

Box 28182 RPO East Kelowna
Kelowna, B.C.
V1W 4A6

09 May 2009

Ms. Barbara Kaminsky
CEO, Canadian Cancer Society, BC/Yukon
bkaminsky@bc.cancer.ca

Ms. Kaminsky:

I have been following the Canadian Cancer Society Campaign to ban 'cosmetic' pesticides with great interest and even greater dismay. The position the Society is taking has no basis in real science, and its ramifications are likely to cost more in illness than it prevents. I have in the past respected the aims of the Society, but I find that its position on this issue is devoid of any scientific rationale.

In the interest of full disclosure: although I have been retired for 4½ years, I am still the Communications Director of the Integrated Environmental Plant Management Association of Western Canada. I am a volunteer and, although elected, receive no payment for the work I do. I have no ownership, shares, or interest of any type in any business even remotely connected to the pesticide manufacturing, sales, advertising, or service industries. In other words, I have no financial stake in whether or not pesticide bans are enacted. I continue in my official position because of my concern with anti-pesticide activist organizations spreading fear on both a local and national basis through unfounded accusations, using misrepresented, misunderstood, pseudo-scientific, or poorly conducted 'studies.'

I am deeply disappointed to see that the Canadian Cancer Society has aligned itself with these activists, accepting unqualified persons as 'experts' in a discipline for which they have no scientific training. I know from personal experience that many of your hard-working volunteers do not share in the Society's stance concerning pesticides. I have always had a belief in science, and it more than angers me to see science trivialized, misinterpreted, and/or ignored. I am particularly appalled that the Canadian Cancer Society would officially embrace an uneven view of the whole issue of the alleged health effects of 'cosmetic' pesticides, by using these unqualified persons as authoritative voices to underscore your conclusions. In this respect, please consider the definition of the word 'expert' to see whether or not the Society's advisors could possibly be included in that category when it comes to true scientific expertise on pesticides. The Merriam-Webster Dictionary defines an expert as "one with the special skill or knowledge representing mastery of a particular subject." I would appreciate it if you could inform me whether those used to help formulate the Society's anti-pesticide stance can claim such mastery. For example, physicians are rarely experts in either epidemiology or toxicology: if such were the case, they would be epidemiologists or toxicologists.

I suppose some epidemiologists who will support your position might be found, but have you considered discovering what the true consensus of science and scientists actually is, and not that of the individuals the Society may choose to support its own views and biases? As the author Anatole France once said, “If fifty million people say a foolish thing, it is still a foolish thing.”

Perhaps you could listen to the words of noted toxicologist Dr. Chris F. Wilkinson (even though they obviously do not reflect the Society’s interpretation of scientific consensus, and are not in agreement with its “growing body of evidence”):

Unfortunately, despite the absence of supporting data, a large segment of the public continues to believe that most human cancers are directly associated with exposure to synthetic chemicals. There is now general consensus that the personal and cultural habits of individuals are the predominant determinants of human cancer.

(Dr. Chris F. Wilkinson, *Being More Realistic about Chemical Carcinogenesis*, available on the Cornell University Website)

There are many good physicians in Canada, but few would have the expertise and training required to comprehend the science of the functioning and environmental fate of pesticides. As an editorial in the *British Medical Journal* stated (in referring to doctors), “as medical students they were filled full with information on biochemistry, anatomy, physiology, and other sciences, but information does not a scientist make – otherwise, you could become a scientist by watching the Discovery channel” (*Doctors Are Not Scientists*, Editorial, *BMJ*, June 19, 2004).

In the words of Dr. Len Ritter (Executive Director of the Canadian Network of Toxicology Centres, and Professor of Toxicology, Department of Environmental Biology, University of Guelph):

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.

(quoted in “You Read It Here First... but You Shouldn’t Have,” by Dan Gardner, *The Ottawa Citizen*, May 28, 2008)

Dr. Ritter is also responsible for a large national research program to advance toxicological knowledge related to environmental and human health.

Everything I outline in this letter is common knowledge in the world of *real* science. Check with the *real* experts, and it might be surprising what can be learned.

The actions of the Canadian Cancer Society will, more than likely, increase the incidence of cancer: more fear about pesticides leads to less consumption of fruit and vegetables, and “low intake of fruits and

vegetables is an important risk factor for cancer” (Gold, Ames, and Slone, “Misconceptions About the Causes of Cancer,” in *Human and Environmental Risk Assessment, Theory and Practice*, 2002).

