

Analysis and Commentary on the June 12, 2012 Presentation to Kamloops Council by the Canadian Cancer Society's Jerilyn Maki

By John J. Holland, Kelowna, BC, June 19, 2012

Jerilyn Maki, the BC-Yukon Canadian Cancer Society's Health Promotion Coordinator for the Southern Interior Region, made a presentation to Kamloops Council on June 12. While Ms Maki is no doubt sincere in her beliefs, what should have been a science-based presentation became one that is both short on facts and replete with misinformation – and is thus much worse than no presentation at all.

In the words of Ms Maki, “the work that we do is based on scientific research and what we are finding is that there is a growing body of evidence that link exposure to pesticides to certain kinds of cancer” (“a growing body of evidence” is a much-loved term that the CCS and others opposed to pesticides have become very fond of using when they come up short on the actual science). After previously detailing many scientific sources from which she claims the CCS receives its information, Ms Maki maintained that her organization's stance on ‘cosmetic’ pesticides “aren't our opinions.”

Although Ms Maki claims that the CCS position isn't “our opinion,” it also certainly isn't that of Health Canada, the US Environmental Protection Agency, the American Cancer Society, the British Cancer Society, and many others. The International Agency for Research on Cancer (IARC), for example, is on Ms Maki's list. But a recent report from the IARC states that:

Very few currently available pesticides are established experimental carcinogens, and none is an established human carcinogen. Studies in humans have failed to provide convincing evidence of an increased risk, even in heavily exposed groups.

International Agency for Research on Cancer, 2007, *Attributable Causes of Cancer in France in the Year 2000*,
IARC Working Group Report, Volume 3

The CCS position is, on the other hand, congruent with those of all the anti-pesticide and non-science based organizations in Canada. Ms Maki speaks of, and one of her Power Point slides highlights, the following: “Over 100 studies have linked pesticide exposure to both adult and childhood cancers.” The findings of this limited number of studies can be challenged by reference to the following, provided by Health Canada's Pest Management Regulatory Agency (PMRA):

We estimated that just proprietary studies that are submitted to us, which we keep on file, amounted to about 23 million pages of scientific studies that are used to support the decisions that we make on pesticides, which is fairly significant. [*Emphasis added*]

Jason Flint (Director, Policy and Regulatory Affairs Division, Communications and Regulatory Affairs Directorate), January 17, 2012, before the BC Special Committee on Cosmetic Pesticides

Furthermore, what Ms Maki failed to explain is that her 100 studies are all epidemiological observational studies with very weak links between pesticides and disease. She further stated that “Once all of these studies have been evaluated, we have what we call the weight of the evidence,” with the obvious implication being that the “weight” is against the use of pesticides, and therefore “we are saying we have enough evidence now that we want people to start taking precautions.” This statement could be true if the selected (‘cherry-picked’) weak epidemiological studies were the only evidence submitted. As the PMRA explains:

Epidemiology studies identify associations rather than causation, and are examined *in conjunction with* well conducted toxicity studies that are specifically designed to elicit toxic effects over a series of dose levels. These

animal toxicity data are assessed to determine if there is any biological basis for the potential associations noted in epidemiology studies. The examination of animal toxicity data from internationally accepted guideline studies using doses well above those to which humans are typically exposed, combined with exposure data obtained from well-designed studies, is currently a useful methodology available for assessing risks to human health. Health Canada's PMRA undertakes this kind of assessment to supplement information about associations that may be established by epidemiology studies. This approach is consistent with that of other regulatory authorities that base human health risk assessments on animal toxicity data.

