quality's storm water rules require local governments to initiate "Best Management Practices" (BMP) to control runoff pollutants. North Texas local governments, NCTCOG and others initiated the Texas SmartScape interactive CD, a non-regulatory BMP, to address pollutants in urban storm water run-off.

5. Partnerships

- Initial CD was developed through a co-operative and voluntary team approach. The original team members included the Tarrant County Health Dept., Texas Co-operative Extension, Texas Parks and Wildlife, Tarrant Regional Water District, Weston Garden Inc., and the North Texas Council of Governments Regional Storm Water Program. The success of the CD prompted other partnerships to develop the Web version for greater public access. Subsequent partners included the Dallas Water Utilities, City of Irving, North Texas Municipal Water District, Tarrant Regional Water District, Upper Trinity Regional Water District, and the Regional Storm Water Management Program.

- The original SmartScape CD was developed with zero funding and was only made possible through the volunteer effort of the original team members described above. This partnership illustrates that while one organization may not possess the funding and staff resources to implement a program, a host of partnerships can bring collective resources such as talent, experience, and innovation and most importantly sweat equity. The Web project, which was developed as result of CD, is an example of agencies supporting the expansion of a successful program. Whereas the CD project had zero funding, the five regional water providers funded the Web project because they saw the value and opportunity to conduct water conservation outreach to the public through SmartScape. The different levels of government agencies that have contributed to the success of the overall SmartScape program (CD and Web) attest to the success and resourcefulness of partnerships and co-operation.

6. Impacts

- Interviews with local garden centres and nurseries have revealed that there has been an increase in demand for native/adaptive plants since the SmartScape program has been implemented, however there is no quantitative data on sales. Customers have been inquiring about the program in local garden centres, where they are given a free CD about the program. Approximately 150 CDs were given out at each one of these garden centers.

- Tarrant County Public Health, a supporter of the SmartScape program, has been running a program with 50 residents over the last months. They will be surveying reductions in water and fertilizer usage in Spring 2004. However, early results from their local government environmental monitoring reveal that phosphorus levels in stormwater are down by up to 5 % since implementation of the program in their county.

- An independent study is being carried out by the Tarrant County Agricultural Extension Service to gauge residential use of water and pesticides in a small test group (40 or so homeowners); however, no measurable data is yet available.

- Weekly advertising in the newspaper for SmartScape Program usually results in program inquiries from about 25% of their customers. On average, 100 CDs are given out to customers each year. Approximately half of all lawn care companies contacted said they had not heard of the SmartScape program or they thought the increase in sales of organic lawn care products was not due to the SmartScape program.
- A measure of success is customer demand. Distributing 12,000 CDs during three years was an initial goal. During the first six months since its release in May 2001, 84,105 copies were ordered/distributed, and to date that figure has surpassed 143,000 copies distributed by over 100 regional entities. An example of public demand was seen in 2001 during one participating city's longstanding annual xeriscaping seminar and tour at which they announced that attendees would receive copies of the CD. Instead of the usual 100 attendees, 800 were there when the doors opened. Many other examples of customer demand and taxpayer satisfaction (phone calls, emails, personal visits, etc) have been tracked.
- A local "Yard of the Month" contest has given a category to SmartScapes. Approximately 60 residents have entered the contests over 2 years, with 12 people winning a prize for the best Smartscape. The "Yard of the Month" contest has a website with photos and an educational column of award winning yards, which has encouraged more people to use less pesticides/fertilizers in order to build a similar "award winning" SmartScape.
- Texas SmartScape has generated local newspaper and national magazine articles, TV coverage, and positive feedback from nurseries, landscapers, homebuilders, consultants, water utilities, professors, and many inquiries from outside of Texas. In addition, SmartScape has received five awards:

  2002 Texas Environmental Excellence Award, Government (first place)

  2002 WatermarkAward and Conservation/Reuse Award, Texas Chapter (first place)

  2002 Award for Excellence in Environmental Health (second place, U.S.)

  2001 - 2002 Keep Texas Beautiful Award, Regional Government (first place)

  (Also, one SmartScape Award is given per month in the "Yard of the Month" contest)
- Some nurseries have said that they have stocked more organic products to make up for the decrease in sales of traditional pesticides.
- Main obstacles and how they were overcome: Funding was a key issue for both the CD and web site. The CD was developed as mentioned before with little funding and primarily sweat equity and volunteers. Over 2000 hours of work were volunteered for this project. For the web development, funding was a key issue, then five regional water providers stepped up to cover the costs.
  - Web links for evaluation data: http://www.dfwstormwater.com/SmartScape/index.html

7. Costs

- Total cost from sections 4 and 5: CD Cost: $61, 902 (Difficult to quantify since the program is flexible and based on who participates and what they elect to do as far as outreach. Some cities only provide a link to the web site, others conduct outdoor festivals and SmartScape workshops)
- Total cost per capita: roughly $0.01 CD

8. Cost effectiveness

- Pesticide reduction was marginal

9. Other Lessons Learned

- *SmartScape* is an important public education tool because it empowers homeowners with information so they can take action to better their community by applying environmental responsibility in their own back yards.

10. Community contact:
Leslie Calderon
Environmental Planner II
NCTCOG Environmental Resources
lcalderon@nctcog.org
(817) 608-2341
(817) 695-9191 (fax)
http://www.dfwstormwater.com

Research Contacts:

Contact Dotty Woodson at the Tarrant County Extension Service office to inquire about her homeowner SmartScape tracking project at (817) 884-1944. She was also a team member involved in developing the program.
Contact Randy Weston. He was a team member involved in developing the CD. He owns a private nursery dedicated to native and adapted plants. (817) 572-0549 or email rweston@westongardens.com

Texas Superstars (which is not related to SmartScape; however, some plants may be the same for both programs): http://www.texassuperstar.com/ - contact Steve George s-george3@tamu.edu

The following nurseries purchased CDs for distribution at regional stores:
Calloway's Nursery - Contact Sam Weger - 817-222-1122
Green Mama's Organic Garden Market (Dallas & Arlington)- Cary Hardin - 817-514-7336
In the Garden Yard and Garden Center (in Cleburne, TX)- Brian Goodman - (817) 774-9000
Stuard's Nursery - Judy Kain - 817-596-0003
Shades of Green, Inc - Robert Wier - 972-335-9095
The Old Blue House - 817-637-4202

Other nurseries:
Back Eyed Susan's Inc 899-8888
Cicle G Nursery 972-402-0019
Cxi 972-471-7775
Jenco Wholesale Nurseries 972-422-1772
Landmark Nurseries Inc 972-471-6300

SmartScape related yard contests contacts:
Debbie York
City of North Richland Hills
Environmental Services
817 427-6651

Keep Denison Beautiful Yard Contest: Tammy Morris -903.464.4492

A1.5 King County and Seattle, Washington, USA

1. Program Overview

- Date Outreach began: 1992
- Date by-law / restriction came into effect – N/A
- Population: Approximately 3.5 million people live in the area with approximately 2.2 million of them governed directly by either Seattle or King County
- Location: King County is located on Puget Sound in Washington Sate and covers more than 2,200 square miles. The City of Seattle is within King County, but is a separate political jurisdiction.

2. Overview of Bylaw / Restriction

- There are no specific by-laws or legislative restrictions as case law in the US does not allow municipalities, counties, or regions to pass legislation governing the use and sale of pesticide products. This power is vested in the Federal Government and can be delegated to the State Government. In the case of Washington State, the Washington State Department of Agriculture (WSDA) may pass laws with respect to the sale and use of pesticides. (http://agr.wa.gov/PestFert/Pesticides/). For example, WSDA recently restricted the use of clopyralid to licensed landscapers. (http://agr.wa.gov/PestFert/Pesticides/Clopyralid.htm) due to input from the City of Seattle.

3. Overview of Education / Outreach Program

- In the early 1990's the City of Seattle developed a Green Gardening Program that was aimed at developing sustainable gardening practices. This collaborative effort of Seattle Tilth, Washington Toxics Coalition, and Washington State University King County Cooperative Extension is sponsored by the City of Seattle Public Utilities and the Hazardous Waste Management Program in King County. It also received funding from the Environmental Protection Agency.
- The Green Gardening Program focuses on direct education, with slide shows and workshops for groups. It also aims to educate retailers and landscape professionals about alternatives to lawn and garden chemicals. Experts do outreach work and will make presentations to groups. Printed and web based materials are also made available.
- For three years the program was advertised in the April to June period to heighten awareness of alternatives to chemical fertilizers and pesticides. While the program was raising awareness, the sponsors felt that an enhanced program targeted at more than already motivated gardeners was required.
- In 1996 Seattle Public Utilities and King County began a campaign to encourage Natural Lawn Care with an aim to reduce the volume of grass clippings entering the composting stream, the residential use of pesticide, and water consumption for lawn irrigation. A formal outreach program was started in 1997 to educate a broader population than was being reached by the Green Gardening Program.
- In 1995, employees in the City of Seattle began consultation with landscape professionals to

develop ecologically sound lawn care practices. This resulted in the development of the first printed materials encouraging mulching mowers, reduced watering, and a reduction in "weed-n--feed"- type combination chemical fertilizers and pesticides. In 1996 a consortium of communications firms was hired to develop and implement a public relations and marketing program to promote Natural Lawn Care. This program continued for five years until 2001 when funding was cut due to the economic downturn in the region. It continues under a reduced budget with a broader mandate as the Natural Yard Care program.

- The communications professionals in collaboration with the City and County develop objectives to increase the number of people practicing grasscycling (i.e. using mulching mowers), decreasing water consumption for lawn irrigation, and reducing the number of people using combination chemical fertilizers and pesticide (weed and feed type products.)

- A poll of 400 Seattle area residents was conducted and determined that male homeowners between the ages of 25 and 54 with a household income of greater than $30,000 were most likely to have a lawn that they cared for themselves. Focus groups within this demographic further determined that the group was interested in behaving in a responsible way, but were resistant to learning complex lawn care techniques.

  Based on this information, a slogan was developed and a friendly character – Bert the Salmon – was devised to deliver the message; *"When it comes to your lawn, act naturally."*

  An integrated "grassroots" community outreach program was developed which included:

  - Television and radio advertising during Seattle Mariners baseball games
  - Media relations and promotional events
  - Support materials including habit change kits, information brochures and videos
  - Education at special events such as Garden and Home shows.

  In addition, the City and County did significant community outreach work with their citizens in the form of outreach materials, displays, participation in community events, working with landscape professionals and with the Washington Toxics Coalition.

  TV and radio advertising proved to be effective in reaching the target audience of 25-54 year old males, who had not traditionally been targets for this kind of advertising. Media relations were particularly effective when reports by the United States Geological Service were released and when the EPA listed the Puget Sound Chinook Salmon as endangered. The development and adoption of IPM policies and guidelines also proved to be newsworthy and generated additional free media coverage.

  Bert the Salmon continues to play a role in public education and has a high recognition factor. He has moved beyond Natural Lawn Care and Natural Yard Care to issues generally affecting water quality.

- Natural Lawn Care has evolved into Natural Yard Care with an expanded focus on all aspect of residential gardening. Unfortunately, budgets have been reduced due to the economic climate in the US Northwest. Advertising and outreach programs have been reduced. The program primarily uses community based social marketing activities. Particular neighbourhoods are targeted with an effort to educate the residents about different methods of yard care that emphasize a reduction in pesticide use and an increase in "natural" alternatives. These programs appear to have a positive effect, with residents learning from and following the examples of their neighbours who have adopted Natural Yard Care techniques. Ten neighbourhoods were targeted in this year's activities.

- The City of Seattle and King County are also involved in developing a broader campaign that includes neighbouring counties and cities (e.g. Portland, Tacoma, Snohomish County, Thurston, Olympia and others) in an effort to reduce the use of "weed-n-feed" products. This program will be delivered in the new year. In addition, a new federal law will require that labeling on these type of products contain a warning that the products are hazardous to salmon.

- Outreach budget: Approximately $1.8 million for the five years 1997-2001. In addition, internal resources were applied to the project. It is estimated that one full time equivalent (FTE) employee was applied by King County and the City of Seattle. The budgets for outreach were reduced significantly in 2002 due to economic conditions in the region.

- Outreach budget per capita: $0.82 over five years.

- Both King County and the City of Seattle have a number of Web links that provide information about pesticide reduction practices. Other organizations like Washington Toxics Coalition and Seattle Tilth Association also have Web sites devoted to Green Gardening and pesticide reduction.

    1. http://www.metrokc.gov/hazwaste/house/lawncare.html
    2. http://www.ci.seattle.wa.us/util/landscape/default.htm
    3. http://www.ci.seattle.wa.us/util/RESCONS/plantNaturally/default.htm
    4. http://www.cityofseattle.net/environment/pesticides.htm
    5. http://www.metrokc.gov/hazwaste/house/garden/controlweedlawn.html
    6. http://www.seattletilth.org/activities/greengardening.html
    7. http://www.watoxics.org/pages/root.aspx

- Julie Colehour of PRR[4], a firm that was part of a consortium that devised and implemented a communications and outreach program in support of the City and County initiatives, has written a case study detailing the initiatives and results. The case study is available at http://www.toolsofchange.com/English/CaseStudies/default.asp?ID=162.