Not everyone can afford to buy ‘organic.’ Not everyone can afford enough ‘organic’ foods to offset their decreased purchase of conventional produce. Many people will buy much less produce because of the fear of pesticides that the Society has instilled in them. If the Society’s campaign frightens some people enough about the fear of pesticides (as, no doubt, has already happened), they will stop eating fruit and vegetables altogether when they can no longer afford ‘organic.’

As stated, less consumption of fruit and vegetables leads to increased cancer incidence. This is not rocket science, and your ‘experts’ should be able to understand this. Isn’t the Society the organization that maintains it wants to “make cancer history?” The anti-pesticide stance it has taken is certainly a major step in the wrong direction.

According to Dr. Anthony Trewavas (Professor of Plant Biochemistry at the Institute of Cell and Molecular Biology, University of Edinburgh), “The stomach is the most likely tissue substantially exposed to ingested pesticides but stomach cancer rates have declined by about 60% in the last 50 years” (“A Critical Assessment of Organic Farming-and-Food Assertions,” *Crop Protection* 23, 2004). The doubling in consumption of fruit and vegetables (from conventional – not organic – agriculture) is credited for the reduction. Also, according to Dr. Trewavas, “For virtually all the major cancers, a diet high in fruit and vegetables cuts cancer rates approximately in half.” Even switching to totally ‘organic’ will not lessen exposure to carcinogens, as these products often have a much greater load of natural carcinogens than conventional products due to a plant’s chemical response to attack from insects and disease. Besides, virtually all food contains much more natural carcinogens by weight than any pesticide residue (and the residue would not even be carcinogenic, anyway).

The Society’s recent conference in November 2008 (“Exploring the Connection: A State of the Science Conference on Pesticides and Cancer”), to look at the use of pesticides for non-cosmetic reasons such as agriculture, hypes up the scare factor even higher. If agriculture were forced, through regulation or public pressure, to forgo the use of conventional pesticides, it is a certainty that production would drop while the cost of food would rise significantly in relation to decreased availability and increased demand (as population increases). According to Dr. Norman Borlaug, the Nobel Prize-winning ‘father of the Green Revolution’ (and who is credited with saving more lives than anyone in human history), the total amount of available organic matter that could possibly be used for farming would, at most, be able to feed 4 billion people (quoted by Ronald Bailey in “Norman Borlaug,” *ReasonOnline*, March 26, 2009). Do we let the rest starve? If we switched to organic-only farming, the total amount of farmland would have to greatly increase (*ibid*; Gerald R. Stephenson and Keith R. Solomon, *Pesticides and the Environment*, 2007; Alex A. Avery, “Nature’s Toxic Tools,” Center for Global Food Issues; Indur M. Goklany and Anthony J. Trewavas, “How Technology Can Reduce Our Impact on the Earth,” *Nature*, May 8, 2003).

In other words, if agriculture were forced to forgo the use of conventional pesticides, there would have to be a corresponding reduction in the amount of forest and other natural land surface – assuming that

you could find enough land suitable for farming. Even if we had the required amount of new farmland available, are you comfortable with the prospect of losing so much of nature?

In his assessment of organic farming, Dr. Anthony Trewavas makes the following points:

Many countries in the world practice organic farming now; but not by choice, but from poverty. When the UK was recognisably organic in the past (1900 for example), life expectancy was much lower, yields were lower, a substantial segment of the UK population were malnourished and/or ate a poor diet. Food in real terms was much more expensive...

In order to link together public exposure and cancer there must be correlations between the level of exposure and the magnitude of the response, consistent results from a number of different studies, and biological plausibility based on studies in laboratory animals. If there is such a relationship, it can be hypothesised that it should be most readily apparent between cancer rates and those most exposed to pesticides.

Since farmers, foresters, pesticide users and manufacturers are by occupation more likely to be exposed to higher pesticide hazards than the general public, many published studies have investigated cancer rates in these groups usually through cohort investigations using matched controls from the public particularly in age and social status... Of 12 separate investigations on farmers involving in total about 300,000 people, 11 found that farmers had overall cancer rates very substantially lower than the general public.