"Answers to Additional Questions for Health Canada (PMRA)," submitted by the BC Special Committee on Cosmetic Pesticides, April 30, 2012 [*Emphasis added*]

Dr. Bruce Ames, an American biochemist and molecular biologist, is one of the most celebrated scientists in the world today and is also among those who are the most cited. Besides numerous other awards, he is the recipient of the U.S. National Medal of Science. Dr. Ames, for many years, was a senior staff member at the University of California, Berkeley and is the developer of the Ames Test, a process widely used for evaluating the mutagenicity (which may then indicate the carcinogenicity) of a chemical. Now retired from Berkeley, he continues to work at the California Children's Hospital Oakland Research Institute, searching for the causes of cancer and other diseases of aging. As Dr. Ames and Dr. Lois Swirsky Gold (also a Berkeley researcher) have written:

The idea that there is an epidemic of human cancer caused by synthetic industrial chemicals is not supported by either toxicology or epidemiology. Though there are some epidemiologic studies that find an association between cancer and low levels of industrial pollutants, the studies do not correct for diet, which is a potentially large confounding factor; moreover, the levels of pollutants are low and rarely seem plausible as a causal factor when compared to the background of natural chemicals that are rodent carcinogens.

Bruce N. Ames and Lois Swirsky Gold, *The Causes and Prevention of Cancer: The Role of Environment*, 1998

If a modern 'cosmetic' pesticide actually caused cancer, it is fairly certain that this would be ascertained through the extensive testing procedures required before it is registered for use in Canada. As stated by a PMRA representative:

For any known human carcinogen, whatever the chemical might be — I'm not speaking directly to pesticides — *the animal models that have been used have shown to be positive for anything that's known to be carcinogenic to humans as well*. So they are well understood predictors of potential human toxicity, and those are the models that are well worked out and used for toxicity testing.

Dr. Connie Moase (Director, Health Effects Division II, Health Evaluation Directorate), in the Second PMRA Presentation to the BC Special Committee on Cosmetic Pesticides, January 17, 2012. [*Emphasis added*]

If one wishes to look at correlations, consider this fact:

Generally, both [cancer] incidence and mortality rates are higher in Atlantic Canada and Quebec.

"Canadian Cancer Statistics 2009," Canadian Cancer Society, Statistics Canada, and the Public Health Agency of Canada

Compare the above statement to the fact that pesticide use "is lowest in the Atlantic provinces and Quebec" ("Households and the Environment Survey," Statistics Canada, February 10, 2009). Are we then to suppose that we can conclude that pesticide use lowers the incidence of cancer? But, as an internationally respected scientist once told me, "The main problem with epidemiology is that people don't know the problems with epidemiology."

Many of those belonging to anti-pesticide organizations maintain that there now exists – in the case of pesticides – a similar situation to that which occurred with the once-disputed association between tobacco and

lung cancer. In the words of Ms Maki, “And, you know it’s like if you look at tobacco, it’s taken many, many years and we now know we have definitive, you know, indication that people get cancer from using tobacco.” But there exists a major difference: a heavy smoker has a thirty times (3,000%) greater risk of developing lung cancer than does a non-smoker. Illustrating a strong correlation between lung cancer and smoking is one of the greatest accomplishments of epidemiology, and the association, once revealed, was so pronounced that it was difficult to dispute the connection. Sir Richard Doll and Sir Austin Bradford Hill were the British authors behind the momentous 1950 study (“Smoking and Carcinoma of the Lung,” *British Medical Journal*, 1950). Richard Doll has been termed ‘the greatest epidemiologist of the 20th Century,’ and, nine years ago, delivered a lecture in Guelph, Ontario. The following is taken from an article published at the time:

Sir Richard gave a public lecture in Guelph. Afterward, a city councillor asked whether he’d support a ban on pesticides in the city. “No,” he said, to her immense surprise. “There’s no scientific basis for it.”

“Pesticide Panic Zaps the Facts,” Margaret Wentz, *Globe and Mail*, May 24, 2003

Then there is also the opinion of Dr. Stan Young, a respected statistician (epidemiology is based on statistics) at the National Institute of Statistical Sciences in Research, Triangle Park, North Carolina, who:

...argues that epidemiological studies are so often wrong that they are coming close to being worthless. “We spend a lot of money and we could make claims just as valid as a random number generator,” he says.

“Numbers can lie – Vitamins, hormones, coffee – today they’re good, tomorrow they’re bad. Why all the flip-flops?” by Andreas von Bubnoff, *Los Angeles Times*, September 17, 2007

The anti-pesticide groups often highlight children as their main concern, and it is certainly not grounds for dispute that special precautions should always be taken when it comes to children. According to Ms Maki, “What we are particularly concerned about are children because of their developing immune systems, and more permeable skin, as well as their behaviours, playing in the grass, putting things in their mouth, and they are on the ground.” But it is also important that we look even more closely at this issue.

