

ENVIRONMENTAL & TURF SERVICES, INC.
11141 Georgia Avenue, Suite 208
Wheaton, MD 20904 USA

July 2, 2008

Mayor Gordon Smith and Councilors
The City of Rossland
1899 Columbia Avenue
Rossland, BC
VOG 1Y0

Re: June 25 letter by physicians regarding
the proposed Red Mountain golf course

Dear Mayor Smith and Councilors:

A letter was sent to you recently by Dr. Cheryl Hume and 29 of her physician colleagues from the Rossland-Trail area. The letter argues against approval of the proposed Red Mountain golf course based on health effects concerns.

We have the highest regard for family physicians and those in related fields. They must be experts in healing and wellness, and they must keep informed about the latest in medical science.

We have no reason to believe that their motivations were anything other than concern for the community. Further, a superficial check would reveal no reason for them not to trust the scientific validity and objectivity of the Ontario College of Family Physicians (OCFP), which seems to provide most of the basis for the June 25 letter. (A quick check of the other cited source's website, www.davidsuzuki.org, indicates clearly that this second organization makes no claims about objectivity and lack of bias.) Unfortunately, the cosigners of this letter were misled by the OCFP. Seriously misled.

The key document in question is "Pesticide Literature Review", published by the OCFP April 23, 2004 (www.ocfp.on.ca). This document is significantly flawed.

We suspect that most of the physicians who signed this letter were not aware of these flaws. These flaws are not just minor technical issues. These are problems that cast fundamental doubt on many or most of the key conclusions.

Following is a technical response to some of the key points of the June physicians' letter that were apparently obtained from the OCFP 2004 report. Several of our comments are based on the strong critique issued by the United Kingdom's Advisory Committee on Pesticides (ACP) (<http://www.pesticides.gov.UK/acp.asp?id=1389> and <http://www.pesticides.gov.UK/acp.asp?id=1387>). The ACP is an independent senior scientist federal advisory group with approximately 18 members. It

consists mostly of university professors with expertise in medicine, genetic and molecular toxicology, and epidemiology.*

The OCFP Report Mistakenly Treats All Pesticides as Equals

Some pesticides have raised legitimate environmental concerns. But there have been more than 1,000 pesticide active ingredients used in North America in the last 50 years, and each has unique toxicological, mobility, persistence, and structural characteristics. It is not valid to lump all pesticides together in a supposedly scientific assessment. This lacks validity similar to treating proteins as if they are fats, or estrogen as if it is Vioxx. Pyrethroids, most of which are non-toxic to mammals but potentially harmful to aquatic invertebrates at certain concentrations, have completely different characteristics from pheromones used to suppress insect populations, which have completely different characteristics from coumadin-type compounds used to control rats, which have completely different characteristics from

Although opponents and proponents alike acted in a respectful manner during the daytime workshop on June 24, there were a couple of people (not physicians) in the post-5:00 PM sessions who behaved in an aggressively rude manner. However, it would be wrong to state that all attendees at those sessions behaved in an aggressively rude manner, just as it would be wrong to generalize from results of a few pesticides -- **most of which have been banned decades in the past and/or would never be used on a BC golf course** -- to modern day pesticides applied to turf.

Pesticide-Related Terminal Disease?

The Rossland-Trail physicians' letter states, ". . . we emphasize prevention rather than treatment of pesticide related terminal disease." The following discussion points raise questions about how one could know, or even suspect, that pesticide-related terminal disease could occur from modern pesticide use on the proposed Red Mountain golf course.†

ACP Criticisms of the OCFP Report

The following statements are taken from the British references cited above.

"3. Other conclusions differ markedly from those of the Panel [*the ACP*]. For example, the report concludes (page 16) that "large well-designed cohort studies consistently show statistically significant positive associations" between solid tumours and pesticide exposure, that "these findings strongly support a reduction of pesticide use", and (page 63) "it can be clearly stated that at least some pesticides are carcinogens".

* Another peer review of the OCFP report is also available at <http://www.croplife.ca/english/pdf/ocfp/CantoxReportreviewofOCFPNov122004.pdf>. The OCFP's response to the ACP comments can be found at <http://www.pesticides.gov.uk/acp.asp?id=1462>.