(Dr. Anthony Trewavas, "A Critical Assessment of Organic Farming-and-Food Assertions," *Crop Protection* 23, 2004)

The U.S. National Center for Food and Agricultural Policy stated in its 2003 report that, without the use of herbicides, there would be a 21% decrease in crop production (*Value of Herbicides in U.S. Crop Production*, April, 2003, NCFAP).

Cherry-picking epidemiological studies that 'suggest' a link to cancer while ignoring those that do not is not a scientific approach. Unfortunately, this was the way that the *Ontario College of Family Physicians Pesticide Literature Review* was conducted in 2004. The Canadian Cancer Society and its representatives have often used this flawed report in support of its stance (for example, in "The Link between Pesticide Exposure and Cancer: Key Resources," BC/Yukon Canadian Cancer Society – a paper which I will later cover more thoroughly).

The PMRA has stated that "The [OCFP] report did not consider all or even most of the relevant epidemiology evidence, which has led to many questions in interpretation" (*Re-evaluation Note REV2006-11*, August 16, 2006, available online, Health Canada). Many other scientists and government agencies of other countries were very critical of this review. As one example, take the response of the U.K. Government's *Report to the Royal Commission on Environmental Pollution* (by Dr. Michael Burr, 2005, available online. Some of the comments made are as follows:

- The treatment of review papers is unclear and appears inconsistent.
- The review takes a rather superficial approach in bringing together the findings of the individual studies.
- Few of the cited studies adequately address the issue of confounding by co-exposures. Much of the evidence supporting an association between pesticide exposure and cancer is derived from occupational exposures, e.g. in agriculture, where animal viruses, diesel fumes, fertilisers and other factors may play a role.
- The review seems to over-interpret the findings, given the limitations of the relevant studies; strong conclusions are drawn from evidence of rather weak quality.

Something that all the anti-pesticide activist groups seem to forget is that *one of the basic tenets of epidemiology is that correlation does not mean causation*. Once an epidemiological study indicates a possible correlation, the vast amount of toxicological data that is available must be used to indicate biological plausibility. According to Dr. Frank Dost, a respected American toxicologist:

A fundamental principle of epidemiology is that to have meaning, findings must meet standards of plausibility. Do the findings make sense in the light of the mass of experimental information that provides the biological and chemical background of each pesticide? In the simplest sense, is it likely that a chemical that is not carcinogenic or mutagenic in animals at nearly lethal daily doses over a lifetime, does not change in the body and is excreted immediately will be carcinogenic at dose rates a thousand times lower?

(Dr. Frank Dost, *Analysis of Canadian Cancer Society Studies Used as a Basis for their Stance on Cosmetic Pesticides*, April, 2009)

The minute quantities of residue from any government-approved pesticide that an individual homeowner may come into contact with, either on food products or in the environment, is very unlikely to lead to any health problems, and certainly not to cancer.

One correlation that the Canadian Cancer Society and other activist groups do not bother to point out is the following: although Saskatchewan has the highest household pesticide use in Canada (“Households and the Environment Survey,” Statistics Canada, February 10, 2009) it is almost at the bottom for all Provinces in age-standardized incidence rates for cancer (Table A4, “Actual Age-Standardized Incidence Rates for Selected Cancers by Sex and Geographic Region, Most Recent Year, Canada,” in *Canadian Cancer Statistics 2009*, Canadian Cancer Society *et al*, 2009).

B.C. has, by far, the lowest incidence rate in Canada (combined male/female incidence rates). Even more interesting, on page 1 of the cancer statistics document it is stated that “generally, both incidence and mortality rates are higher in Atlantic Canada and Quebec.” Compare this conclusion to the aforementioned Statistics Canada paper which states that pesticide use is “lowest in the Atlantic provinces and Quebec.” So does this inverse correlation mean that the more pesticides used in a Province, the lower we should expect the incidence of cancer to be? Correlations can be used both ways on an issue.

Why does the Society dismiss or refuse to even consider the analyses of pesticides by the *real* experts: Health Canada's Pest Management Regulatory Agency? The PMRA has in its employ more than 350 qualified scientists, including biologists, chemists, toxicologists, epidemiologists, and plant pathologists. I must conclude that the Society considers all these scientists either incompetent or paid industry hacks, since it does not make use of their expertise. Can you please communicate to me your opinion of these actual experts?