4. Political and Community Readiness

- In the early 1990's, staff at King County's Hazardous Waste Management began developing the Green Gardening program in collaboration with a number of organizations and agencies in the region. They soon realized though that the messages of the program were largely reaching the converted who needed assistance and information on how to change their practices.

- In the mid-1990's the City of Seattle became concerned about the impact of grass clippings on the compost stream. The City initiated a study of mulching mowers and in 1995 issued a report on lawn care that focussed on the generation of solid waste, the use of chemical fertilizers and pesticides, and on water use. In 1996/1997 the City developed a comprehensive public education

[4] Julie Colehour, PRR, Tel: 206-623-0230 Ext. 250 juliecolehour@prrbiz.com PRR, The Frause Group, and Brumley Communications were contracted the City of Seattle and King County to devise and implement a program to promote Natural Lawn Care.

package that included its first "Natural Lawn Care" materials. These encouraged a reduction in the generation of grass clippings through the use of mulching mowers, a reduced use of chemical fertilizers and pesticides, and reduced water use. There was some political backlash though when the City and County were seen to be not "practicing what they preached".

- In May of 1999 the United States Environmental Protection Agency (EPA) declared the Puget Sound Chinook Salmon Evolutionarily Unit as "threatened" and that it was preparing to declare the Puget Sound Bull Trout Evolutionarily Unit as "threatened". While the City of Seattle had been consulting with grounds-keeping staff internally and with landscape professionals externally on pesticide reduction practices, the EPA declaration provided significant political support to advance the agenda. A Tri-County committee was formed to develop guidelines and policies for Integrated Pest Management, Washington State Toxics Coalition was contracted to do an evaluation of pesticides used in the City of Seattle and subsequently in King County, and Seattle Public Utilities released "Ecologically Sound Lawn Care for the Pacific Northwest: Findings from the Scientific Literature and Recommendations from Turf Professionals". In November 1999 an Executive Order was signed in King County requiring King County departments, offices, and agencies to conduct pest and vegetation management activities in accordance with the Tri-County Integrated Pest Management (IPM) Model Policy and Guidelines and the City of Seattle adopted the same policy and guidelines. The City and County were lauded in the press for their initiatives and the adoption of the IPM Policy and Guidelines added political weight to the programs directing changes in residential practices.

- In addition, the United States Geological Service (USGS) released a report in 1999 relating the levels of pesticides detected in small streams in the Puget Sound Basin[5] to the retail sales of pesticides in King County Washington.[6] The study found that twenty-three pesticides were detected in water from urban streams during rainstorms, and the concentrations of five of these pesticides exceeded limits set to protect aquatic life. It also found that pesticides used on lawns and gardens contribute to the occurrence of several pesticides in urban streams.[7]

5. Partnerships

- The City of Seattle (multiple departments), King County, Washington Toxics Coalition, and landscape professionals were all involved in the development and delivery of the public outreach programs for Natural Lawn Care and Natural Yard Care.

- The Green Gardening Program is a program of the Seattle Public Utilities and is a collaborative effort of Seattle Tilth, the Washington Toxics Coalition and Washington State University Cooperative Extension, King County.

- The City of Seattle and King County are natural partners in this and many other processes due to their close proximity and similarity in responsibilities. The involvement of the Washington Toxics Coalition brought scientific credibility to the categorization of pesticides into tiers and bridged a gap between a political lobby group and the organizations that that group would normally seek to influence.

[5] Reported in Bortleson and Davis: Pesticides in Selected Small Stream in the Puget Sound Basin, 1987-1995

[6] USGS Fact Sheet 097-99 April 1999: Pesticides Detected in Urban Streams During Rainstorms and Relations to Retail Sales of Pesticides in King County, Washington.

[7] Ibid p.1

- The involvement of landscape professionals is also critical. In many cases, residents themselves are not using or applying the products in question, but are hiring professionals to carry out the tasks. If the resident is convinced to change practice, but the person or company that actually implements the service is biased against the change, then it will be unlikely that change will occur. Working with landscape professionals and involving them in the development of practices has greater likelihood of success than the imposition of standards about which there is no consensus.

- The adoption of policies and guidelines by the City and County can also be seen as a partnership between citizens and government. While the amount of pesticides used by both levels of government is a small percentage of the total pesticide use in the region and the reductions achieved are perhaps negligible in the overall scheme, the adoption of IPM practices shows that government is leading by example and is prepared to take its share of responsibility for pesticide reduction.

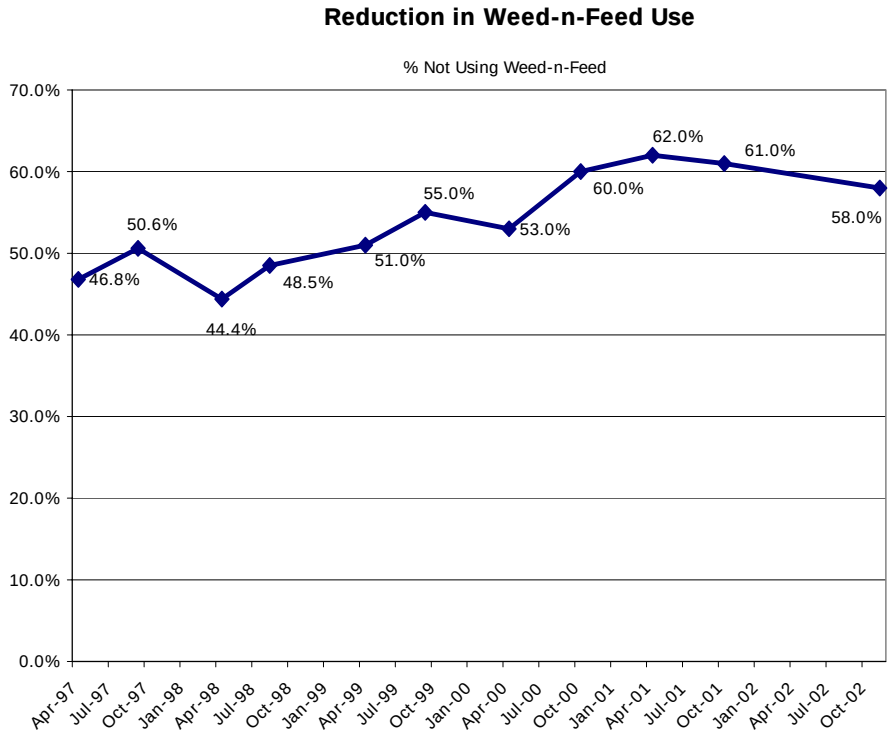
6. Impacts

- As with any program that relies on public education and not on legislation it is difficult to measure absolute results. In addition, little baseline information is available for comparison and sales data are not compiled. There are no reporting requirements for sales and manufacture of residential pesticides and no agency that collects sales information.

- Anecdotal information suggests that there is a greater interest in more environmentally friendly practices and a willingness to change practices. Most writers of gardening columns today do not recommend the use of pesticides in the same way as was common 10 years ago. Anecdotal evidence from garden centers where staff are trained in alternatives show that they can have an impact on buying practices by providing clear information about alternatives.

- Throughout the Green Gardening program and the Natural Lawn Care programs the partners conducted polls and analyzed limited sales data that was purchased from large retailers. While the poll data shows a reduction in the number of people who state that they are not using Weed-n-Feed type products, the sales data is not so clear.

- The chart shows the results from the polling for the percentage of the population who do not use a Weed-n-Feed product on their lawn. While there was an increase in users in the first year of the outreach program, there was a steady decline in the period from April 1998 to April 2001. This corresponds with the peak period of the outreach and advertising and the higher expenditures on the program. As budgets have been cut, the percentage of users who report using a Weed-n-Feed product has increased. While not shown on the chart, data for October 2003 is the same as 2002, i.e. 58%.



- The sales data is more complex and more difficult to determine any definitive patterns. Since 1997 data has been obtained on the quantity of pesticides sold at large home improvement stores in King County. The data set has changed over time as the mix of stores has changed and the data will no longer be available beyond 2002.

- Key findings of the data analysis are:

    - Pesticide active ingredient sales increased by 27% for 2000 -2001 and a further 0.9% from 2001-2002. Excluding moss killers, sales increased by 20% in 2000-2001 and decreased 10% in 2001-2002.

    - The mix of active ingredients changed over the three years reflecting the phase out of some products and their replacement by other products.

    - The two top sellers were moss killers and glyphosate (Round-Up). The next two active ingredients were MCPP and 2,4-D, the main herbicidal ingredients in Weed-n-Feed products. Sales of both MCPP and 2,4-D declined steadily from 2000-2002.

    - Sales of ingredients detected in more than half of King County streams as reported by the USGS fell by 32% on a per store basis, while sales of the 5 pesticides reported as being above water quality standards fell by 50%.

    - Sales of alternative products such as organic or less toxic pesticides gained market share from 4.19% to 5.65 %

- Both King County and Seattle, as part of their IPM initiatives, did measurements of the amount of

pesticides used by their staff and compared it to pesticide use in subsequent years. King County measured a drop of 50% in the total use of pesticides from 1999-2000[8]. Seattle found a 26% drop between 1999 and 2000, but an overall 17% drop between 1999 and 2001[9]. Seattle noted some difficulty in collecting and reporting the data, which may account for the apparent increase in use between 200 and 2001. While pesticide use by Seattle and King County did decline, the overall impact of this decline is seen to be negligible as compared to overall pesticide use in the region. However, the impact on public attitudes to pesticide use and pesticide use reduction is enhanced by the examples of the City and County taking active measures to reduce their own use.

- Web links for evaluation data:

  http://www.cityofseattle.net/environment/pesticides.htm

7. Costs

- Outreach budget: Approximately $1.8 million for the five years 1997-2001. In addition, internal resources were applied to the project. It is estimated that one full time equivalent (FTE) employee was applied by King County and the City of Seattle. The budgets for outreach were eliminated in 2002 due to economic conditions in the region.
- Outreach budget per capita: $0.82 over five years.

8. Cost effectiveness

- It is difficult to determine the cost effectiveness of these programs directly as the real costs of the continued use of pesticides is not known or calculated. However, it appears that a budget in the area of about $0.16 per citizen per year (about $360,000/yr) was effective in changing practices and reducing pesticide use. When expenditures fell below these levels, pesticide use began to creep up.

9. Other Lessons Learned

- Advertising and outreach programs have some effectiveness in changing attitudes and practices. When combined with media coverage of third party reports and issues like the declaration by the EPA that salmon were endangered and USGS reports, they have greater impact.
- Advertising and outreach programs must continue from year to year or else 'backsliding' tends to occur.
- People will follow the lead and adopt practices of neighbourhood leaders who set an example, so working with neighbourhoods to educate smaller groups has positive impact.
- While there may be some appetite and willingness on the part of the public to change practices, this needs to be supported by education and outreach programs to promote alternatives that are easy and uncomplicated.
- The initiative for pesticide reduction works better when it is part of a comprehensive lawn/yard/gardening program that aims to change broad behaviour rather than focussing specifically on pesticide use.
- There needs to be a "champion" within the municipal organization who will drive the process and take the initiative in developing and implementing programs.

[8] Integrated Pest Management in King County Government – A Status Report Through the Year 200 on the Implementation of the King County IPM Executive Order. King County IPM Steering Committee July 2001.