† Note also that I made the following statements several times and/or presented in a graphic at the June 24 workshop sessions: 1) we would only recommend the use of 'organic'/'biorational' insecticides; 2) the most intensively managed part of the golf course will be the greens, which will constitute approximately 0.55% of the overall project area; 3) only approximately 4.4-7.2% of the overall project area will consist of golf course turf treated with fungicides and/or herbicides.

4. The main reason for the difference in conclusions appears to be the failure of the Ontario group to take proper account of all or even most of the available scientific evidence.”

“These discrepancies arise from serious flaws in the methods employed in the review. Most important are:

- its failure to take account of all or even most of the relevant epidemiological evidence, and the biases inherent in the way in which material was picked out for inclusion;
- inadequate attention to exposure characteristics and relevant toxicology when interpreting reported associations; and
- its superficial synthesis of evidence, which inadequately explores the impact of the strengths and weaknesses of individual studies. “

Non-Hodgkins Lymphoma and 2,4-D: No Cause-and-Effect

The physicians’ letter and the OCFP report link 2,4-D with Non-Hodgkins lymphoma (NHL). There was a valid paper published in 1990 (Zahm et al.) that suggested such a linkage based on NHL incidence in farmers who were exposed to 2,4-D and, presumably, other agricultural chemicals. 2,4-D is a widely used broadleaf herbicide.

This pesticide is one of the most thoroughly tested and evaluated pesticides on the planet, and many relevant studies have been conducted since 1990. There is no longer considered to be a linkage between 2,4-D and NHL. In recent years, Health Canada’s Pest Management Regulatory Agency (PMRA), the U.S. Environmental Protection Agency, and their outside, independent, scientific advisory bodies have concluded that “2,4-D is unlikely to affect your health when used according to the revised label directions”, and “Dietary risks from food and water are not of concern” (PMRA quotes, from “Re-evaluation Decision RVD2008-11, (2,4-Dichlorophenoxy) Acetic Acid [2,4-D], 16 May, 2008).

Misleading Indictments

Both the physicians’ letter and the OCFP report cite studies by Kross et al. (1996), Band et al. (2000), and Munger et al. (1997). There is also a key statement in the sixth paragraph of the physicians’ letter regarding body burdens of pesticides. Brief comments on each topic follow in order.

Kross et al. (1996) did find elevated cancer mortality for a set of golf course superintendents who died between 1970 and 1992. (Note that any chemically-induced carcinogenesis would likely have resulted from exposure to chemicals in use decades before the onset of symptoms, i.e., the 1940s to 1960s.) However, no data on exposure to pesticides, fuel, solvents, cigarette smoke, etc. were gathered, and a key conclusion of the study was the following:

In conclusion, mortality from smoking-related diseases among golf course superintendents was significantly elevated. Preventive strategies, such as smoking cessation programs and non-smoking areas at golf courses, may have a significant impact on reducing overall mortality among golf course superintendents.

The letter cites a BC study by Band et al. (2000), and states that it “. . . showed that female agricultural workers had higher incidences of breast cancer than control subjects.” This can be a

complicated subject, but three quick observations are informative: 1) excess cancer risks were also noted for women in the medical, teaching, clerical, and laundry fields; 2) **no attempt to characterize actual pesticide exposure was done**; and 3) the generalizations were based on only 11 cases for fruit and vegetable farms, not the 1,018 cases implied by the OCFP. (The latter number was the total number of cancer cases in the whole study.)

The Munger et al. (1997) study focused on triazine herbicides. This class of pesticides is generally not applied to cool season turfgrasses. No triazines were reported in a 2003 survey of pesticide use of BC golf courses (ENKON Environmental Limited, 2005, Table 20), and we would not recommend these products for the proposed golf course at Red Mountain.

Finally, the letter authors state, "Pesticides are routinely detected in human tissue, are known to cross the placenta and are secreted in breast milk." Yes, this is absolutely true. But **it applies to persistent chlorinated hydrocarbon insecticides that were mostly banned ca. 30 years ago** (e.g., Carrizo et al., 2006). In fact, I helped ban one of them, heptachlor, in the late 1970s when I worked for the U.S. EPA.

Golf and the Environment

The golf course industry began to focus on environmentally sound principles and practices of course design and management in the late 1980s to early 1990s, with success. We could write several books on the subject. Following are a few relevant examples.