The Society ignores the real scientists and relies on advice from those who are unqualified and/or linked to extreme anti-pesticide activist groups. This is not a science-based path the Society has chosen to follow: it is a political one. The politics to the extreme is certainly evidenced by the Society's persistent and public attempts to force the B.C. Government to make the banning of pesticides an election issue (i.e., from your website: "Cancer Is an Election Issue," appearing above the heading "Cosmetic Pesticides and Other Cancer-Causing Substances;" CBC news report of April 5, "Cancer Society Pushes for B.C. Pesticide Ban;" your April 20 press release, "BC Health and Environmental Powerhouses Call for Cosmetic Pesticide Ban as Election Campaign Ramps Up;" and much more).

In recent years, one of the main thrusts of the Society's advertising campaigns – as well as the role of the activists on the B.C./Yukon Board with their Provincial travels to encourage municipal bans, and the sponsoring of such anti-pesticide events as Carole Rubin's B.C. appearances for her book *Get Your Lawn off Drugs* – has been to demonize the role of 'cosmetic' pesticides in order to frighten the citizens of both B.C. and the rest of Canada, through the use of money donated for cancer research. For much of the general public, a pesticide is a pesticide, regardless of whether it is used by homeowners, professional applicators, golf courses, or agriculture. As a case in point, during an April 23rd industry meeting in Richmond, a group of agitated protestors picketed outside the hotel with signs reading "pesticides kill our children," and other related nonsense. The signs did not refer to 'cosmetic' pesticides, just to pesticides. In the email alert sent to the anti-pesticide supporters to attend the rally, it was stated that "First they polluted our food with chemicals and GMO's" (from Alert entitled, "Join us for an Earth Day/Anti-pesticides Rally in Richmond on Thursday, April 23"). The attempts to link pesticides with cancer or other diseases are creating fear of all pesticides, for it is impossible to detach one from the other in the public consciousness. An attack on any category of pesticides – whether they are termed 'cosmetic' or agricultural – leads to suspicion and fear of all pesticides.

Are you aware that modern pesticides are designed for relatively specific purposes, rather than the non-specific effects of 'naturals' that have usually been found by accident, with no consideration of adverse effects at any level? The main factor that distinguishes 'natural' from conventional pesticides is their origin. As a group, they are neither 'safer' nor less toxic than many of the conventional pesticides, and many are certainly not friendlier to the environment (for example, check out copper and sulphur, both of which are considered 'organic').

Many of the 'organics' are also much more caustic than their conventional counterparts. For example, compare glyphosate (*Round-Up*) to commercial acetic acid ('organic'), both recommended for weed control. The latter product also has a lower LD50, which defines it as *more* toxic than *Round-Up*. Because

of their generally much lower efficacy, many 'organics' have to be applied more often and at heavier rates than conventional products (for example, see *Nature's Toxic Tools*, Alex A. Avery, Center for Global Food Issues, available online). As an additional problem, this increases the carbon footprint of those applying the 'organics.' In sum, the 'organics' cost more, work less well, increase pollution (more applications translates to an increase in fuel use), require more labour, and many may well be more – not less – dangerous to both humans and the environment.

For over 25 years, Dr. Lois Swirsky Gold has directed the Carcinogenic Potency Project at the University of California, Berkeley and E.O. Lawrence Berkeley National Laboratory. Her research has been supported by, among others, the U.S. Department of Energy, the U.S. National Institute of Environmental Health Sciences (NIEHS), the U.S. National Toxicology Program, the U.S. National Cancer Institute, and the U.S. Environmental Protection Agency. Dr. Bruce Ames is a member of the U.S. National Academy of Sciences, has been on the board of directors of the U.S. National Cancer Institute, received the U.S. National Medal of Science (among many other awards), is one of the most cited scientists in any field, and is the inventor of the 'Ames Test,' used to test the mutagenicity (which can lead to cancer) of chemicals. These globally recognized and celebrated scientists state that "the low levels of human exposure to residues of industrial chemicals are toxicologically implausible as a significant cause of cancer or reproductive abnormalities, especially when compared to the natural background" (Gold, Ames, and Sloan, "Misconceptions About the Causes of Cancer," in *Human and Environmental Risk Assessment, Theory and Practice*, 2002).