[9] City of Seattle Pest Reduction materials posted at http://www.cityofseattle.net/environment/pesticides.htm

10. Community contact:

- David McDonald, City of Seattle Public Utilities Tel: 206-684-7650 David.McDonald@Seattle.Gov
- Ann Peacock, King County Tel: 206-263-3088 Ann.Peacock@METROKC.gov
- Phillip Dickey Washington Toxics Coalition, Tel: 206-632-1545 Ext. 16 pdickey@watoxics.org

A1.6 North Shore Recycling Program in partnership with the City of North Vancouver, the District of North Vancouver and the District of West Vancouver

1. Program Overview

- Date Outreach began: 2003
- Date by-law / restriction came into effect – not applicable
- Population: 180,000
- Location: City of North Vancouver, the District of West Vancouver and District of North Vancouver

2. Overview of Bylaw / Restriction : Not applicable

3. Overview of Education / Outreach Program

- The North Shore Recycling Program (NSRP) is the City of North Vancouver, District of North Vancouver and District of West Vancouver's agency for residential waste reduction. In late 2002, representatives from the three municipalities approached the NSRP to secure support for the development of an education program on pesticide reduction for the North Shore. The framework for a five-year plan to reduce pesticide use through public education was initiated in February 2003.
- Prior to the new emphasis on pesticide reduction given to NSRP, the organization had integrated components of pesticide reduction into its existing outreach efforts. In 1998, NSRP expanded from simple composting education to what has been coined Natural Yard Care - natural lawn care, waterwise and organic gardening, biological pest control, mulching, etc. This broadening of focus has resulted in a plethora of new programs being offered through the NSRP Community Programs to the public, including hands-on workshops on topics such as sheet mulching, organic gardening, natural lawn care, and healthy food choices, among many others.
- The new North Shore Pesticide Reduction Education Program included a media campaign through ads, articles in community newspapers, ongoing website updates, resource package, pesticide-free lawn sign and street cards (promotional postcards). The Program effectively used a community-based approach through activities such as a workshop series, school program (bug workshops), backyard workshops and natural gardens tour.
- The North Shore Pesticide Reduction Education Program used a unique approach to help shape its communication /outreach plan. Two independent telephone surveys were conducted by Points of View Research & Consulting Ltd. over the course of the pilot. In the first year of the program (pilot phase), NSRP used the results of an informal focus group and the first telephone survey to develop the ad concept and design, educational content for public workshops and education materials on pesticide reduction and natural yard and garden care methods. In both surveys, Baseline (Spring 2003) and Follow-up(Fall 2003), valuable information was collected from 480 interviews distributed equally across the North Shore region. Information included the percentage of residents of single family dwellings with lawns that are currently using pesticides cosmetically, the types of pesticides residents are currently using on their lawns and why, how often pesticides are being applied, the percentage of residents using natural weed and pest control techniques, public perceptions of the greatest risks that might be associated with the use of pesticides, what

types of information influence residents to consider switching to more natural lawn care alternatives and awareness of the North Shore Pesticide Reduction Education Program components (The latter was collected in the follow-up telephone survey). Results and information from the second telephone survey will be used to improve and revise program components in the program's second year.

- The outreach budget for 2003 was $50,000, of which $20,000 was shared by the municipalities according to population and $10,000 was contributed from Environment Canada-Pacific and Yukon Region. In addition, the NSRP in-kind contributions equaled close to $ 20,000.
- Outreach budget per capita: $0.28
- Web link: http://www.nsrp.bc.ca/

4. Political and Community Readiness

- Besides concerns about public heath and protecting surface water quality (an enormous amount of streams and creeks, many of which are salmon-bearing, run through North Shore neighbourhoods and into Burrard inlet,) one of the key factors for moving forward with an outreach program was the high media attention the pesticide/bylaw issue was receiving The three municipalities decided it would make sense to partner and act on popular support to reduce pesticide usage on residential properties. In addition, the proactive response of the City of Port Moody to adopt a bylaw, as well as municipalities across the country either considering bylaws or implementing education programs was another factor influencing the decision to move forward with a North Shore-wide education program. Finally, there was enough political support in the three municipalities – particularly in West Vancouver, where a very vocal public interest group continued to pressure Mayor and Council to bring in a bylaw with the primary concern being the public health issue. Because of this West Vancouver was very much in favour of education and was the driving force behind getting the other two municipalities to partner on an education program.

5. Partnerships

- The primary partners were North Shore Recycling Program, City of North Vancouver, the District of North Vancouver, the District of West Vancouver and Environment Canada-Pacific and Yukon Region. The NSRP is the delivery agent and project manager, while the others act as funders and project reviewers. The budget was cut back considerably from the original proposal submitted by the NSRP; however, support from Environment Canada-Pacific & Yukon region enabled the follow-up telephone survey to be completed and valuable results to be heeded which will help improve the program for next year.
- The fact that the municipalities allowed the NSRP do what the NSRP does best – design and implement community-based environmental programs – made implementing and managing the program that much more effective and productive. NSRP reported to the three municipalities in an information email update every 2 months with a final report to be submitted by year-end.

6. Impacts

- The Spring 2003 baseline telephone survey provided a benchmark measure on pesticide use on private residential lawns and gardens, while the October 2003 follow-up telephone survey was conducted to determine if any behavioural changes have . Although there were many interesting findings from the surveys, the three of greatest interest were how prevalent pesticide use was, what types of pesticides residents were using and how often they were using them.
- The results for prevalence of use showed that 50% of North Shore households were applying

pesticides to their lawns and gardens at least occasionally in April 2003 compared to 47 % of households in October 2003 (this change is not statistically significant). In the October follow-up survey, respondents were asked if they had used pesticides in 2003 and a quarter (25%) said they had, a smaller proportion than the 39% who said they had used pesticides in the past three years.

- The results showed that "weed and feed" products and weed killer sprays (herbicides) are the most commonly used pesticides, followed by insecticides and moss killer herbicides. The types of pesticides used were similar in both surveys, with the exception of a decrease in the use of weed killer sprays (herbicides). (See end of this profile for graphical representation).

- This NSRP survey revealed that, overall, pesticide use in the past three years was down somewhat, although not statistically significant (compared to the survey done in Spring 2003). Pesticides in general and "weed and feed" types of products were used in 2003 by a significantly lower percent of residents than in the past three years. The findings are hopeful signs that some householders may be voluntarily restricting or decreasing their use of these products.

- Four local garden centres representing eight area retailers (see end of this profile) selling pesticide products were contacted by the C2P2 project review team in November 2003. These centres have increased their sales in organic products from 10 to 50%. Discussions with Safers representatives [10] concluded that the only store in North Vancouver able to be tracked showed an 11 % increase in organic pesticide products from 2002-2003.
- All four garden centres identified above confirmed that there has been a decrease in the sales of pesticides; 15% at one store and approximately 60% at another store. All garden centres have heard of the North Shore Recycling Program's eduction program to reduce pesticides.
- Interview with Environmental Factors Vancouver, a low impact lawn care products and lawn care company franchise, found sales have grown 10% over 2 years. There was an increase in natural lawn care franchise inquiries (30 inquiries in 2003compared to 10 the previous year) new inquiries responding to the need for non-chemical companies.

7. Costs

- Total cost from sections 4 and 5 including in-kind support: $50,000
- Total cost per capita: $ 0.28

8. Cost effectiveness

- The budget was extremely low for what was accomplished in this program. The NSRP believes in doing more with less without compromising quality and effectiveness.

9. Other Lessons Learned

- What worked: Street card message was extremely effective – it was a tell-it-like-it-is message and linked directly to health – *Pesticides kill weeds and bugs… think they're healthy for your kids?* And *Pesticides kill weeds and bugs… who's next*? These messages really got people's attention.

- Community-based workshops and programs - effective at reaching people at a grass-roots level where they are likely to share the info with their neighbours and friends.

- What didn't work: The NSRP had hoped to launch the program and the promotions much earlier. The agency was set back in the spring while waiting for funds to be confirmed from the

[10] Personal communication with Josie McDonagh, Director of Sales & Marketing Woodstream Canada Corp, Safers products representatives in Canada. Dec 4, 2003.

municipalities. Though the street cards were effective – they were distributed in the community later than NSRP had hoped for.

- The lawn sign was too official looking and bureaucratic looking. Comments from some residents included that they didn't like the municipal logos (NSRP recommended that these NOT BE put on the lawn sign – unfortunately the municipalities didn't agree).

10. Community contact:

Heidi Schimpl
Community Programs Coordinator
North Shore Recycling Program
148 East 2nd Street, North Vancouver, BC V7L 1C3
T: 604.984.9730 F: 604.984.3563
E: schimplh@dnv.org
www.nsrp.bc.ca

Telephone Interviews

North Vancouver

i) Dykhof Nurseries Ltd.
604-986-2511
ii) Gardenworks

604-980-6340

ii) Maple Leaf Garden Centres
604-985-1784

West Vancouver

i) Maple Leaf Garden Centres
604-922-2613

ii)West Van Florist Ltd.
604-681-1863

Area- Retailers potentially selling pesticides

North Vancouver
Rona Revy- V7J 1B8
Gus' Home Hardware -V7G 1C9
Dykhof Nurseries Ltd -V7J 2L2
Gardenworks -V7R 2S3
Maple Leaf Garden Centres- V7J 2A5
West Vancouver
Simpson Home Hardware -V7V 1J3
Maple Leaf Garden Centre -V7V 1Y4
West Van Florists - V7V 1J7

Results of Two Surveys of North Shore Residents

Points of View Research & Consulting Limited. (November 2003) Pesticide Reduction and Education Program- Two Surveys of North Shore Residents living in single family dwellings.

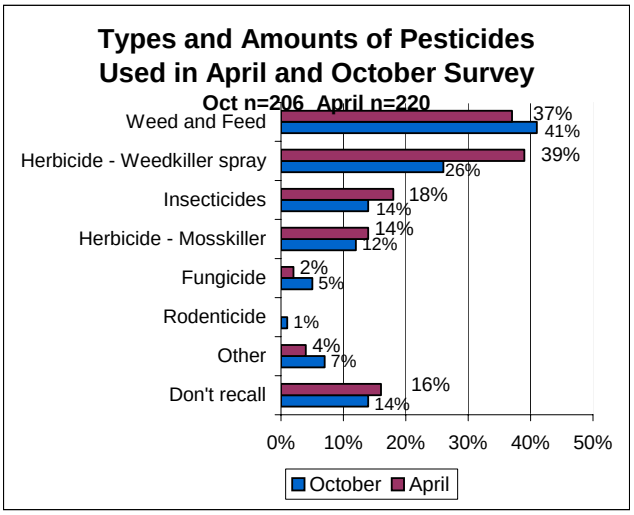


**Figure courtesy of North Shore Recycling Program

Community Name:
A1.7 Chesapeake Bay, Pennsylvania (Harrisburg)

1. Program Overview

- **Date Outreach began**: June 2002
- **Date by-law / restriction came into effect: N/A**
- **Population**: 245,576 Dauphin County, 213,674 Cumberland County, Harrisburg proper 48,950 (2000 census) Total 459,250
- **Location**: Dauphin and Cumberland Counties in South Central Pennsylvania in the Harrisburg metropolitan area in Chesapeake Bay area – northeast U.S.A.

2. Overview of Bylaw / Restriction: **Not applicable**

3. Overview of Education / Outreach Program

- **Date it started**: June 2002
- **Summary of approaches used:**

The IPM Awareness program had two major objectives:
1.) Encourage the public to choose less toxic methods of pest control
2.) Create a model program for adoption by other proponents of IPM in the Chesapeake Bay region.

The objectives were to be met through two primary vehicles:
1.) Forming partnerships with nurseries and other retailers selling pest control and landscaping products by training store employees, labeling less toxic products, and advertising the programme and participating retailers.
2.) Developing relationships with Master Gardeners and other local experts who would function as consultants and educators for homeowners and businesses who wish to implement IPM practices.

- **Overview of communication / outreach plan:**

Creation of logo by Melinda Russell Designs of Stewartstown, PA (*Mr. Les Toxic…a catchy fish holding a watering can*), tag line (*From your home to our streams…Choose less toxic products),* end cap displays, and product shelf talkers. The less toxic character and other elements of the program were modeled in part on the IPM program of the Central Costa Coastal Sanitary District in California. Melinda also created a panel on the Less Toxic Program for use on the Alliance's free-standing display that was taken to a variety of conferences and events throughout the Chesapeake Basin.

Point of sale IPM information packets were compiled by Alliance staff and included fact sheets developed by Pennsylvania Cooperative Extension as well as a list of less toxic products originally developed by Central Costa. Alliance BayScape IPM fact sheets were also reprinted for in-store distribution.

Provided employee training, in-store displays and literature and product

based training module and a training binder for presentation to the employees of partner retailers. Most trainings also included an "on-the-floor" walk-through of the less toxic products display area and an overview of the products displayed therein. For a variety of reasons, many trainings were delayed and some were not scheduled because of non-interest by store management. The table below summarizes store training activity:

RETAIL STORE	WHEN	TYPE	REASON (No training or delay)	NUMBER TRAINED
Ashcombe's	February 2004	Combo.	Conflicting schedules at Ashcombe's – The owner would like all employees present	
*Country Market	August 12, 2003	Combo.		15 employees
Davis Country Living Agway	July 17, 2003	Combo.		5 employees
Highland Gardens			Prefers none	
Hepfer's True Value Hardware	July 10, 2003	Combo.		3 employees
Hanoverdale Agway			Prefers none	
Ritters True Value	February 2003	Powerpoint		20 employees
SKH	July 7, 2003	On-floor		5 employees
Wal-Mart	Spring 2004		Due to construction	

*Country Market has requested IPM training for its seasonal employees in the early spring of 2004.

- Was to **recruit and train Master Gardeners** to conduct additional outreach and training on IPM but due to resistance by Cooperative Extension in forming such a partnership it did not materialize. However, some Master Gardeners are already involved with IPM outreach and Cooperative Extension permitted the use of their IPM fact sheets.

- Spring 2003 - Information displays and product shelf talkers were placed at partnering stores.

- Spring and Summer 2003 - Alliance staff made regular visits to these sites to track progress, consult with store managers on any project issues, maintain displays and label products as necessary. The supply of IPM/Less Toxic handouts at these stores was consistently exhausted, taken by thousands of interested customers.