- "Environmental Guidelines for Canadian Golf Clubs" (12 pages; 1993) seems to be the first document of its kind. It is a statement of principles that was published by the Royal Canadian Golf Association. It was revised and republished in 2007 as "Golf & The Environment" (see the RCGA website below).
- "Environmental Principles for Golf Courses in the United States" (15 pages; 1996) was the first publication of the Golf & The Environment initiative, which is being coordinated by the Center for Resource Management in Salt Lake City, Utah. It was supported, in part, by the US Environmental Protection Agency, and it was developed by a highly diverse group that included Friends of the Earth, the Royal Canadian Golf Association, the US Golf Association, the National Coalition Against the Misuse of Pesticides (now called Beyond Pesticides), and 13 other organizations.
- We have created a database of water quality monitoring results from golf courses in the US and Canada (Baris et al., 2007 [I presented this at the breakout sessions June 24]; Cohen et al., 1999). The results indicate that surface water and ground water contamination by pesticides is a rare event.
- The following websites describe many examples of golf courses coexisting well with the environment:

Canadian Golf Superintendents Association (CGSA):

http://www.golfsupers.com/Content/NavigationMenu/IssuesandInformation/Environment/Audubon_Certified_Canadian_Courses/default.htm;

<http://www.golfsupers.com/Content/NavigationMenu/IssuesandInformation/Environment/EnvironmentalIssues1/default.htm>;

Royal Canadian Golf Association (RCGA):

<http://www.rcga.org/innerpage.aspx?x=UOPYR%2bUghO7h3qzbOc1CEHsfHn8b0SmsCRnPO5Lm5i%2fCxFUihSfCY%2fcN25W4yOUVJ>;

Coalition for Responsible Golf (in Canada):

<http://www.responsiblegolf.org/pageStandard.php?lang=en>;

Audubon International:

<http://www.auduboninternational.org/programs/acss/CACS%20list.pdf>;

<http://www.auduboninternational.org/programs/acss/The%20Golf%20Club%20as%20a%20Bird%20Sanctuary.pdf>;

Case studies from the Golf Course Superintendents Association of America:

http://www.eifg.org/portal/portal/portal.aspx?menu_type=itemtype&identifier=5

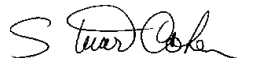
Conclusions and Recommendations

The physicians' letter was appropriate based on the information taken from the two cited organizations. But that information was significantly flawed, presented in a biased/misleading manner, and/or out of date.

Of course, the Rossland-Trail physicians' apparent motivation is entirely appropriate: prevention is better than cure, and a duty to serve the community well. Therefore we recommend that the cosigners of the letter establish a committee to review our water quality risk assessment when it becomes available near the end of the summer.

This letter has been long, perhaps overly long. (Although we could offer additional technical comments.) But a responsible group of technically-trained individuals raised important concerns that must be addressed in a scientific manner.

Sincerely,



Stuart Z. Cohen, Ph.D., CGWP
President

Environmental & Turf Services, Inc.

P.S. I have attached a nice summary of regulatory and science issues related to lawn and garden pesticides, written by a professor at the University of Guelph.

Attachment

References

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QUESTIONS AND ANSWERS ABOUT LANDSCAPE AND GARDEN PESTICIDES

Keith Solomon, Centre for Toxicology and Department of Environmental Biology,
University of Guelph, Guelph, ON, N1G 2W1, Canada

March 27, 2007

The emotional argument concerning so-called “cosmetic use” of pesticides in landscapes and gardens has been a controversial topic for many years. Extremist views on both sides have dominated the discussion and the public, which has the right to expect factual information, has instead been besieged by headlines and reports which have little basis in scientific fact. These Questions and Answers address some of these issues.

Q. What are pesticides?

A. By law, pesticides are substances or things that control or mitigate pests. The definition of a pesticide is very broad; more than 700 pesticides are registered for control of pests such as insects, diseases, weeds, and rodents. These substances have a wide spectrum of chemical and biological properties and are used in agriculture and forestry, in urban and marine environments, and for protection of human health. Even swimming pool chemicals are classed as pesticides as are the naturally occurring pesticides such as pyrethrins, rotenone, and biological control agents favored by organic growers. What they have in common is that they cause effects in target organisms (pests). Not all pesticides are the same, some are very toxic to non-target organisms, some essentially innocuous.