Dr. Gail Charnley is a scientist internationally recognized for her expertise in environmental health risk assessment and in both risk management science and policy. According to Dr. Charnley:

Young children are more sensitive than adults to the toxic effects of some chemicals, such as lead and organic mercury. At the same time, children are less sensitive than adults to other chemicals. For example, unlike the situation in adults, liver toxicity and death from acetaminophen poisoning is extremely rare in children. Reduced chemical toxicity in children is generally due to their more rapid rates of metabolism and elimination, resulting in lower body burdens of drugs or chemicals than adults for the same exposures.

“Protecting the Children: Risk Assessment, Risk Management, and Children’s Environmental Health,”
June, 2001, Dr. Gail Charnley, Reason Public Policy Institute

The PMRA has stated the following (in this case, referring specifically to 2,4-D, but is their general policy about pesticide registration for home and garden situations):

The unique physiology, behaviours and play habits, such as [children’s] lower body weights and hand-to-mouth contact while playing, were also taken into consideration in the exposure assessment.

Extra safety factors were applied to the no effect level identified in animal toxicity studies to protect population groups, such as children and pregnant women, that may be more susceptible to the potential effects of pesticides.

“Re-evaluation Decision RVD2008-11,” 2008, Health Canada’s PMRA, available online

Dr. Chris F. Wilkinson, a respected American toxicologist, wrote the following:

There is little, if any, evidence that under current regulatory procedures, children are any more 'at risk' than adults to the potential adverse effects of pesticides.

"Pesticide Outlook," The Royal Society of Chemistry, 2000

There are also many other scientists who are of the same opinion. Dr. Miles Weinberger, a pediatrician at the University of Iowa Children's Hospital and both a Professor of Pediatrics and the Director of the Iowa State Cystic Fibrosis Newborn Screening Program, has stated the following:

While both naturally occurring and man-made substances can cause cancer in high concentrations and under certain exposure conditions, there is no evidence that such substances are contributing to childhood cancer in the amounts generally found in the environment.

Dr. M. Weinberger, "Facts and Myths about Childhood Ailments Frequently Linked to Environmental Exposures," in *Are Children More Vulnerable to Environmental Chemicals?*, 2003

The BC Special Committee on Cosmetic Pesticides submitted written questions to the PMRA, one of which was as follows: "We have been told that homeowners, and particularly their children, are exposing themselves to carcinogens, neurotoxins and endocrine disruptors when using cosmetic pesticides. Is this true?" The PMRA's straight-forward response was "No" ("Answers to Questions from the BC Special Committee on Cosmetic Pesticides," PMRA, December 23, 2011). According to Dr. Elizabeth Whelan, president of the prestigious American Council on Science and Health, "Public perceptions of child susceptibility to 'chemicals' is largely influenced by psychological factors rather than dispassionate scientific assessments of risk" (E.M. Whelan, "Big Bucks—Yours—Fighting Bogus Health Risks," *The Huffington Post*, Nov.07, 2007).

Since, in Canada, the most widely used herbicide for controlling lawn weeds is 2,4-D, it has become one of the products most attacked by anti-pesticide organizations. Because of this, much of the following discussion will concentrate on that product. The anti-pesticide organizations label 2,4-D as a carcinogen – even though it is not listed as such by any regulatory agency in the world, or even the IARC. It is interesting that one of the information sources listed by Ms Maki is the US Environmental Protection Agency (EPA). Although the EPA has consistently re-registered 2,4-D over the years – after the assessment of any new studies which had been produced since a prior evaluation – the National Resources Defense Council (NRDC) recently petitioned the EPA to revoke the registrations. In its statement of findings, in April of this year, the EPA stated that:

A part of this cancer assessment was the review of data bearing on 2,4-D's potential mutagenicity. EPA has consistently found that these data do not support classification of 2,4-D as a carcinogen.