And, according to another respected scientist, Dr. Chris F. Wilkinson, "In view of the fact that our total daily intake of natural carcinogens could exceed our intake of synthetic materials [not just pesticides] by as much as 10,000 fold, it is highly unlikely that, for the general population, the combined carcinogenic effects of all synthetic chemicals can ever be distinguished from the natural background (*Being More Realistic About Chemical Carcinogenesis*, available on the Cornell University Website).

In addition, a study by the *Committee on Comparative Toxicity of Naturally Occurring Carcinogens* (U.S. National Research Council), entitled *Carcinogens and Anticarcinogens in the Human Diet: A Comparison of Naturally Occurring and Synthetic Substances* (National Academies Press, 1996), found that, "Overall, the basic mechanisms involved in the entire process of carcinogenesis – from exposure of the organism to expression of tumours – are qualitatively similar, if not identical, for synthetic and naturally occurring carcinogens." As a conclusion to this study, it was stated that "there is no notable mechanistic difference(s) between synthetic and naturally occurring carcinogens." In other words, the human body cannot differentiate between natural and synthetic carcinogens.

Since, as noted above, there may be a 10,000 times greater intake of natural compared to synthetic carcinogens, it is hardly probable that such amounts are capable of causing cancer. Furthermore, Trish MacQuarrie, Director General of Health Canada's PMRA stated, on March 31 of this year, "Health Canada approves only those pesticides that show no significant increased health risk, including cancer."

As an example of how ridiculous the Society's attempts are to connect pesticides to cancer, one has only to look at the case of peanut butter. Almost all peanut butter contains traces of aflatoxin, a potent carcinogen. According to Ames, Gold, and Sloan ("Misconceptions About the Causes of Cancer," *Human and Environmental Risk Assessment: Theory and Practice*, 2002), "there is a synergistic effect in the human liver between aflatoxin (genotoxic effect) and the hepatitis B virus (cell division effect) in the induction of liver cancer." It has been estimated that consuming peanut butter "that contains an average level of only 2 ppb [parts per billion] of aflatoxin once every 10 days would result in a cancer risk of seven in one million. That risk may seem minute, but it is much larger than the risk experts estimate exists from most pesticides" ("Aflatoxin and Peanut Butter: an Unavoidable Combination," *Environmental Nutrition*, February, 1995). Have you considered running a campaign against the dangers of eating peanut butter? After all, exposure to aflatoxin creates a greater risk for many than does pesticides.

In his book *The Fly in the Ointment* (ECW Press, 2004), Dr. Joe Schwarcz (Chemistry Professor at McGill University and Director of McGill's Office for Chemistry and Society) explains that "salt, vitamin B-6, vitamin A, and caffeine, on a weight-for-weight basis, are more toxic than many pesticides" Should this fact inspire the Society to lobby for a ban on the use of salt? And perhaps the Society's 'experts' should do a study on the adverse effects on humans of swimming in salt water (especially the possible toxic effects to children).

An argument used by the Society – and others – is that not every pesticide registered in Canada has been re-evaluated using the latest available science. This is true, but *all* re-evaluations are expected to be completed by the end of this year, and 75% are finished already (*Personal email*, March 31, 2009, from Trish MacQuarrie, Executive Director, PMRA).

The argument regarding re-evaluations of pesticides does not explain the Society's objections to the use of such products as 2,4-D, the re-evaluation of which was completed some time ago. And just because products are undergoing re-evaluation does not mean that something is wrong with them. But, if the Society still wants to use such an argument as a 'rationale' for their position, then suggest that those products still to be re-evaluated not be used until those reviews are completed. I believe that all of the commonly used 'cosmetic' pesticides are in the re-evaluated category.

The 'experts' to whom the Society claims to listen, seem – to me – to consist, for the most part, of either physicians who have no appreciation, understanding, or training in the actual science behind pesticides, or activists who are similarly unqualified, or worse. "The Link between Pesticide Exposure and Cancer: Key Resources" (BC/Yukon Canadian Cancer Society) is, apparently, the document that forms the formal basis of the Society's stance against pesticides. This 'resource' list does not seem to be available online, but I did manage to secure a copy. I had it analyzed by a prominent (retired) toxicologist who was more than willing to look at it, without charge, due to his own dismay with those who ignore true science.