Q. Are pesticides tested before being put on the market?

A. Yes, to be registered, extensive testing is required. These data, current, as well as historical, are reviewed and re-reviewed on a regular basis in Canada (Pest Management Regulatory Agency), USA (Environmental Protection Agency), European Union, and other jurisdictions (FAO, WHO). This process is similar to that for drugs and food additives, except that pesticide testing also addresses environmental fate and effects. Some may take exception to the fact that the testing is paid for by industry but this is appropriate as they benefit from the sales of the substances. Testing must be done under Good Laboratory Practice guidelines and must be subjected to Quality Assurance before it is acceptable.

Q. What tests are done on pesticides?

A. Pesticides are tested for effects in mammals and in the environment. In mammals, tests include those that address acute effects such as oral and inhalation toxicity, dermal toxicity, skin irritation, sensitization, and eye irritation. Longer-term studies include subchronic oral or inhalation toxicity and lifetime oral toxicity (cancer and other effects). Additional tests include metabolism and excretion, mutagenicity and genotoxicity, teratology (birth defects), and reproduction (multigenerational effects). Environmental testing includes acute aquatic toxicity tests in fish, algae, plants, and invertebrates, terrestrial tests in birds, and beneficial organisms (bees). Chronic tests

include life cycle and developmental tests in fish and invertebrates. Special tests include environmental fate and dissipation and field tests (microcosms).

Q. How are the test data used to assess risks to pesticides?

A. Regulators use the precautionary approach to set guidelines for exposure of humans and the environment to pesticides. The results of laboratory tests, usually the doses or exposures that cause no effects in the test organism are used to set a maximum short-term or long-term exposure for humans or the environment. The exposure from the laboratory tests is divided by several uncertainty (safety) factors when extrapolating to humans and the environment. These factors are multiplied together and range from 100 to 1000-X. In other words, the acceptable exposure for a human will be 100-1000-X less than the dose that causes no effect in the most sensitive test animal.

Q. Is the pesticide registration system in Canada stringent?

A. Yes, the pesticide registration process in Canada has always been stringent. Registration of pesticides in Canada is the responsibility of the Federal Government. The Pest Management Regulatory Agency has a staff of more than 300 highly trained specialists who intensively evaluate pesticides submitted for safety and effectiveness before allowing registration. The PMRA was established in 1995 to centralize a task that had previously been done by several Departmental Units and Interdepartmental Committees. Some believe that Canada had very lax pesticide regulatory requirements prior to the establishment of the PMRA. That is completely incorrect. Canada has had one of the strongest regulatory systems in the world for many years. The formation of the PMRA was primarily an administrative change — Canadian requirements for registration were strict prior to the formation of the PMRA and they have remained strict since that time.

Q. Are pesticides controlled at the provincial level?

A. Yes, in most provinces, pesticides have long been subject to further review and control under the local regulation. In Ontario, for example, this is done by Ministry Scientists and the Ontario Pesticides Advisory Committee, a group of highly qualified environmental scientists, medical doctors, pest management specialists, and private individuals who report to the Minister of the Environment for Ontario. This committee is responsible for classifying pesticides for use in Ontario. The Ministry of Agriculture, Ministry of the Environment, and other ministries publish recommendations for pest control and monitor use. Thus, before a pesticide is registered and recommended for use in Canada, it is subject to intensive evaluation by highly trained specialists at both levels of government. The Canadian system is as stringent, if not more so than that of the EPA in the United States, the MAFF in Great Britain, or the European Council in the EU.

Q. Is municipal regulation of pesticides needed?

A. Municipal regulation of pesticides is not needed. Considering the intensive review carried out at federal and provincial levels, a third level of government need not be involved. Federal and provincial agencies are staffed with highly trained specialists. Beyond that, what can municipalities, only a few of which have pest management

specialists on staff, contribute? A case in point is the ban on tobacco smoking in public places by municipalities. Cities do not seek to ban and restrict smoking because of the diligent work of local committees – they do it because research and risk assessment by Health Canada (and other regulatory agencies) have shown that smoking causes lung cancer and a host of other diseases. These same agencies review and assess pesticides and approve their use in Canada, the USA, and many other countries. Why do we choose to believe these agencies when it comes to smoking but not when it comes to pesticides?

Q. Will municipal regulation of pesticide use work?

A. Draconian plans to virtually eliminate pesticide use simply will not work. While some pests can be suppressed by non-chemical methods of control, many others cannot. Homeowners will quickly realize that some pesticide use is necessary to suppress lawn and garden pests and they will ignore the by-law. The obvious unfairness of the system will further promote non-compliance. This will not be difficult to do since pesticides registered in Canada will still be legally available.