"Order Denying NRDC's Petition to Revoke Tolerances," April 07, 2012, Environmental Protection Agency

The same report also explained that "The half-life of 2,4-D in humans is less than 12 hours; 2,4-D does not metabolize or transform; 2,4-D is excreted unchanged; and it *does not accumulate*" [Emphasis added].

Another anti-pesticide organization, Beyond Pesticides, submitted studies that they claimed proved the use of 2,4-D was potentially harmful to pets. But the EPA's conclusion was as follows:

[The EPA] does not believe that there is evidence of critical animal health issues which warrant changes to its current conclusions.

"EPA Response to Issues Raised in Public Comments, but Unrelated to Issues in NRDC 2,4-D Petition," Memorandum from Joel Wolf, EPA Chemical Review Manager, April 07, 2012

Dow Canada, through a NAFTA challenge, disputed what they maintained were Quebec's unscientific grounds for banning 2,4-D. In a final settlement, the Government of Quebec modified its stance, releasing the following statement:

... the Government of Quebec agrees that products containing 2,4-D do not pose an unacceptable risk to human health or the environment, provided that the instructions on their label are followed, as concluded by Health Canada's Pest Management Regulatory Agency in its May 16, 2008, decision on the re-evaluation of 2,4-D.

"Settlement agreement with Dow AgroSciences," May, 2011

Dow stated that, although they recognized the right of provinces to prohibit certain pesticides, assertions of harm could not be used as the rationale for the banning of 2,4-D. Perhaps it would be enlightening to examine the basis (or lack thereof) for Quebec's ban of this product. In 2002, after analyzing the scientific data concerning 2,4-D, the following was added to an official Government of Quebec document:

Certain herbicides in Annex 1 (2,4-D, MCPA, Mecoprop) cannot be prohibited on a scientific basis (carcinogenic risk and others). Briefs from companies producing these active ingredients emphasized this. These are active ingredients commonly used on lawns, and the prohibition of them has raised many objections and commendations. However, we must rethink our position on this or base our argument on other factors.

Translation from French, "Fiche pour information, Code de Gestion des Pesticides," September 23, 2002

It was obvious from the beginning that there was awareness on the part of Quebec that there were no scientific reasons for a prohibition. Dow achieved what it had been attempting to achieve: the recognition that there were no scientific reasons for eliminating 2,4-D as an available product. If the government of Quebec believed it could be successful in a court case, it would certainly not have agreed on such a settlement.

It is also interesting to note that 2,4-D is actually not a poison: it kills weeds by mimicking a normal plant growth regulator, through a biochemical mechanism non-existent in humans. Dr. Frank Dost, an American toxicologist with extensive pesticide expertise, has stated, as have other expert scientists, that "There is so much information that it is safe to say that if 2,4-D is carcinogenic, it can only be so by a mechanism that has never been identified, because it does not act through any known mechanism that might lead to carcinogenesis" (Personal communication to me, November 09, 2009).

In her presentation, Ms Maki claimed that "Health Canada isn't the full answer," and added that:

...what the PMRA looks at is the acceptable risk only when the products are used according to the label direction and according to the PMRA presentation to the Special Committee, the definition of acceptable risk is reasonable certainty of no harm. So this isn't talking about it being safe when used as applied according to the directions.

In other words, if the label directions aren't followed exactly, there must therefore follow a great risk to the public. The PMRA, however, explains that:

The difference between the human exposure level and the no effect level from animal studies is referred to as the margin of exposure/safety margin. As a minimum, this value must be a hundred times below the level at which no effects were seen in animal test data. However, this value is often several hundred times to greater than a thousand times less than the no effect level.

"Answers to Questions from the BC Special Committee on Cosmetic Pesticides," submitted to the PMRA on December 23, 2011

The PMRA's definition of "acceptable risk" is as follows:

Risks are acceptable if, on the basis of extensive scientific data, it has been determined that there is reasonable certainty that no harm to human health, future generations or the environment will result when the pesticide is

used as directed. If the level of human exposure is hundreds or thousands of times less than the no effect level observed in animal testing, the criteria used to define “acceptable risk” has been met.

“Answers to Questions from British Columbia Special Committee on Cosmetic Pesticides,” submitted to the PMRA on December 23, 2011

It should not be difficult to determine from such statements that there exists a substantial safety margin for modern pesticides, even if not totally used according to label recommendations.