Used **paid advertising and outreach** at several venues to steer public to purchase the labelled less toxic products at those locations.

- March 8, 2003 - The Alliance conducted a well-attended BayScaping seminar at the Pennsylvania Home Builders Show in Harrisburg. The Less-Toxic program was emphasized during this presentation.

- March 13, 2003 – Kick-off press conference (preceding the official start of the Pennsylvania Garden Expo) using the completed 800 square foot Alliance garden as a backdrop. Press releases were sent to area media and follow-up calls were made leading up to the event. Invitations were sent to retail partners, agency officials, garden club representatives, funding partner Board Member Libby Miksell from the National Foundation for Integrated Pest Management Education (NFIPME) and the Plant Doctor, Noel Faulk. Press conference presenters included David Bancroft and Brook Lenker from Alliance for Chesapeake Bay (ACB), Jim Steinhauer from the Pennsylvania Department of Agriculture and Frank Ellis from U.S. EPA. The local CBS affiliate

Channel 21 WHP TV, George Weigel (lead gardening writer for the Patriot News,) and WHP 580 AM Radio covered the event. A radio news story about the project was aired on WHP Radio following the press conference. Unfortunately Channel 21 did not run the story nor did George Weigel write a story.

- March 14 – 16, 2003 - The Inaugural Pennsylvania Garden Expo at the PA Farm Show Complex attended by approx. 30,000 people. The Alliance's environmentally-friendly garden and the Less Toxic display was a success with more than a thousand IPM handouts distributed. About 45 people attended the IPM talk given by the "Plant Doctor", Noel Faulk, sponsored by the Less Toxic Program.

- April 2003 - Alliance staff person, Rebecca Wertime, presented the Less Toxic program at the National IPM Conference in Indianapolis.

- June 7, 2003 - Less Toxic booth at the Annual Susquehanna River Celebration in Harrisburg. The booth was in cooperation with the PA IPM program. Hundreds of visitors enjoyed PA IPM's colorful BugMobile (a Volkswagen decorated as a ladybug).

- July 12, 2003 - The BugMobile and PA IPM's Ed Rajotte joined ACB staff for a Less Toxic promotional day at Highland Gardens.

- July 2003 - Hundreds of Less Toxic project post cards (with partner retailers list) were mailed out using local mailing lists from the regional Council of Churches/Faith Based Groups, customer lists from select partner nurseries, area members of ACB and area subscribers to the *Bay Journal*.

- October 4, 2003 - ACB displayed IPM/Less Toxic fact sheets and had special giveaways for kids at the Fall Festival at Stauffers of Kissel Hill. The ACB website has been and continues to be a source of information on the Less Toxic Program. The Less Toxic page includes a list of cooperating retailers.

- **Outreach budget:**

  September, 2002 to August, 2003 from National Foundation for Integrated Pest Management Education (NFIPME)

Budget Category	Grant Funding	In Kind
Personnel	$27,000	
Fringe Benefits	7,900	
Travel	5,000	
Equipment	5,000	
Supplies	3,000	
Contractual	0	
	2,100	
Total	**$50,000**	

  From the U.S. E.P.A:
  Personnel (loaded): $70,000
  Travel: $1,000
  Phone: $1,000
  Supplies: $3,000
  Training Materials: $5,000

Total: $50,000 + $80,000 = $130,000

- **Outreach budget per capita**: $0.28
- **Web link:** http://www.pesp.org/2002/afcb02.htm has project proposal for IPMEF

4. Political and Community Readiness

- The 2000 Chesapeake Bay Agreement adopted a goal of a *"Chesapeake Bay free of toxics by reducing or eliminating the input of chemical contaminants from all controllable sources to levels that result in no toxic or bioaccumulative impacts on the living resources that inhabit the Bay or on human health."* From this goal, the Toxics 2000 Strategy was developed that commits to voluntary efforts to build on regulatory efforts and go beyond compliance in controlling toxic pollution. The Toxics 2000 Strategy recommends the implementation of "Projects and programs that reduce the use of pesticides, promote less toxic alternatives, or employ other voluntary efforts that ultimately reduce pesticide loads to the watershed."
- The Chesapeake Bay Strategy recognizes that "Nonpoint sources, particularly urban stormwater runoff, represents a substantial source of chemical contaminants to the Bay and its tidal rivers". This fact coupled with "…increasing population and expanded development within the watershed" suggest that efforts to reduce the toxic contributions from individuals and homeowners should have a significant cumulative benefit for the Bay and its rivers.
- From 1970—1990 200 square miles of Susquehanna watershed were converted from agricultural to urban land uses. Since 1990, the trend has continued, if not accelerated.

5. Partnerships

The National Foundation for Integrated Pest Management Education (NFIPME) - funding
U.S. E.P.A. - funding
The Pennsylvania office of the Alliance for the Chesapeake Bay – coordination, labour
Participating retailers - see above list.

- **What can be learned about the ideal role of the various players, including different levels of government?**
- Development and printing of all in-store promotion materials could be performed by any number of entities, a regional non-profit or a state government program to name two. This entity could then act as a clearinghouse to share resources including the in-store materials and training curriculum.
- The enrolment of retailers, continued servicing of the in-store component of the project as well as training of store employees and other interested groups could be done by either a local government entity such as a municipal water utility and/or a local conservation group. As a long-term project, activities could be broken down to make the store work manageable for individual volunteers. Once the retailer is enrolled, it takes 3 to 5 hours per month per store to maintain in-store materials, talk to store managers and provide periodic training of store employees.
- Ideally retailers would commit resources to label and promote the project on their own although some oversight would be necessary from a local entity to ensure the accuracy and consistency of the labelling.

6. Impacts

- The majority of the retailers felt this program had increased sales of the labeled less toxic products by 10 to 30 percent. The majority of retailers also said they will continue to label less toxic

products and display project information (compiled results of the retailer survey at end of report). When contacted and asked about the difference in proportions of pesticides vs alternatives from 2002 to 2003 (before and after project) responses ranged from no change in sales (90/10) to a shift from 80/20 to 65/35 with a 50% increase in sales of diatomaceous earth and insecticidal soaps. Staff responses to customer inquiries varied greatly depending on staff knowledge and their personal preferences.

- Through advertising, promotional events, and in-store information tens of thousands of people were reached with the "go less toxic " message but quantitative measures have not been taken

- Most of the partner retailers want to see the Less Toxic Program continue and feel new programs need more time and continued publicity to get truly established. Retailers have agreed to continue to display IPM information and label the less toxic products.

- Additional partner promotion for this fall and into next year has been negotiated with Harrisburg Magazine for their new quarterly publication *Homes and Gardens of Central PA.*

- IPM fact sheets and information about the Less Toxic Program will be shared at Stauffers of Kissell Hill's Fall Festival. The Less Toxic mascot suit will be available for use at the Fall Festival and on an ongoing basis by all partner nurseries.

- The Alliance for Chesapeake Bay website will continue to promote the program and partner nurseries. ACB will also perform additional training for employees at two partner retailers in 2004. Further funding will be pursued to assist these and, perhaps, new local retailers in promoting less toxic products.

- In late spring and into the summer the Alliance began to coordinate with the Pennsylvania IPM Program – a collaboration between Penn State and the PA department of Agriculture. Alliance staff worked with Ed Rajotte, Director of PA IPM, in co-exhibiting at the Susquehanna River celebration and in having their BugMobile present at the Highland Garden promotional event. PA IPM has expressed an interest in working with the Alliance in related future activities.

- After a fall 2002 meeting with a representative of Cooperative Extension, the Master Gardeners declined to enter into a formal partnership with the Alliance citing a priority on their own IPM related activities. Permission was granted to use their IPM fact sheets for this program. The Alliance met with The Garden Club Federation of Pennsylvania as a potential substitute outreach partner in April 2003 and exhibited at their annual conference later that month. Despite some encouraging discussion, the relationship failed to materialize primarily due to a lack of interest by local garden club members. With the presence of the Alliance at the Garden Expo, Susquehanna River Celebration, and other venues, the main outreach goals of the Less Toxic Program seem to have been achieved, but the "trickle down" benefit of having many other traveling trainers and advocates for IPM was reduced by the lack of a formal collaborator.

- Web links for evaluation data:

- http://www.acb-online.org/project.cfm?vid=89 has project write-up

- http://www.agnic.org/cbp/
  Data base of the occurrence and distribution of pesticides in Chesapeake Bay

- www.acb-online.org Alliance for Chesapeake Bay

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7. Costs

-

- Personnel: $59,437.49
  Fringe Benefits: $9,841.10
  Travel: $290.96
  Telephone: $128.93
  Supplies: $4,339.70
  Contractual (garden expo garden designer): $2,500.00
  Printing: $7,331.80
  PSA Production: $5,000.00
  Paid Advertising: $19.029.03
  Postage: $629.72

  TOTAL: $108,528.73

- **Total cost per capita:$0.24**

8. Cost effectiveness

- **What was the reduction in the purchase and/or use of pesticides per dollar spent?**
- N/A
- **What can be learned about keeping expenses to a minimum?**
- Paid advertising for print, radio and TV was a substantial cost due largely to development costs for the ads. Participating retailers could be asked to contribute to the project advertising including using their own store ads or mailers. The Alliance was told that the $19,000 was far higher than it should have been and the PSA's can be customized for approximately $50 per set of TV or radio ads.

- The number of participating retailers may have a big impact on the cost of the project

- Using volunteer not paid staff time. The project was very time and labour intensive due to retailers constantly adding and shifting product on the shelf without shifting the shelftalkers and not storing and replenishing literature. This generally required at least two visits a month per store for Alliance staff. Perhaps working with a local conservation group to use their membership to solicit, monitor and maintain the stores is advisable.

9. Other Lessons Learned

This is a program that should have a minimum life span of three to five years with the following components:

1. development and printing of in-store promotion and training materials and print, radio or TV advertising.
2. recruitment of local partners to pursue the project on a local level. Local partners could enable the project to reach a wider area and potentially save money by bringing in volunteer help.
3. using the community watershed model. The Alliance would provide training, tools, and, perhaps, small grants to local watershed associations to partner with a retailer/s in their community to promote the use of less toxic products. Watershed groups can plug in the name of the partner retailer and put their own name in a credit/contact on the less toxic promotional kits, 15 and 30 second radio and TV spots and print PSA's created by the Alliance. The groups could also use the Less Toxic mascot for in-store promotions.
4. Other partners could be engaged such as the PA IPM program and its counterparts in Maryland and Virginia; other funding partners such as Pennsylvania's Growing Greener funding program

and further NFIPME support for a Chesapeake region-wide application of this model.

5. To develop consumer awareness of the project label without a large advertising budget, several years of consistent point-of-purchase information and labelling are required.

10. Community contact:

Brook Lenker – blenker@acb-online.org. Brook is the Director of Watershed Stewardship for the Alliance. He holds a M.A. degree in Geography and Environmental Planning from Towson University and has seven years of experience in leading training, education, capacity-building and restoration projects with a focus on volunteer engagement. Brook supervised overall implementation of the Less Toxic program, assisted with various tasks, and completed reports and invoices for NFIPME

Susan Richards – Susan is a Watershed Stewardship Program Coordinator for the Alliance. She holds a B.A. in Agricultural Economics and has over five years of extensive field experience in hands-on restoration and training, especially with riparian forest buffers and more recently with invasive plant control. Susan administered outreach programs to promote the use of native plants in partnership with several garden centers and is involved with a program to educate homeowners about backyard stream stewardship. Susan was one of the two principal investigators for the Less Toxic program. She coordinated the development of the Les Toxic character and point of sale and product labeling components. She also recruited and liaisoned with all partner retailers and worked with media representatives on program advertising.

Rebecca Wertime – Rebecca is a Watershed Stewardship Program Coordinator for the Alliance and holds a B.S. in Biology. She has over nine years of experience in restoration training, restoration project implementation, and landscape design. She is the lead specialist in our BayScapes landscaping program and has produced planting plans for a variety of audiences, including homeowners, farmers, businesses, and developers. She manages our S**tree**mside Station nursery and has distributed thousands of trees to local organizations for conservation projects. Rebecca served as the second principal investigator for the Less Toxic program. She developed and delivered the training program for store employees. She also was the lead coordinator for our display garden and Less Toxic exhibit at the PA Garden Expo and assisted in many other tasks for the Less Toxic program.

Results of the Less Toxic Project Participating Retailer Survey

Question 1

Do you feel that the labeling program increased sales of the labeled products?

Yes: 6

No:1

Unsure: 1

Question 2

If yes, can you estimate by how much?

- 10%
- Unsure because many of the products were new
- Minimal amount
- 10%
- 20-30%
- 30%

Question 3

Do customers indicate that they had seen the project advertisements?

Yes: 4
No: 3
Unsure:1

Question 4
Do you plan to continue labeling products and displaying the project information?
Yes: 7
No:
Unsure:1

Question 5
Do you have any suggestions to make this project more successful?