Q. Are pest problems in gardens serious?

A. Pests can be a real problem, even in home gardens. Most people today have little idea of the large number of pest species that exist. For example, in Ontario, over 100 species of insects have been identified as pests of vegetable crops. There are dozens of pest species which attack other urban horticultural crops. Not all are present at epidemic levels all the time; however, management techniques must be in place to cope with an outbreak when it occurs. Pests can cause damage very quickly, they will not conveniently wait around for a city inspector to give a permit, neither do they punch a time clock and not damage gardens over weekends. Restricting the use and application of pesticides in domestic situations may result in costly damage to ornamental and other garden plants.

Q. What quantities and kinds of pesticides are used for home gardens and landscape pest control?

A. Compared to the total use of pesticides in Canada, only a small percentage (2-5%) is used for landscape and home gardens. Most of these (80%) are herbicides, such as 2,4-D and related phenoxy, glyphosate, and some insecticides. Fungicides are also important in golf-course maintenance.

Q. Are landscape and home-use pesticides the same as those used in agriculture?

A. Landscape and home-use pesticides do not include most of the pesticides used in agriculture. Generally, home use products have lesser toxicity to mammals and other non-target organisms, small persistence, and little mobility in the environment. They are only sold in small quantities and often in sealed direct-application packages. Most agricultural pesticides cannot be purchased or applied by a homeowner, they may only be applied by people who have had training and are licensed or certified to apply these products.

Q. Do landscape pesticides build-up in the environment and in humans?

A. No, if they did, they would not be allowed for use. For example, the herbicide 2,4-D has a half life in soils of about 2 weeks and no persistence beyond season of use. It has low mobility, is not bioconcentrated into organisms, is not bioaccumulated over time, and not biomagnified up the food-chain. Another common urban and landscape pesticide is glyphosate, which is biologically non-persistent, immobile, not bioconcentrated, not bioaccumulated, and not biomagnified.

Q. Have exposures to pesticides such as 2,4-D been measured in home-owners?

A. Yes, extensive studies have been done on this topic. The conclusions of these were that: Homeowner and professional applicator exposure well below regulatory guidelines, protective clothing reduced exposure under all conditions of use, applicator exposure was caused by spills and contact with spray, no or very small exposures occurred in bystanders to home or professional applicators, and reentry exposures were small but a 24-48 hours re-entry period will further reduce them to essentially negligible amounts.

Q. Do pesticides cause cancer in adults and children?

A. This is a topic of much discussion, much of which was precipitated by a report of the Ontario College of Family Physicians (OCFP), a small team mainly composed of family physicians and graduate students, but with epidemiological expertise. They reviewed the literature on the human health effects of pesticides published in the period 1992-2003 to upgrade their brochures and educational programs on the impact of pesticides on public health. On the basis of reviews of studies conducted with agricultural, not homeowner pesticides, they concluded that: Many of the studies showed statistically significant positive associations between pesticide exposure and solid tumors, non-Hodgkin's lymphoma (NHL), leukemia, as well as consistent effects linking pesticide exposure to disorders of the nervous system. This report has not yet been published in the scientific literature but was reviewed by two disinterested groups in the UK.

The UK Advisory Committee on Pesticides (ACP) remarked on the failure of the study to take account of all or even most of the relevant epidemiological evidence, and the biases inherent in the way in which material was picked out for inclusion. There was inadequate attention to exposure characteristics and relevant toxicology when interpreting reported associations. The study was superficial in the synthesis of evidence, which inadequately explored the impact of the strengths and weaknesses of individual studies. Overall, the ACP concluded that the report does not raise any new concerns about pesticide safety that were not already being addressed, and does not indicate any need for additional regulatory action in the UK.

Another independent review of the OCFP study was conducted by Dr Michael Burr, University of Wales College of Medicine at the request of the UK Royal Commission on Environmental Pollution. He concluded that the authors had insufficiently addressed the issue of publication bias, and the review seemed to over-interpret the findings, given the limitations of the relevant studies. He also stated that strong conclusions were being drawn from evidence that was of rather weak quality and that concluded that it was difficult to assess the likelihood and strength of causal effects in the various associations reported.

Given these independent comments, the conclusions of the OCFP report should be treated with great caution.