Ms Maki even admits that “we are not saying that the PMRA is wrong or that they are bad and that they don’t know what they are doing.” But she then qualifies her admission by adding, “All we’re saying is that these assessments are not based on what we know that British Columbians want” because the CCS’s polling illustrates “that the majority of British Columbians do want to stop this unnecessary exposure to lawn and garden pesticides.” She is therefore asserting that, although the PMRA is correct in their assessments, there is still no reason not to ban pesticides. As she later stated in response to a question by Councillor Singh, “So it doesn’t matter if it’s used according to the manufacturer’s instructions. These chemicals are still being used. So we are saying don’t use them.” This would seem to exhibit a certain lack of scientific reasoning: even after readily admitting that the PMRA is correct, the CCS is still adamantly insisting that pesticides not be used – even if applied properly.

As for the CCS’s polling, it is well known within the advertising community that pollsters and many of those who utilize their services are aware that you can get the result you actually want by the way in which you ask questions or by how you interpret the answers (or both). A recent non-CCS poll in BC, commissioned by the Canadian Consumer Specialty Products Association and conducted by Angus Reid, obtained the following results:

- 88% of those surveyed indicated insect control by homeowners inside their residences should be allowed (65%) or allowed under certain circumstances (23%). This number climbed to 92% support when respondents were asked if professional insect control inside homes should be allowed or allowed under certain circumstances.
- 73% of respondents said homeowners should also be allowed or allowed under certain circumstances to use insect control products on their lawns and gardens. This number increased to 84% if the pesticides were to be applied by trained operators.
- 64% of respondents indicated homeowners should be allowed to use weed control products on their lawns and gardens. 70% of respondents said trained or licensed operators should be allowed to use these products on privately owned lawns and gardens.

“British Columbia residents support continued use of pest control products,” August 17, 2011, Canadian Consumer Specialty Products Association, available online

Ms Maki also dismisses the possibility that weeds in sports fields could create a tripping hazard, contending that “looking at the body of research, there’s no evidence that shows that this is a safety concern.” Perhaps she and the CCS need to delve just a bit more deeply into the subject. The following is just one example: a June 11, 2012 Letter to the Editor of the *Kamloops Daily News* (“Some Facts on Pesticide Use”) explained how dandelions can cause slippage when stepped upon by plastic cleats, and how these weeds do not survive foot traffic and thereby create dangerous holes in the turf. In an online response to this letter, a reader related that “Two years ago my daughter blew out her ACL playing soccer at Mac Park because of the weeds (broad leaf plantain) leaving craters when ripped out by cleats.”

A recent article in the *Vernon Morning Star* newspaper had this to say:

Typically in baseball, loaded bases make for a great scoring opportunity. But not when they're loaded with weeds, instead of runners. That's the case at some local diamonds in Coldstream, specifically Creekside Park, where weeds have overrun the infields.

"It presents some real challenges to our young ball players," said Mark Batchelor, president of the Vernon and District Baseball Association. "There's significant risk for them and they don't want to slide, there's fear of tripping."

The problem has progressively gotten worse since the Greater Vernon Advisory Committee, at the request of Coldstream, stopped using herbicides and pesticides within Coldstream in 2009. While coaches and staff have tried to pitch in by raking the infields themselves, they haven't been able to keep up with the growth. And if the problem persists, Batchelor fears they won't be able to play ball in Coldstream.

.... "If they can find some organic alternative of herbicide they should use it," said Coun. Gyula Kiss. But according to head gardener Isabel Prystawik, even the organic herbicides are caustic, less effective and more expensive.

"Coldstream's Creekside Park field conditions draw concern," Jennifer Smith, *Vernon Morning Star*,
February 17, 2012

And then, there is the following:

Dr. John Sorochan, associate professor of turfgrass science and management at the University of Tennessee, acknowledged provincial legislation in both Ontario and Quebec has made it increasingly difficult for sports turf managers to control pests on their fields, adding if certain measures aren't taken, a dramatic rise in athlete injuries will occur. He said player safety is of foremost concern when managing sports turf, noting 25 per cent of all injuries to athletes are a direct result of a field's condition. In the United States, 3 ½ million children under the age of 14 are hurt annually while playing on sports fields, with one-quarter of those injuries occurring due to poor field conditions.