- Better bin labels.
- New information is usually slow to take hold of customers attention – give it time and a little more publicity and it will help I'm sure.
- A larger sign we can hang over the aisle 11x17 to say something to the effect do the right thing for the environment – look for the "less toxic labels!"
- Continue to label products – new labels every so often – convince consumer that the less toxic are effective
- A larger less toxic product list
- More consumer friendly explanation of product active ingredient. How does the product work or what it is. Example hydramethylon. Consumers are becoming better educated and are asking more questions – is the product harmful to pets or children.
- Increased public awareness.

Question 6
Additional Comments?

- Continue
- Employee info meeting will help on our end and customer info time will help sales
- I think it will take a couple of years of doing this program to see measurable results.
- Many consumers would like to use less toxic but are unwilling to pay a little more. Many feel the less toxic may not be as effective.
- Feel the brochure is a step in the right direction and would like this program to continue.

A1.8 Aalborg Denmark

1. Program Overview

- **Date Outreach bega**n: Drastrup project 1997 - 2001
- **Date by-law / restriction came into effect**
- **Population**: Aalborg Municipality includes the city of Aalborg and 16 towns and 14 villages including Frejlev (2000 in 2002), Drastrup, Visse, Dall Villaby with a population of about 3000 each that are the focus of this report.
- **Location** Aalborg in North Jutland area of Denmark.

2. Overview of Bylaw / Restriction

Since 1986, Denmark has progressively banned the use of some chemicals commonly used for lawn care in Canada eg. 2,4-D, Diazinon (now being phased out in Canada and U.S.A.), and others are severely restricted such as MCPA, MCPP, Mecoprop-P
Source: http://www.pesticideinfo.org/Detail_Country.jsp?Country=Denmark

3. Overview of Education / Outreach Program

- **Date it started**: 1997
- **Summary of Approaches used:**
- The Drastrup project was started to protect groundwater in the recharge area near Aalborg City proper. Estimates are that 1/3 of Aalborg's water is from this area. Up to 98% of Denmark's drinking water is groundwater.
- 1992 Aalborg Municipality approved a new strategy for protecting groundwater.
- 1995 The land use plan was passed by Aalborg City Council. The working group also drafted a European Union LIFE project application http://europa.eu.int/comm/environment/life/home.htm explains the EU LIFE programme.
- From 1996, the City Council set aside 3 million DK (approx. 402,000 Euro) per year for land purchase. Farmland was purchased or farmers were offered land outside catchment area.
- In 1998, new federal legislation was introduced that established a land use plan for Aalborg to take to farmers requesting they change their land use, stop using pesticides/fertilizers or receive compensation to relocate. As of 2003, there are still 2 farmers in the area under negotiation. The rest have sold or relocated.
- The overall plan was to convert 400 acres into forest and 100 acres into pasture. In this area are several villages. Aalborg municipality started by informing 100 householders in the village of Frejlev of the hazards of pesticides. They were presented with the worse case scenario of chemical contamination and the need for chemical treatment of groundwater if they did not develop a plan. They asked for a handful of people to define the project and decide on the action plan. This

meeting resulted in 50% of householders agreeing not to use pesticides. The Chair of the Residents Association asked if the whole village could take part in the No Pesticides Project

- Aalborg Municipality made available gas burners (portable propane torches to burn weeds and unwanted vegetation) and advisors, distributed quarterly newsletters and held follow-up group meetings where the activities were coordinated.

- Saturday collection of pesticides in the village netted 27 kg. of product (note that 1.5 kg would be enough to contaminate the local groundwater)

- Aalborg Municipality discussed the issue of pesticides with the stores in the area and the stores decided to remove the pesticides from the shelves Furthermore, they began selling alternatives to pesticides.

- Sign at town limit declaring the town is going pesticide free.

- The pesticide-free status has become a source of village-pride and that pride has extended to other villages as mentioned above where the same methods used for Frejlev were also used for Drastrup. People using pesticides are "shamed" by their neighbours so peer pressure and civic pride seem to be the regulators.

- **Overview of communication / outreach plan and timing (who was involved, how it is was implemented, reach, frequency):**

- Local media used to publicize no pesticides and encourage other villages to participate, quarterly newsletters in mail by Aalborg municipality with citizens association.

- http://www.netby.dk/Nord/Appelsingade/BE-eksport/engelsk___englisch.htm has web-based information for citizens on reasons for project

- **Outreach budget:**

  The project was co-financed by the EU LIFE II programme and Aalborg Municipality. The budget has been app. 12,4 million DKK ($3 million Canadian dollars) of which the EU LIFE II programme co-financed 6 million. DKK. App. 147.000 Euro ($1.3 million dollars). However, that includes buying land for conservation purposes. The budget for the phone interviews, the brochures, etc. for the village of Frejlev at 150,000.00 DKK = $34,000 Canadian dollars. That is about $3.40 per person – much higher than any of the other approaches we looked at.

- **Outreach budget per capita:** Non comparable (see paragraph above).

- **Web link:**

- http://iclei.org/europe/la21/pract/Aalborg.pdf has description of Aalborg as a sustainable city, page 8 has details of Drastrup project

- http://europa.eu.int/comm/environment/water/water-framework/pdf/gwd_economic_study.pdf has cost/benefit analysis of Drastrup project – benefits of protecting groundwater, afforestation

- http://www.eaue.de/winuwd/108.htm has Aalborg, implementing a comprehensive environmental plan for sustainability (general information about Sustainable Cities initiative)

4. Political and Community Readiness

- **Why did this happen in this community? What were some of the key factors that led to having enough popular and/or political support to move forward with a by-law / restriction/ outreach program?**

- Although the reason for the pesticide reduction project in the Drastrup area was initiated by Aalborg Municipality for groundwater protection, the following points provide the background of Denmark's leadership in pesticide reduction from all sources and general goal towards sustainability.

- 1987 - 1996 Danish Pesticide Action Plan Phase I - to tighten criteria for pesticide approvals and reduce both pesticide consumption and frequency by 50% - achieved

- Source: http://www.mst.dk/magazine/issue8/pesticides/text.htm

- Total Herbicide consumption Measured in Mt 1990 – 1997

Denmark	3128	2867	2824	2632	2685	3283	2915	0

- Total Insecticide Consumption Measured in Mt 1990 – 1997

Denmark	259	146	128	107	95	231	36	0

- Source http://www.iiasa.ac.at/Research/ERD/DB/data/data_0.htm

- May 27, 1994 – Aalborg hosted first European Conference on Sustainable Cities and Towns where the Aalborg Charter was signed Source http://www.iclei.org/europe/ECHARTER.HTM

- Dec. 1995, Aalborg City introduces environmental impact assessments

- Jan. 1, 1996 - Following approval by the European Commission, the government of Denmark raised national pesticide taxes from 3% of the retail price to as much as 37%. According to the Danish Environmental Protection Agency, an average 15% increase in the price of pesticides is expected to reduce pesticide use by 8%; Source http://www.sare.org/htdocs/hypermail/html-home/12-html/0267.html

- 1998 Bichel Committee to assess economic impact of unilateral ban on pesticide use for agriculture Source: http://www.mst.dk/udgiv/Publications/1998/87-7909-445-7/html/default_eng.htm

- Aalborg Municipality decides to purchase agricultural land that contains water resources and asks that the Water supply department and the Park and recreation department work together to ensure safe water supply with the goal of zero pesticide use on municipal property. Also aiming for 12% forest cover

- Drinking Water Protection is a priority to protect purity of groundwater through voluntary creation of Pesticide Free Villages

- Zero tolerance for pesticides in groundwater. For this reason Danish consultants, in cooperation with governmental and municipal organizations, have carried out intensified water resource planning covering the optimal use of the limited resources including environmental and pollution protection. Water supply systems in Denmark are generally organized on village and town level.

Every village and town runs its own system of wells, water works and distribution systems including an operation and maintenance organization.

- The systems found in thousands of Danish villages are thus comparable to a standard self contained rural water village system Source: http://www.ai-raadet.dk/English/water.htm

- **Danish Pesticide Plan for 2004 – 2009**

  The national government is working on a plan to prevent incorrect dosage and use of pesticides on private property. Will initiate information plan directly for private use; seek agreement with industry to have only ready-to-use products; focus on alternatives to pesticides; work on entering an agreement and co-financing with Den Okologiske Have (the largest organic garden in Denmark) and Det Danske Haveselskab (non-profit association of Danish garden owners) about information and a hotline.

5. Partnerships

- **What partners were involved and what role did each play, and how did this contribute to success?**
- Extensive use of citizen partners for participatory planning - part of the "Better Town" project
- LIFE European Commission Programme - funding
- Aalborg Municipality including Water Supply Dept. – funding, management of project

6. Impacts

- Pesticides are no longer sold in the village of Frejlev.

- Since 2001, only 12% of citizens still use pesticides determined by a survey and telephone interviews. NOTE: Only paper copies of survey exist with Water Supply division in Aalborg and they are only in Danish.

- **What has been the proportion and amount of exercise gained by residents through more active gardening? How was it measured or estimated?**

- Unknown

- **Other indications of success**:

- The greatest reduction in volume of sales between 1991 and 1996, were seen in Finland (- 46%), the Netherlands (- 43%), Austria (-21%), **Denmark (- 21%)** and Sweden (- 17%). Together these accounted for 6.5% of the total volume of sales in 1996. Source: http://europa.eu.int/comm/agriculture/envir/report/en/pest_en/report_en.htm

- One of the major achievements has been to boost the involvement of the citizens and to involve them in the planning of public projects

- **How did retailers change the way they promoted and displayed synthetic and alternative pest control products and services? Has the relative amount of shelf space devoted to synthetic and low impact pesticides changes?**

- The local retail has stopped selling pesticides. Aalborg Municipality discussed the issue of pesticides with the stores in the area and the stores decided to remove the pesticides from the

stores. Furthermore, they began selling alternatives to pesticides

- **Web links for evaluation data:**

- http://www.aalborg.dk/serviceomraader/skov+og+natur/skove/eufolder_091002.pdf has full report on project

- An example of a municipal initiative from Denmark illustrates the strength of public feeling on the issue of pesticide use in public areas. In the town of Aalborg a questionnaire was sent to 2,400 residents. As many as 67% of respondents indicated that they would like to do away with pesticide use in parks and cemeteries even if they looked less well cared for as a result

Source: http://www.pan-uk.org/pestnews/Pn35/pn35p12.htm

- http://iclei.org/europe/la21/pract/Aalborg.pdf has write-up on Aalborg

- http://www.eaue.de/winuwd/108.htm Aalborg: implementing a comprehensive environmental plan for sustainability

7. Costs

- **Total cost from sections 4 and 5:**

- Cost benefit analysis at http://agire.brgm.fr/to%20download/RC-52326-FR_n3.pdf

- Economic assessment of groundwater protection http://europa.eu.int/comm/environment/water/water-framework/pdf/gwd_economic_study.pdf

- Analysis of sustainability of public property restructuring of agricultural land for afforestation, nature restoration including groundwater protection: http://www.geogr.ku.dk/dkgs/image/pub_pdf/sp_gt/sp3/08.pdf

- **Total cost per capita: As mentioned above in section 3, under Outreach budget, t**he budget for the phone interviews, a brochure, etc. for the village of Frejlev was $34,000 Canadian dollars. That is about $3.40 per person – much higher than any of the other approaches we looked at.

8. Cost effectiveness

- Frejlev appears to have achieved a high level of pesticide reduction. However, their costs appear to be unusually high and may not serve as a useful guide for North American communities.

9. Other Lessons Learned

A unified planning approach between the water, land and soil sectors is important.

10. Community contact:

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Local Agenda 21 co-ordinator
City of Aalborg, Urban and Environmental Affairs Dept.
P.O. Box 765 Denmark 9100 Aalborg

Danish Association of Environmental Officers **http://www.fmk.suite.dk** (Danish Only)

A1.9 Germany and the state (Laender) of Baden-Wuerttemberg

1. Program Overview

- **Date Outreach began**:
- **Date by-law / restriction came into effect**
- Baden-Wuerttemberg (one of 16 states or Laenders in Germany) banned plant protection products for home and garden allotment use in 1990 and Berlin since 1992. In 1970 the City of West Berlin banned the use of herbicides on roadsides and other hard surfaces. Pesticides are allowed for special purposes such as airports.
- Above regulations replaced by European Union and Federal German regulations effective July 1, 2001 (see Appendix I for allowed products for home and garden use)
- **Population**: Germany: 82,688,000 (2002 est.); Baden-Wuerttemberg 10.680 million (June 30/2003)
- **Location**: Germany

2. Overview of Bylaw / Restriction

- **Date enacted**: See above
- **What it requires: History of German regulations:**

Federal Plant Protection Act 1998

http://www.verbraucherministerium.de/englisch/pflanzenschutzgesetz/inhalt.htm

Article 6A Special Provisions governing use: "They may be used in houses and allotment gardens only if labelled "use allowed in houses and allotment gardens" " and

Article 8 More extensive regulations issued by the Laender: to lay down regulations to prohibit, to restrict or make subject to approval or notification

a. the use of plant protection products in protected areas governed by provisions under water or nature conservation law,

b. details of the use of plant protection products next to surface or coastal waters or

c. the use of plant protection products on outdoor areas not used for agriculture, forestry or commercial horticulture

Article 9 Notification: Any person intending to apply plant protection products for other persons - except in the case of occasional neighbourly help - or to give advice to others on the use of plant protection products for commercial purposes or within the scope of any other business undertaking shall notify the authority responsible for the company and as well that responsible for the place where the work is to be performed before commencing such work. The governments of the Länder shall be empowered to issue, by ordinance, the necessary detailed rules concerning notification and the notification procedure. They may by ordinance delegate these powers to supreme state authorities.