Q. Are cancer rates in Canada increasing?

A. Incidence of cancer must be considered in relation to increasing population and increasing age of the population. The latter is particularly important as it is known that cancer incidence increases with age and that the Canadian population is now longer-live than ever before. Despite claims such as those by the Canadian Institute for Child Health that childhood cancer has increased 25%, this is not supported by data in National Cancer Institute of Canada's databases, the official source of this information. Increases other than those associated with better and earlier diagnosis have not been noted by the U.S. National Cancer Institute either.

Based on information from the National Cancer Institute of Canada, age-adjusted cancer incidence rates in Canada have remained constant or decreased for all major form of cancer. Breast and prostate cancer rates have increased, most probably as a result of better diagnosis and/or changes in lifestyle. Lung cancer has decreased in men and increased in women, a direct result of changing patterns of tobacco smoking.

The Canadian Cancer Society has stated that "is very concerned about the use of potentially carcinogenic (cancer-causing) substances for the purpose of enhancing the appearance of, for example, private gardens and lawns as well as parks, recreational facilities and golf courses (ornamental use)". They go on further to state that "Since ornamental use of pesticides has no countervailing health benefit and has the potential to cause harm, we call for a ban on the use of pesticides on lawns and gardens". The reason for their recommendation is primarily that they do not perceive a value to the aesthetic use of pesticides. In other publications, they have supported the use of pesticides in the production of inexpensive and healthy food. These views do not consider the countervailing risks of alternatives and are based on value judgments.

Q. Why can we not use epidemiology studies in humans to link pesticides to cancer and other diseases?

A. Epidemiology studies, while conducted on the organisms of interest (humans), are, for the most part, seriously hampered by lack of good historical or current data on exposures as these are not measured analytically in the subjects. For this reason, surrogates for pesticide exposure are used, such as use of pesticides, area sprayed, years of application, money spent on pesticides, or amount of pesticide applied. These have been shown to be unreliable indicators of exposures and call all epidemiology studies with pesticides into question.

Q. Why not apply the precautionary principle to regulating pesticides?

A. The precautionary approach is already used in the regulation of pesticides so the application of the precautionary principle is redundant. Besides, the precautionary principle is used for issues of greater significance. The precautionary principle was first used by Swedish EPA in 1969 and was ratified in the Maastricht treaty of the European Union in 1992 and first applied in Principle 15 of the 1992 Rio Declaration on Environment and Development. It is applied where there are threats of serious or irreversible damage; lack of full scientific certainty shall not be used as a reason for

postponing cost-effective measures to prevent environmental degradation. It was applied to ozone-depleting gases such as the CFCs, methyl bromide, etc., which have been banned or restricted under the Montreal Protocol of 1987.

Landscape and garden use of pesticides does not qualify for consideration under the precautionary principle. They are **not serious**, they are selective to pests, have low toxicity to non-target organisms, and are well understood. Their use is **not widespread**, less than 2% of all active pesticide ingredients used in Canada are for landscape uses and the land area to which they are applied is small (less than 1% of total land area for landscape uses and less than 10% for one or more applications in all uses). The effects of these pesticides are **not irreversible**. There is rapid recovery through reinvasion and weed seeds and most need to be used at least once per season.

Q. Are there alternatives to the use of pesticides only?

A. Yes, there are better ways to manage pests than to only use pesticides. Modern pest management programs are built around the concept of Integrated Pest Management (IPM) using a combination of non-chemical and chemical pest control methods. While chemicals are an important component of IPM programs, it is sensible to use them only when necessary. For example, in 1987 Ontario initiated a 15 year program aimed at reducing agricultural pesticide use by 50%, while still achieving effective pest control. This program, involving research and extension specialists, grower organizations, and the chemical industry has, been a remarkable success.

Urban landscape pest managers also can use IPM and there is no question that chemical use could be reduced substantially with significant savings in cost for chemicals. Cities could organize a positive, progressive effort to develop an urban pest management program modeled after the provincial agricultural pesticide reduction project. This can be achieved through a cooperative effort involving the city, academia, the pest management industry, and end users. This would involve education and community effort but would be less costly than the alternative.

Q. Should cities ban the use of pesticides in urban and landscape environments?

A. No, not for toxicological or health reasons. However, if they wish to do this for political reasons, that is their legal right; however, they should at the very least be honest enough to admit it. It is also important to consider the countervailing risks of not controlling pests and the costs and the risks of the alternatives. Pesticides should always be used properly and, by all means, use Integrated Pest Management to reduce use but keep all the tools of pest management, including pesticides, in the box.