Dr. Frank Dost states:

I am more than disappointed in the approach taken by this movement, which is to characterize all pesticides as alike, then take “information” about substances long out of use to try to frighten the community into banning “cosmetic” pesticides. Either they are working without the basic knowledge necessary, or they have designed deception. Either possibility is unacceptable. Unless they are willing to discuss the unique characteristics and the scientific background of each individual pesticide this cannot be considered an honest effort to protect the public.

(Dr. Frank Dost, *Analysis of Canadian Cancer Society Studies Used as a Basis for their Stance on Cosmetic Pesticides*, April, 2009)

Some of Dr. Dost’s other comments regarding the Canadian Cancer Society’s ‘Key Resources’ are as follows:

- “The authors [of the ‘Ontario College of Family Physicians Pesticide Literature Review’] are identified as medically or scientifically trained, and such generalization [of pesticides] is inexcusable. It does not differ in concept from describing all medications as having similar effects. Would these physicians claim that imodium is just like ibuprofen? Is an overactive gut the same as an aching back? That could also mean that all medicines are carcinogenic; some are, you know.”
- “I am trying to rationalize the statement that these articles have been peer reviewed, given the deficiencies they exhibit. Certainly they were not reviewed by an epidemiologist, although there is an epidemiologist among the authors.” (referring to Bassil *et al*, “Cancer health effects of pesticides, Systematic review”).
- “IARC [International Agency for Research on Cancer] is quoted as stating that ‘occupational exposure to pesticides is a probable human carcinogen’. Aside from the mis-statement, IARC lists among probable human carcinogens only ‘non-arsenical’ insecticides, presumably chlorinated hydrocarbons, none of which can be considered for cosmetic or other household use. In the list of possible carcinogens are chlordane and chlorothalonil neither of which are of concern here.” (referring to the Society’s view of the IARC’s supposed suggestions of pesticide carcinogenicity).
- “The [U.S.] National Toxicology Program, eleventh report on carcinogens, is listed as classifying a number of active ingredients in pesticides as ‘reasonably anticipated to be a human carcinogen’. The problem here is that while the list does include some pesticides, they are no longer used or are not accessible to homeowners. A possible exception might be certain fumigants that could only be used in drastic circumstances where the home would be evacuated. In referring to this document, as is the practice in this movement, all pesticides are seen as equivalent. Even at that, this report has not been well read.” (referring to “Report on

Carcinogens, Eleventh Edition;” U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program).

- “The report by Clapp *et al* is a useful summary that again is seen much more superficially than the authors intended. As with any review, it is intended to lead the reader to details of the generalizations described. It does not seem that the references to herbicides (the principal concern in this issue) really support the sentiment that CCS intends by this inclusion. The review by Clapp *et al* is presented as a source of information supporting a ban on ‘cosmetic’ pesticides, the bulk of which are herbicides. It is a useful paper but doesn’t support the idea of a ban.”

- “Another source presented as support for this movement is a useful report by Boyd and Genuis (2008). Unfortunately it tells us nothing about the role of cosmetic pesticides, mentioning pesticides only once, referencing Fritschi *et al* (2005). They describe the environmental burden of respiratory and cardiovascular disease, cancer and congenital disease in Canada, using a set of ‘environmentally attributable fractions’ of the total disease burden... They state: ‘Importantly, pesticides is a generic term that includes substances with a variety of different chemical structures and mechanisms of action. Only particular types of pesticides or specific chemicals might be related to non-Hodgkin’s lymphoma.’ What do they find? From the Abstract: ‘Subjects with substantial exposure to organochlorines, organophosphates, and other pesticides (all other pesticides excluding herbicides) and herbicides other than phenoxy herbicides had similarly increased risks’ (in most cases not statistically significant). Fritschi *et al* included discussions of the inconsistency of epidemiological findings, including difficulty in assessing exposure.”

- “The review by Belsen *et al* (2007) examines the literature on acute leukemia in children. They concluded that of all the risk factors considered, including pesticides, only one environmental source, ionizing radiation, has been significantly linked to either type of acute leukemia. It is useful to look at the pesticide studies they considered in this effort... The difficulties of reaching conclusions from epidemiology studies alone are well illustrated; small populations and poor exposure histories have real influence on outcomes. The result here is that some presumably lower exposures have higher risks, and that often calculated risks are indistinguishable among quite different classes of chemicals.”