Little data exists to support the claim that pesticides used on athletic fields are harmful to humans, Sorochan said, singling out 2,4-D as an example. "But there's data that shows children get hurt on athletic fields if you've got poor playing surfaces. I'd be really interested in seeing in Ontario over the next few years if people start tracking injuries of children playing on athletic fields where the surface has now become jeopardized for safety."

From "Adopt best management practices to optimize sports field playing conditions," Mike Jiggins,
Turf & Recreation, December, 2010

The University of Tennessee, for which Dr. Sorochan works, is home to the world's largest sports turf research program, with an emphasis on athlete safety. At present, the University has a number of research studies in progress to investigate athlete to surface interactions in order to reduce lower extremity orthopedic injuries and to prevent concussions. Besides his professorial position, Dr. Sorochan is a consultant for the U.S. National Football League Players Association for the Safety and Welfare of the players as it relates to field performance and safety. The main emphasis of Dr. Sorochan's research is for Kindergarten to Grade 12 and municipal fields.

I was very interested in Dr. Sorochan's research, so I contacted him directly at the University of Tennessee. Part of what he related to me follows:

I have been in the turfgrass industry for more than 25 years and specifically I have been involved with sports turf research for the past 20 years. The greatest motivating factor I have to conduct sports turf research is to improve the playing surface conditions so that the children using them do not suffer any injuries related to the condition of the field. The two most common problems I see with regards to unsafe athletic field surfaces are soil compaction and weed infestations. Most athletic fields do not have the budget to properly aerify to reduce surface compaction, nor do they conduct proper pest management practices for controlling weeds. Common weeds in turfgrass do not provide the tinsel strength of turfgrass nor do they have the wear tolerance of turfgrass. Thus, as athletic fields get worn from use, those with weed infestations become more worn and result in an inconsistent and unsafe playing surface.

As a scientist in agriculture, I would not hesitate to have my children play on an athletic field that was properly maintained with pesticides to control weeds, diseases or insects that may persist. Conversely, I would not allow my children to play on an athletic field that is riddled with weeds and insect grubs to a point where surface disruption jeopardizes the playing conditions thus potentially increasing the likelihood for lower extremity injuries (torn ACL's, ankle sprains, etc).

Personal communication to me from Dr. John Sorochan, University of Tennessee, Knoxville, Tennessee,
June 18, 2012

Dr. Sorochan also informed me that a study has indicated that "10% of lawsuits related to sports injuries claim that the athletic field was inadequately maintained."

Several times in her presentation, Ms Maki talked about unnecessary risk, "which is what we say the cosmetic use of pesticides is." But what is this risk (compared to the actual risk of injury due to poor field maintenance)? Is the CCS or *any* anti-pesticide organization able to provide us with proof that even *one* citizen of Kamloops, or even in all of Canada, ever developed cancer or other disease from the use of a landscape pesticide registered today? Unfortunately, a percentage of the population will be stricken with cancer, no matter whether they do or do not use pesticides. An example sometimes forwarded about a relative or friend having used pesticides and then developing cancer is *not* proof of anything. A cardinal rule of epidemiology is to realize that correlation is *not* causation.

Numerous municipalities and provinces across Canada have banned the use of 'cosmetic' pesticides because of the scientifically uninformed opinions of the Canadian Cancer Society along with the help of numerous anti-pesticide organizations that attempt to apply political pressure. It would seem to me that all too few politicians are aware of the fact that the CCS is only a fund-raising and advocacy association – not a scientific organization – run by a relatively small number of employees with many volunteers. The Society has done a great deal of good work in the past but, in my opinion, has lost its way on this issue by squandering millions of donated monies on anti-pesticide presentations, media advertising, and providing financial support to individuals to travel the country and present unscientific misinformation. Some Canadian medical associations have even been swept up in the artificially created and baseless hysteria, convinced by the 'information' provided by the CCS and others. But, as Dr. Len Ritter (one of the foremost experts and internationally respected toxicologists with scientific expertise in pesticides) has stated:

I don't offer patients advice on when they should have their gall bladder taken out. And I sometimes think it would be better if physicians, largely family physicians, who really have no training in this area at all, it would be better to leave the interpretation of the data to people who are competent to do it.