- **New Federal regulations effective 2001**

Requirements for the registration of plant protection products for non professional use in home and garden
Martin HOMMES

Federal Biological Research Centre, Institute for Plant Protection in Horticultural Crops, Messeweg 11/12, D-38104 Braunschweig

Importance of private gardens
About 50 % of German private households own or rent a garden. The area covered by these gardens amounts to approx. 930 000 ha which is 2.6 % of the entire area of Germany. The average garden size is 500 m² and one third of the gardens are cultivated. The structures of private gardens with manifold plant species and habitats are many and diverse. Therefore they are not only a place for relaxing and providing oneself with food, but also of crucial importance for maintaining biodiversity in urban and suburban regions.

Statutory basis
According to §15 of the German Plant Protection Act of May 14th 1998, the Federal Research Centre for Agriculture and Forestry (BBA) decides on the suitability of a plant protection product for use in home and garden (amateur gardening). This is done in agreement with the Federal Institute for Health Protection of Consumers and Veterinary Medicine as well with the Federal Environmental Office. The legislator assumes that the amateur gardener is not always well-informed to use plant protection products safely. Therefore, the following criteria are particularly taken into consideration when evaluating a plant protection product intended for use in home and garden:

Generally suitable
Generally suitable for use in home and garden are plant protection products which have not to be classified according to the regulations of Dangerous Goods and have no hazardous potential for the environment.

Not suitable
Not suitable for use in home and garden are plant protection products which have to be classified as: very toxic, toxic or caustic

Suitable in isolated cases
Plant protection products which have to be classified as T (toxic, provided that this classification is not done on the basis of carcinogenic, mutagenic or reproduction toxic properties), Xn (detrimetal to health) or Xi (irritating) or which show a particularly hazardous potential regarding the natural balance and groundwater may be suitable for amateur gardening. But only, if the type of formulation, dosing equipment, packaging and manner of application exclude a risk for human being, animals, natural balance and groundwater.

Dosing ability
For all plant protection products formulations which are not ready-to-use a dosing precision of 10 % must be ensured. The dosing system for the production of a ready-to-use product (e.g. spray liquid) for amateur gardening, must be such that the user cannot be harmed when the product is used properly.

Packaging size
In order to be suitable for a plant protection product for amateur gardening, a maximum packaging size shall not be exceeded. The calculation of the maximum packaging sizes is based on a single treatment of an area of 500 m2. If only one packaging size is intended for the treatment of an area of 400-500 m2, at least one further packaging size has to be offered for treating smaller areas. Moreover, the packaging size can be individually assessed if, for instance, a calculation is not possible or makes no sense (e.g. aerosol cans, plant protection sticks).

Literature:
HOMMES, M. 2000: Requirements for the registration of plant protection products for non professional use in home and garden. Mitt. Biol. Bundesanst. Land-Forstwirtsch. Berlin-Dahlem Heft 370, 289.

HOMMES,M., KROOS, G.M. & G. PREUSSENDORFF 2001: Neuregelungen für den Pflanzenschutzmitteleinsatz im Haus- und Kleingartenbereich. Nachrichtenbl. Deut. Pflanzenschutzd. 53, 333-334.

- NOTE: The approved pesticides for use on home and garden have some restrictions ie. some substances like chlorpyrifos are only available as granulates to control ants and root flies and others only as spray cans. Pesticides cannot be used or sold in stores except by permit. Only low-impact (insecticidal soaps) are sold without a permit.

State or Laender Level: Baden-Wuerttemberg effective 1991:

Source: http://www.stuttgart.army.mil/agencies/dpw/emd/documents/GoverningStandards/Pesticides.pdf page 11-7 with acceptable prouducts listed on pages 11 - 16

"In Baden-Wuerttemberg the application of plant protection products is not allowed in areas that are not used for agriculture, forestry or commercial horticultural nurseries. This restriction applied to household gardens, other horticultural nursery areas, planted roofs, planted walls, balcony plantings, parks, greenspaces, sports facilities and cemeteries. An exception to this is the application of plant protection products that contain no active agents or exclusively the Active agents listed on Table C11.T4; (page 11-11) the application of the products is allowed if other biological, mechanical, or bio-technological means are not sufficient."

- **How was compliance encouraged: (penalties, warning tickets etc)**
- Penalties are possible but rare. Enforced through other laws or regulations, particularly through the marketplace. Non-compliance is determined by looking for residues of illegal herbicide use. If current regulations don't work then the plan is that all herbicides will be banned in the future.
- **Were by-laws phased-in? Over how many years? How did this contribute to success?**
- It was immediate but people still used pesticides they had purchased before the law came into place.
- **Were there any permit applications and inquiries? How were they processed, and how did this contribute to a reduction?**
- Permits are issued very rarely and only for commercial/industrial purposes in agriculture and forestry.
- **How many complaints were received about infractions each year? How did the number and/or nature of these change over time? How were they handled and how did this contribute to a reduction?**
- Unknown
- **How many tickets / warnings / enforcement visits / charges were involved each year? How did the number and/or nature of these change over time**
- Unknown
- **Budget for development of the by-law; budget per capita**
- Unknown
- **Budget for enforcement of the by-law, including any extra permit costs (other than what is included in section 5); budget per capita**
- Unknown
- **Web link:**
- http://sustainableproduction.org/downloads/New%20Directions%20in%20European%20Chemicals%20Policy.pdf New Directions in European Chemicals Policy, Drivers, Scope and Policy Oct. 2003 paper by Lowell Centre for Sustainable Development pg. 41 has summary of German Environmental agencies and regulatory bodies
- From: http://www.umweltdaten.de/wasser/wawi-e-1.pdf Water Resources Management in Germany UBA October

2001 has levels of pesticides found in groundwater 1998 and 1999 a compilation of reports from the Lander

- http://pubs.acs.org/hotartcl/tcaw/99/jan/green.html Germany is Going Green – a good background on Germany's environmental approach to chemical regulation

Several Internet Pages which provide information about plant protection and herbicide use in Baden-Württemberg (in German).

http://www.bba.de/recht/pskv_mai01.pdf
Pflanzenschutz - Sachkundeverordnung - Plant Protection – Special Customer Regulation

http://www.bba.de/recht/pfg_jun02.pdf
Pflanzenschutzgesetz (Budesrepublik Deutschland) – Plant Protection Law - Germany

http://www.uvm.baden-wuerttemberg.de/bofaweb/print/g-pflschv.pdf
Verordnung über Anwendungsverbote für Pflanzenschutzmittel
(Pflanzenschutz-Anwendungsverordnung)- Regulations on bans of use for plant protection products

http://www.mlr.baden-wuerttemberg.de/cgi/show.pl?ARTIKEL_ID=1719
Pressemitteilung 171/99 vom Ministerium für Ernährung und ländlicher Raum – Press release 171/99 of the Ministry for nutrition and rural area

3. Overview of Education / Outreach Program

- **Date it started:**
- Unknown
- **Summary of Approaches used:**
- Some education from all sources – the state or Laender, city councils, environmental groups but inaccessible due to non-reply to inquiries – possibly language barrier
- **Overview of communication / outreach plan and timing (who was involved, how it is was implemented, reach, frequency):**
- **Outreach budget:**
- **Outreach budget per capita:**
- **Web link:**
- **Reference details of key reports describing it:**

4. Political and Community Readiness

- **Why did this happen in this community? What were some of the key factors that led to having enough popular and/or political support to move forward with a by-law / restriction/ outreach program?**

The following are some web-referenced historical highlights and occasional strong challenges in German (and European) environmental history with progressively more restrictive regulations for pesticides. Although they are not all causally connected to pesticide reduction on private property, they set the stage and hopefully offer some insight.
1969 – Willy Brandt elected as Chancellor– has high priority for environmental protection
1971 – German EPA formed

1971 – Plant Protection Use Ordinance that prohibits or places strict limits on the use of certain products to protect human and environmental health. Since 1979, this ordinance has been used to implement the prohibitions at the European Commission level http://www.verbraucherministerium.de/englisch/pflanzenschutz/risk3-2.htm#325r

At present, 44 active substances whose use in plant protection products is prohibited are listed. Furthermore, there are 60 active substances whose use in plant protection products is forbidden in water catchment areas and mineral spa areas. Moreover, the *Laender*, taking regional differences into account, may prohibit the use of certain plant protection products in certain marked-off areas which are sources of drinking water, mineral springs or other areas for the protection of groundwater.

In principle, plant protection products which are made of or contain active substances which are subject by ordinance to a limited ban on use or limited use may not be used in nature reserves and natural parks. Further regulations on prohibitions or general prohibitions of plant protection products in nature reserves or natural parks may be passed by the *Laender* in accordance with regional differences.

1977 – Introduction of world's first eco-labeling system, the Blue Angel labels products that serve the same purpose as other products but which distinguish themselves by their environmental advantages. This label is awarded by an independent jury and has so far marked more than 5000 products. http://www.blauer-engel.de/willkommen/willkommen.htm

1990- German unification

1991 - in Berlin 16 out of 31 groundwater samples detected pesticides, Drinking Water Regulations exceeded 11 times. Pesticides were used in great quantities on "death strips" on East/West Berlin Wall. 10 samples from East Berlin showed phenoxycarbon acid – not certain if from herbicides.
http://www.stadtentwicklung.berlin.de/umwelt/umweltatlas/e_text/ek204.pdf

1991 – Council of the European Communities first draft Concerning the Placing of Plant Protection Products on the Market. The development of a European Union Directive to harmonize the authorization, placing on the market, use and control of plant protection products. As of 2003, still a work in progress.
http://www.uksup.sk/download/oso/20030409_smernica_rady_91_414_eec.pdf

1992 - U.N. Conference on Environment and Development in Rio Agenda 21 document agreed on by more than 170 governments states that local governments must play role in sustainability. Agenda 21 projects are very open-ended and driven by local interest and need

1994 - Occurrence of Pesticides in Drinking Water in Selected European Countries
http://www.fwr.org/environs/fr0429.htm
There is evidence that control strategies are successful, resulting in reductions in pesticide levels in raw water supplies, particularly in Germany. There is considerable emphasis on protection of water supplies: several countries reviewed adopting strict controls on pesticide approval and usage; Germany in particular, is a strong proponent of using groundwater protection zones. Regulations in Germany and The Netherlands clearly state that the pesticides parameter includes important pesticide degradation products.

The authorities of most countries issue derogations where pesticides exceed the EC MAC, provided that health-based limits (World Health Organization guideline values or similar values) are not exceeded, though the Department of Health in Germany has issued a list of pesticides and degradation products for which no derogations are permitted.

http://www.iwar.bauing.tu-darmstadt.de/wv/forschung/birmingham.pdf
Groundwater protection areas are divided into zones I, II and III

- **I.** area directly around water source at least 10 m around catchment – no land use allowed
- **II.** defined by the 50 day travel-line pesticides prohibited
- **III.** regulations tend to apply to industrial users

1997– German government embarrassed at Rio + 5 summit UNGASS that they had no national strategy for sustainability. Germany's pride in being environmental leader and international pressure led to action. Only 1,300 out of 16,121 municipalities in Germany had committed themselves to ratification of a local Agenda 21 programme. At the

beginning projects were initiated by citizens/parishes but are now shifting to municipal. Municipalities felt squeezed between federal obligation to Agenda 21 and citizens seeking environmental projects. German Institute for Urban Affairs survey showed strong preference for environmental and planning focus of projects in 1997. Then the Lander offered financial incentives to projects. An example: Clearing house for Applied Futures in Land North-Rhine-Westfalia has played key role in spreading news of Best Practices across Germany. They offered .5 DM per citizen to each municipality for Agenda 21 activities in 1996. Between July 1996 and Sept. 1997, the number of municipalities voting to engage in Agenda 21 rose from 3 to 29.

1998 – Rotterdam Convention - PIC (Prior Informed Consent) countries participating in the procedure are informed about risks and dangers of certain hazardous chemicals and also about certain hazardous pesticides. Based on this information, these countries can then decide if they agree to an import -if necessary only under certain conditions- or not. If a transaction takes place certain requirements regarding labelling and the provision of information on possible risks for health and environment have to be met. The Tenth Session of the Intergovernmental Negotiating Committee (INC) for an international legally binding instrument for the application of the PIC procedure for certain hazardous chemicals and pesticides in international trade was held in Geneva, from 17- 21 November 2003.

1998 –The Rotterdam convention embarrassment, pressure from the environmental movement, the Laender's financial incentives and the Wuppertal Institute for Climate, Energy and Environment production of a 350 page document Sustainable Germany resulted in creation of How-to book for all mayors on Agenda 21 initiatives in Europe. Agenda 21 Conference in Bonn in 1998 increased pressure from environmental groups on Lander for projects. Germany also provided funding to the International Council for Local Environmental Initiatives ICLEI. http://www.iclei-europe.org/

1999 – German Greens elected in coalition government

2000 - The European Community's Water Framework Directive 2000/60/EC came into force http://www.umweltdaten.de/down-d/2455-e.pdf lists the priority substances including pesticides with the goal of phase-out within 20 years after specific measures have been adopted at a community level against pollution of water

2003 – European commission list of active ingredients in counties in Europe as of 1993 http://www.bba.de/english/bbaeng.htm Germany has 242, Denmark 140, UK 326.

2003 – European Commission presents new regulatory framework for chemicals called REACH (Registration, Evaluation and Authorisation of Chemicals) http://www.epha.org/r/30 It requires that manufacture or import of more than one tonne of a chemical substance per year be registered in a central database. Germany's "Rat von Sachverständigen für Umweltfragen" (Council of Environmental Experts - an independent body advising the German government) published a 36-page evaluation of the chemical industry's impact assessments, calling them "not plausible" and "of little use" for the debate. The experts' report states that the studies done for the chemicals industry overestimate the new system's economic impact and underestimate the advantages for environment and health. At the same time, the German study indicates that the REACH system will also be beneficial to the competitive position and innovation of the chemicals industry itself.

EU ordinances are legally binding and involve industry partnerships for environmental management with audits to verify results. Germany has adopted them as law at the federal level that is implemented at state levels (16 states in Germany). Germany is a leader in providing incentives to business through voluntary efforts (limited success), compensation agreements which allow pollution in return for other environmental work; and tradable permits.

5. Partnerships

- **What partners were involved and what role did each play, and how did this contribute to success?**

Agenda 21 projects with municipal and citizen/NGO partnerships. Baden-Wuerttemberg had State Institute for Environmental Protection. "Agenda 21" communities have risen from 10 in April 1998 to over 330 in July 2002. Holds a competition for innovative ideas every year. http://www.fest-heidelberg.de/Downloads/4-Local%20Agenda%2021%20p6-7.pdf
NOTE: Have not been able to locate specific projects to pesticide reduction as there is no central location that lists projects

- **What can be learned about the ideal role of the various players, including different levels of government?**

Environmental policy in Germany is based on the prevention principle, the polluter-pays principle and the principle of cooperation:

The **prevention principle** new projects are to be developed in such a way as to avoid pollution or damage as much as possible.

The **polluter-pays principle** inflicts upon the producer the costs for failing to take protective measures and for inadequate stewardship of the environment. The objective is to include environmental costs into economic decision making, thus resulting in ecologically fair prices.

The **principle of cooperation** is based on a the readiness of voluntary cooperation and uses economic incentives (e.g., tax incentives, fiscal charges, compensation, etc.) to bring about innovations. Source: http://www.germanembassyottawa.org/ebs/environ.php

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6. Impacts

-

Unknown

- **What was the reduction in the use of pesticides on residential properties, as indicated by the residents? (absolute reduction and percentage reduction)? How was it measured or estimated? Where possible, provide at least two independent measurements / estimates (e.g. one source could be sales data from local lawn care companies, and the could be data from municipal surveys on pesticide use)**

Abgesetzte Wirkstoffmenge für den Garten
in Tonnen (IVA-Mitgliedsfirmen)

	1997	1999	2001	2002
Herbizide inkl. Düngemittel mit Herbiziden	124	131	140	132
Eisen-II-Sulfat	108	106	161	161
Insektizide	81	62	84	86
Fungizide	39	41	35	46
Molluskizide (Schneckenmittel)	38	70	78	65
Wühlmausmittel	5	5	4	3
Gesamt	395	415	502	493

Source: http://www.iva.de/branche_verband/br_pf_haus_garten.asp?r=3741C600-9F1D-4661-AC7B-34862ED0D572

- An example: “in Stuttgart before the law, the US-Army in Stuttgart used several hundred kilograms of herbicides per year, now we are lucky without a gram of herbicide for more than 6 years, and it works for almost the same costs.”

- Other opinions are that regulations didn’t work very well as they weren’t enforced. They are on a complaint basis by neighbours who report other neighbours using herbicides illegally. Violations are enforced by heavy fines. Enforcement is more difficult because some products are still available in stores.

- **What has been the proportion and amount of exercise gained by residents through more active gardening? How**

was it measured or estimated?

- Unknown
- **Describe other relevant findings from public opinion or follow-up surveys:**
- **Other indications of success:**
- **How did retailers change the way they promoted and displayed synthetic and alternative pest control products and services? Has the relative amount of shelf space devoted to synthetic and low impact pesticides changes?**
- **Main obstacles and how they were overcome:**
- Strong economic problems due to economic recession in 1980's, German unification and shifting burden of unemployment from federal to local municipalities would have prevented enforcement of regulations.
- **Community contacts for evaluation data: (if different than already noted above):**
- **Web links for evaluation data:**

"According to the observations of the authors and the publications and evaluations of practitioners of plant conservation serious regulatory shortcomings were only noted in the areas of protection against washing away and water erosion, and regarding the application in gardens and allotments."

Source: http://www.umweltbundesamt.de/uba-info-presse-e/presse-informationen-e/p99223-e.htm

"The compliance with the legal requirements relating to the application of pesticides is poor. There are, however, hardly any control inspections due to the lack of staff prevailing at the executive authorities. For this reason the use of specific application techniques should be made legally compulsory. This is the conclusion drawn by the authors of a study which has been carried out on behalf of the Federal Environmental Agency by the Gesellschaft für Boden- und Gewässerschutz e.V. (Society for Soil and Water Conservation, registered society) in Wettenberg. Technological solutions are also becoming more important because an increase in the numbers of staff of the executive authorities is unlikely in the future in view of the tight budget in public finances."

Source: The German Groundwater Monitoring Network http://www.iwac-riza.org/IWAC/IWACSite.nsf/82742712005ECB2DC1256B1200438749/$File/Wolter%20ea%202001.pdf

- **Reference details of key evaluation reports:**

7. Costs

- **Total cost from sections 4 and 5:**
- Unknown

8. Cost effectiveness

- Unknown

9. Other Lessons Learned

10. Community contact:

Bodwin Gebhard
6th ASG, DPW
Environmental Management Division
e-mail: gebhardb@6asg.army.mil
0114971172286133

Ministry of transport and the Environment
Baden-Wuerttemberg

Spoke to Stephanie Huether in Public relations Stephanie.huether@uvm.bwl.de 011497111262754

Martin Hommes
German BBA
011495312994404
m.homes@bba.de
Plant protection products in sector of amateur gardening

European Environmental Bureau (Federation of Environmental Citizens Organizations)
http://www.eeb.org/activities/chemicals/main.htm

Stefan Scheuerat EEB office
Tel.: +32 2 289 13 04
Fax: +32 2 289 10 99
E-mail: stefan.scheuer@eeb.org

German Federal Environment Ministry:
GO→ www.bmu.de
Umweltbundesamt/Federal Environment Agency:
GO→ www.umweltbundesamt.de
Baden-Württemberg:
GO→ www.uvm.baden-wuerttemberg.de/uvm
GO→ www.lfu.baden-wuerttemberg.de
Berlin:
GO→ www.stadtentwicklung.berlin.de
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PAN – Germany
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Dr. Brink Jans
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011 49 2288100250

Dr. Martin Boehringer
Advisor for Plant Protection for Ministry for Nutrition and Rural Area – Baden-Wuerttemberg
Martin.boehringer@mlr.bwl.de

Thomas Neck
Chemical Industry Assoc.
011 49 69 25560
neck.iva@vci.de
www.iva.de

Eric Liegeois

Eric.liegeois@cec.eu.int
European Union www.europa.eu.int/comm/environment/pps/home.htm

Stephanie Williamson
PAN Europe Co-ordinator
T: 44 (0) 20 7274 8895 e-mail: Stephanie-paneurope@pan-uk.org
www.pan-europe.net/

Approved list of products for home and garden use

Registr. No.	Name of Pesticide (example)	time of expire	Name of active ingredient
Fungicide			
004560-00	Ortiva	31/12/09	Azoxystrobin (0902)
023225-00	Baycor-Spritzpulver	31/12/04	Bitertanol (0613)
024419-00	SWITCH	31/12/12	Cyprodinil (0907); Fludioxonil (0887)
033957-00	Pflanzen Paral Pilz-Frei N	31/12/11	Fenarimol (0495)
024533-00	Teldor	31/12/11	Fenhexamid (0956)
033099-00	Aliette WG	31/12/03	Fosetyl (0522)
004456-00	Cueva Wein-Pilzfrei	31/12/12	Kupferoktanoat (0940)
040723-00	Funguran	30/12/04	Kupferoxychlorid (0147)
023684-00	BioBlatt-Mehltauspray	31/12/06	Lecithin (0612)
033220-00	Bio Myctan Spinnmilbenfrei	31/12/05	Lecithin (0612); Piperonylbutoxid (0163); Pyrethrine (0098)
003924-00	Dithane NeoTec	30/04/04	Mancozeb (0010)
022851-00	TRIMANGOL	31/12/04	Maneb (0073)
023986-00	Polyram WG	31/12/03	Metiram (0081)
023917-00	Antracol WG	31/12/04	Propineb (0117)
030006-00	Netzschwefel Stulln	31/12/03	Schwefel (0184)
023963-00	Euparen M WG	31/12/07	Tolylfluanid (0371)
Insecticide			
004148-00	MADEX 3	31/12/06	Apfelwickler-Granulosevirus (0759)
004436-00	NeemAzal-T/S	31/12/08	Azadirachtin (Neem) (0943)
004426-00	XenTari	31/12/08	Bacillus thuringiensis (0253)
004135-00	Insekten-Streumittel NEXION NEU	31/12/04	Chlorpyrifos (0363)
004600-00	Appeal	31/12/09	Codlemone (0910); Cyfluthrin (0678)
023658-00	POLY-PLANT Pflanzenschutzstäbchen	31/12/07	Dimethoat (0042)
004653-00	Provado 5 WG	31/12/12	Imidacloprid (0866)
004415-00	Lizetan Plus Zierpflanzenspray	31/12/08	Imidacloprid (0866); Methiocarb (0079)
004210-00	Neudosan AF Neu Blattlausfrei	31/12/05	Kali-Seife (0653)
033220-00	Bio Myctan Spinnmilbenfrei	31/12/05	Lecithin (0612); Piperonylbutoxid (0163); Pyrethrine (0098)
005044-00	Runner	02/04/06	Methoxyfenozide (1020)
022551-00	ELEFANT-SOMMERÖL	31/12/08	Mineralöle (0143)
042667-00	Metasystox R spezial	31/12/03	Oxydemeton-methyl (0032)

004047-00	Pflanzenspray Hortex Neu	30/04/04	Piperonylbutoxid (0163); Pyrethrine (0098)
004780-00	Spruzit Schädlingsfrei	31/12/12	Pyrethrine (0098); Rapsöl (0757)
033743-00	MICULA	31/12/12	Rapsöl (0757)

Herbizide

033659-00	GREENMASTER Fine Turf Extra	31/12/06	Dicamba (0218); 2,4-D (0027)
041740-00	Casoron G	31/12/04	Dichlobenil (0225)
004231-00	LOREDO	31/12/07	Diflufenican (0698); Mecoprop-P (0772)
023686-00	SUBSTRAL Rasendünger mit MOOSVERNICHTER	31/12/07	Eisen-III-sulfat (0633); Eisen-II-sulfat (0229)
023243-00	Gabi-Anti-Moos-S	31/12/04	Eisen-II-sulfat (0229)
032239-00	Gabi-Antimoos, flüssig	31/12/11	Eisen-II-sulfat (0229)
004345-00	TEM 123	31/12/10	Essigsäure (0928)
004883-00	Roundup Easy	31/12/13	Glyphosat (0405)
004179-00	Touchdown TD	31/12/04	Glyphosat-trimesium (0901)
004117-00	Brennessel-Granulat Spiess-Urania	31/12/06	MCPA (0074); Mecoprop-P (0772)

Appendix 2: Profiles of other innovative community activities

Listed below are a number of communities that were researched for this project, but were not chosen as a Best Practice. A description of the program or by-law's goals and results is given, as well as an explanation of why it was not chosen as a Best Practice.