Dr. Len Ritter (Department of Environmental Biology, University of Guelph; Executive Director, Canadian Network of Toxicology Centres), quoted by Dan Gardner in "You Read It Here First," *The Ottawa Citizen*, May 28, 2008

Edmonton, considering a pesticide ban, requested information from the Government of Alberta. It received the following reply:

Alberta Environment will continue to strongly support using science-based evidence and will not create restrictions or laws that conflict with the federal government, who we rely on for health and safety assessments. Restricting access to products that are designed and approved to be used safely conflicts with our assessment of the public's need for access to all tools available for controlling a variety of pests.

Ernie Hui [Alberta Assistant Deputy Minister, Policy Division], "*Letter to Edmonton on Pesticides/Bans*," August 09, 2011

Ms Maki ended her presentation with a quotation by Dr. Carolyn Gotay, whom she identified as the Canadian Cancer Society's Chair in Cancer Primary Prevention at UBC, and someone else who is recommending a ban. As explained by Ms Maki, Dr. Gotay's role "includes evaluating research evidence regarding factors that increase the risk of cancer – and cosmetic pesticides are among those risks." It is of importance to note that Dr. Gotay's PhD is not in toxicology: it is in social psychology. Dr. Gotay apparently has experience in both cancer control and quality of life research. However, when it comes to intimate knowledge of the science and the possible effects of pesticides – compared with knowledge of the effects of cancer – I would suggest that expert toxicologists and other scientists (such as those at the PMRA and EPA) should be the relied-upon sources of information and opinion.

I have been retired for almost eight years, and have spent a great deal of that time researching the science behind pesticides. I have tried to remain open to both sides of the issue, but the more I have learned, the more I have become aware that the public is being swamped with misinformation and outright mistruths by numerous scientifically illiterate organizations (and not just in the case of pesticides). I do not find fault with the average citizen who believes that pesticides can cause cancer, for the media loves to present stories of doom and gloom – often without conducting the necessary background research. To be considered, of course, is the old mantra in the media: "if it bleeds, it leads." Many in the public have thus been brain-washed by what Paul Driessen, an American political commentator, has termed 'chemophobic indoctrination.'

I believe that those in power – who have the responsibility of protecting the public – have a duty to learn the facts and to pass only legislation or bylaws that are based on legitimate science, not on the disingenuous factoids formulated from junk science. I would expect that reputable organizations such as the Canadian Cancer Society would submit to any level of government only data based on real science and facts – information readily accessible, if one remained open-minded enough and cared to take the required time and effort.

Many of those opposed to the use of pesticides attempt to make it seem as though it is an aberration to want a weed-free lawn. But most homeowners want a yard that is aesthetically pleasing both to themselves and others. Aesthetics are an important part of the human psyche, from the appreciation of great art to the simple pleasure of a well-maintained lawn. Pulling weeds is not something that appeals to those homeowners who have acquired a pleasant yard for enjoyment, not as a make-work project.

Ms Maki closed her presentation with what she considered to be a relevant quotation (that of Dr. Gotay). I will also close with one which I consider to be relevant. Professor William Reville, a biochemist and public awareness of science officer at University College Cork, Ireland, recently stated the following:

The modern world pays much attention to amateur opinion, and the media give just about equal weight to amateur and expert analysis in an increasing number of areas of significant public interest.

Poorly informed amateur opinion is often sharply at odds with expert analysis on a range of environmental and other scientific issues, sometimes winning the public argument and often causing great delay before the expert analysis is adopted.

William Reville, "Beware of Amateur Scientists," *The Irish Times*, July 07, 2011

So the bottom line comes down to this: do you make decisions based on the emotionally charged exhortations of those opposed to the use of pesticides because of an unscientific belief founded on myth and ideology, or do you follow the science as researched, understood, and explained by those with the appropriate and extensive specialized knowledge?