Sault-Ste. Marie, Ontario – Clean North
Population: 75, 000
Sault-Ste. Marie Naturally Green, has been taken over by the organization Clean North to provide public education on reducing the residential use of pesticides. Clean North works with the horticultural society to help reduce pesticides, gives Green Home Visits to educate homeowners about lawn/garden chemical alternatives, hands out flyers and leaflets and maintains a website to help educate residents about alternatives to pesticides. In 2000, 57% of 419 homes had converted to become pesticide free as part of the Naturally Green campaign, however this campaign has stopped since they have gone out of business. A committee has been organized to discuss looking at a municipal by-law, however it has been relatively inactive.
Contact: Kathy Brosemer; Phone 1-705-945-1573 Internet: http://www.cleannorth.org/

Lanark and Leeds, Ontario – Lanark and Leeds Green Community
Population: 87,270
Lanark and Leeds Green Community has distributed 1000 Action kits, held three workshops and given out more information on how to support by-laws. They have followed up on 20% of 100 Green Garden visits and 800 Pesticide Free Naturally Kits, as part of the Green Communities Association. The Green Communities Association pesticide reduction campaign was already represented as a Best Practice through the City of Hamilton.

Contact: Susan Brandum, Phone: 613-283-3482, E-mail: llgreen@superaje.com, Internet: www.gca.ca/LANARK.htm

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***Elora, Ontario* - Elora Centre for Environmental Excellence**
Population: 4546
The Elora Centre for Environmental Excellence's pesticide reduction campaign has been a part of Green Communities Association Campaign to reduce pesticides. They have done over 100 garden visits, 4 workshops, sustainable garden visits and have given out 400 Pesticide Free Naturally Action Kits. The Green Communities Association pesticide reduction campaign was already represented as a Best Practice through the City of Hamilton.

Contact: Joan Bruder, Phone: (519) 846-0841, E-mail: info@ecee.on.ca
Internet: www.ecee.on.ca/top_frame.html

***Chelsea, Quebec*- Municipality of Chelsea**
Population: 6, 500
Chelsea, Quebec has implemented an education campaign and by-law to restrict the residential use of pesticides. Free seminars, workshops on alternatives, interactive phone line, and pamphlets were given out to each household to educate residents on alternatives. Information on health risks has been provided by mail-outs, telephone information, workshops and information kiosks at local events and the town hall. One summer after the by-law came into force, statistics showed that 12 permits had been

issued for pesticide use. In addition, 21 inspections had been carried out, and after receiving proper information from the municipal employees, some twenty residents had decided to use ecological methods to solve their problem. Chelsea has a small population, and is one of the communities covered as a Best Practice in Coalition for Alternatives to Pesticides (CAP), Quebec. Contact: Rachael Deslauriers, Phone: 819-827-1124, E-mail: environnement@municipalite.chelsea.qc.ca, Internet: http://pestinfo.ca/documents/chelsea.pdf

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Nanaimo, British Columbia – *City of Nanaimo*
A Pesticide Awareness Program with workshops, forums and discussions with the Mayor of Port Moody, who is implementing a pesticide by-law was implemented by the City of Nanaimo. The City has also been involved in supporting the Pesticide Free Naturally Action Kits, distributed by the Green Communities Association. The City is currently surveying across Canada for updates on pesticide reduction. A baseline survey was done in Spring 2003 and will compare to survey from Fall 2003 to measure pesticide reduction; program too early to consider a best practice.
Contact: Rob Lawrence, Phone: 250-755-4483, Internet: http://www.greencommunities.bc.ca/nanaimo/

Halton, Ontario – *Weedgee Kids (Country Side Alliance and Healthy Lawns for Healthy People)*
Population: 39, 000
The Caledon Country Side Alliance and *Healthy Lawns for Healthy People* have helped co-ordinate a student volunteer program called Weedgee Kids to help residents to stop using pesticides for cosmetic purposes. On request, a student comes to pull your weeds out and educate residents on how to use organic means of lawn care. The program began in 2002 with a more formal (i.e. funding, statistical) approach in 2003, so it is still too early to consider as a best practice. A restrictive pesticide by-law was also passed in Caledon effective 2003.
Contact: Karen Hutchinson, Phone: 1-905-584-6221, E-mail: karen.hutchinson@upwind.com, Internet: www.woodrising.com/cca/weedgee/info.pdf

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Sweden - *National Chemicals Inspectorate*
Swedish chemical control is founded on three basic principles: Prevention of harm, manufacturer or importer responsibility for risk prevention and the substitution principle (added to Swedish Chemical Act as a clarifying amendment in 1990) with a priority for water protection.

Pesticides are divided into three classes related to the availability and educational requirements. Class 1 and 2 products can only be used by licensed professionals who must keep records of pesticides used. Class 3 products are restricted to amateur uses. Weed control products sold for use in home gardens has dropped from 143 metric tonnes in 1986 to 76 in 2002
http://www.kemi.se/Kemi/Kategorier/Bekampningsmedel/vaxtbek/1048065199.html
http://www.kemi.se/Kemi/Kategorier/Bekampningsmedel/vaxtbek/1048065199.html
but sold amounts of substances for moss control in lawns has increased from 39 to 267 metric tonnes during the same period. Acetic acid sales are up also. Home use (amateur) pesticides are 4% of the total market. All products must be ready to use and only containers for spot-treatment are allowed.

The only products available for homeowners use are glyphosate, acetic acid, pelargonic acid, MCPA (granular formulation for weed control on lawns), Dichlorprop, Dicamba (granular formulation for weed control on lawns), fatty acids (moss control on lawns), iron sulphate (moss control on lawns). Insecticides are pyrethrin-based. Effective January 2003, some Class 3 glyphosate products have been re-assigned to Class 2L.
http://www.kemi.se/default_eng.cfm?page=kemstat_eng/statindex_eng.htm
http://www.kemi.se/default_eng.cfm?page=kemstat_eng/statindex_eng.htm
has statistics since 1986 of pesticide use by sector.

Contact: Peter Bergkvist, Principal Scientific Adviser, National Chemicals Inspectorate, P.O. Box 2, SE-172 13 Sundbyberg, E-mail: mailto:peter.bergkvist@kemi.se peter.bergkvist@kemi.se Phone: +468 519 41 209, Fax: +468 735 7698, Internet: www.kemi.se

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USA – *Requirements for use or sale of endophytic species*
Endophytic grasses contain a fungus that makes the plants more drought tolerant, competitive with weeds and more resistant to injury. The result is a grass that survives well in a range of conditions without the use of pesticides or with a greatly reduced use of them. Dr. J. David Miller, a Professor at Carleton University, informed us that some states in the USA now recommend the use of endophytic species of grasses. For example:
http://www.gov.on.ca/OMAFRA/english/crops/facts/endophyt.htm
http://www.ccenassau.org/hort/fact_sheets/c219_sod_webworms_jan03.pdf
http://muextension.missouri.edu/explore/agguides/pests/ipm1020.htm

The plants are readily available in Ontario from retailers and there is a fact sheet from the Ontario Ministry Of Agriculture And Rural Affairs
http://www.gov.on.ca/omafra/english/crops/facts/endophyt.htm

Contact: Dr. J. David Miller, Phone: 520-2600 x 1053,
E-mail: davidmiller@pigeon.carleton.ca

Appendix 3: Other *data* collected on by-law and public education programs

(Spreadsheet available upon request)

Appendix 4: Initial Set of Questions for all Potential Communities

1. Overview:

    a. Location

    b. Population

    c. Date by-law or restriction was enacted

    d. Date outreach began

    e. Link to by-law or public education program

    f. Contact details

2. Approaches Used to Reduce Pesticide Usage:

    a. What does the by-law / restriction require?

    b. What types of outreach approaches were used to help educate citizens about alternatives and the need for compliance with the by-law / restriction?

3. Efforts to Measure Success of Approach:

    a. Has there been a decrease in the cosmetic use of pesticides on residential properties?

    b. How has that been measured?

    c. Have there been any public opinion surveys or follow-up surveys to measure the success of your approach?

    d. Are they any other indications that your approach is successful?

Appendix 5: Research Template for In-Depth Investigation

Community Name: (can also include regions)

1. Program Overview

- Date Outreach began:
- Date by-law / restriction came into effect
- Population:
- Location

2. Overview of Bylaw / Restriction

- Date enacted:
- What it requires:
- How was compliance encouraged: (penalties, warning tickets etc)
- Were by-laws phased-in? Over how many years? How did this contribute to success?
- Were there any permit applications and inquiries? How were they processed, and how did this contribute to a reduction?
- How many complaints were received about infractions each year? How did the number and/or nature of these change over time? How were they handled and how did this contribute to a reduction?
- How many tickets / warnings / enforcement visits / charges were involved each year? How did the number and/or nature of these change over time
- Budget for development of the by-law; budget per capita
- Budget for enforcement of the by-law, including any extra permit costs (other than what is included in section 5); budget per capita
- Web link:
- Reference details of key reports describing it:

3. Overview of Education / Outreach Program

- Date it started:
- Summary of Approaches used:

- Overview of communication / outreach plan and timing (who was involved, how it is was implemented, reach, frequency):
- Outreach budget:
- Outreach budget per capita:
- Web link:
- Reference details of key reports describing it:

4. Political and Community Readiness

- Why did this happen in this community? What were some of the key factors that led to having enough popular and/or political support to move forward with a by-law / restriction/ outreach program?

5. Partnerships

- What partners were involved and what role did each play, and how did this contribute to success?
- What can be learned about the ideal role of the various players, including different levels of government?

6. Impacts

- What was the reduction in the purchase of pesticides for residential properties (absolute reduction and percentage reduction)? How was it measured or estimated? Where possible, provide at least two independent measurements / estimates (e.g. one source could be sales data from main pesticide wholesalers or lawn care companies in the area, and the other could be sales data from large diversified / neutral retailers in the area. Ask for estimates of the percentage of synthetic pesticide products purchased by residents who shopped outside their municipality because the pesticides were banned in their municipality.
- What was the reduction in the use of pesticides on residential properties, as indicated by the residents? (absolute reduction and percentage reduction)? How was it measured or estimated? Where possible, provide at least two independent measurements / estimates (e.g. one source could be sales data from local lawn care companies, and the could be data from municipal surveys on pesticide use)
- You most likely won't be able to get actual sales or usage figures when you call local stores. If you can't - ask the salespeople to estimate increases or decreases in both sales and use. Offer them some choices to select from …(for example, "compared to last year, how much less of that do you now sell …5%, 10%, 15%?) Ask what has happened over several years. Normally one needs expert estimates from 6-8 independent sources in order to see a clear picture.
- What has been the proportion and amount of exercise gained by residents through more active gardening? How was it measured or estimated?
- Describe other relevant findings from public opinion or follow-up surveys:
- Other indications of success:

- How did retailers change the way they promoted and displayed synthetic and alternative pest control products and services? Has the relative amount of shelf space devoted to synthetic and low impact pesticides changes?
- Main obstacles and how they were overcome:
- Community contacts for evaluation data: (if different than already noted above):
- Web links for evaluation data:
- Reference details of key evaluation reports:

7. Costs

- Total cost from sections 4 and 5:
- Total cost per capita:

8. Cost effectiveness

- What was the reduction in the purchase and/or use of pesticides per dollar spent?
- What can be learned about keeping expenses to a minimum?

9. Other Lessons Learned

10. Community contact:

Appendix 6: Measurement Methods

Method	Strengths	Weaknesses / Biases
User surveys (intention to use and reporting of past use) From surveys already carried out by the participating communities	• Readily available • Reflects what is happening with use of traditional pesticides AND alternatives	• Self reported; participants know what the desirable answer is; likely biased
Registration Data (e.g. permits to use pesticides) From government records	• Readily available	• Does not capture information on those who apply pesticides illegally, without permits
Sales Data – **synthetic pesticide consumer products** From Government of Quebec,, participating retailers in the USA, expert interviews with regional suppliers (e.g. garden centres, Loblaws?)	• Shows what is happening with sales of the pesticides of concern	• When a pesticide is about to be banned, as in Quebec and Washington State, stores may discount prices and consumers may stockpile – both of which can contribute to a temporary rise in sales • May need to account for increases due to increased gardening levels
Sales Data – **services for the application of synthetic pesticides** (wholesalers and retailers like lawn care companies)	• Shows what is happening with sales *and use* of the pesticides of concern	• Those who provide only traditional solutions may not want to talk with us • May need to account for increases due to increased gardening levels
Sales Data – **safer alternatives products and lawn care services** (wholesalers and retailers e.g. Organic Landscape Alliance, Environmental Factors, ASHEQ)	• Shows what is happening with the sale (and, in the case of services, use) of alternatives	• Does not necessarily indicate what is happening with the pesticides of concern • May need to account for increases due to increased gardening levels

Expert Opinion – (e.g. garden centre staff; city Health department staff, gardening media experts – particularly those involved with call-in shows)	• May shed light on what is happening with the use of traditional pesticides and their alternatives, as well as any increased levels of gardening / physical activity • Relatively unbiased, because they carry many different products from many different suppliers • Because there are few major retailers in the communities being proposed for the case studies, we may only need to contact 3-5 stores per community.	• Subjective