Also disturbing is the fact that the Canadian Cancer Society does not even quote the Precautionary Principle correctly. The actual Principle addresses “threats of serious or irreversible damage” (1992 Rio Declaration). The Society has incorrectly – and perhaps purposely – paraphrased the precautionary principle as that which necessitates action “when an activity raises threats of harm to human health and the environment” (as one example of many, see “Reducing your Risk for Cancer” on your website). The “serious or irreversible” has been deleted by the Society, no doubt so that it better fits with its own goal of banning all cosmetic pesticides. In this respect, it is significant to note that cosmetic pesticides do not qualify for consideration under the actual definition of the precautionary principle.

As Dr. Keith Solomon (Centre for Toxicology and Department of Environmental Biology, University of Guelph and Director, Canadian Network of Toxicology Centres) explains:

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.... 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 year.

(“Questions and Answers about Landscape and Garden Pesticides,” March 27, 2007)

The Canadian Government recognizes that the precautionary approach/principle can be useful in some circumstances when full scientific certainty is not available. But, “guidance and assurance are required as to the conditions governing the decisions that will be made” and “Canada has a long-standing history of implementing the precautionary approach in science-based programs of health and safety, environmental protection and natural resources conservation” (from “A Canadian Perspective on the Precautionary Approach/Principle,” Environment Canada Website). Obviously, this stance of the Canadian Government leads to the logical conclusion that common sense should prevail over unscientific hysteria.

According to the British Social Issues Research Council, referring to the Precautionary Principle:

This form of pre-scientific thinking presents a serious obstacle to rational discussion. The absence of an effect can never be proved, in the way that I cannot prove that there are no fairies at the bottom of my garden. All I can say are two things: firstly, sustained observation over the past 20 years has revealed no evidence of their presence, and secondly the existence of fairies, in my garden or elsewhere, is very unlikely on *a priori* grounds. This is how science works – precisely in accord with the principles of Karl Popper that hypotheses cannot be proved, only refuted.

The precautionary principle is, however, a very useful one for consumer activists precisely because it prevents scientific debate. The burden of evidence and proof is taken away from those who make unjustified and often whimsical claims and placed on the scientific community which, because it proceeds logically and rationally, is often powerless to respond. This is what makes the principle so dangerous. It generates a quasi-religious bigotry which history should have taught us to fear. Its inherent irrationality renders it unsustainable.

(Available online at <http://www.sirc.org/articles.htm>)

Cass R. Sunstein is one of the most cited experts in jurisprudence in the world, and in January of this year was selected by U.S. President Barack Obama to head the Office of Information and Regulatory Affairs (operated out of the White House). One of his responsibilities is to oversee all rules and regulations relating to the environment. Sunstein writes the following:

I do not contend that precautions are a mistake, or even that it is impossible to reconstruct the Precautionary Principle on sensible foundations. For now, my only claim is that the principle is a crude and sometimes perverse way of promoting desirable goals – and that if it is taken for all that it is worth, it is paralyzing, and therefore not helpful at all.

(Cass R. Sunstein, *Laws of Fear: Beyond the Precautionary Principle*, 2005)

One of the main attacks on pesticides involves those products used for lawn care. On the Society's website, in the section entitled "Cosmetic Use of Pesticides," it is stated: "We are very concerned about the cosmetic and non-essential use of potentially cancer-causing substances on green spaces." One of the diseases constantly referred to in many of your press releases is non-Hodgkin's lymphoma, the cancer that the anti-pesticide activist groups constantly try to link to 2,4-D and, like the Society, point to children as those most at risk. In addressing the possibility of children coming into contact with treated lawn areas immediately after a 2,4-D application, Health Canada's PMRA stated in its recent re-evaluation of the product:

This was considered to be a high-end exposure scenario because it was assumed children would be exposed dermally through contact with treated turf as well as orally through ingestion of soil, turf mounding and hand-to-mouth contact. The unique physiology, behaviours and play habits, such as their lower body weights and hand-to-mouth contact while playing, were also taken into consideration in the exposure assessment.

In addition, 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.

(Health Canada's PMRA, *Re-evaluation Decision RVD2008-11*, May 16, 2008, online)

When it comes to blaming 2,4-D for non-Hodgkin's lymphoma, it would be of use to have a look at the Society's own *Canadian Cancer Statistics 2009*. You will note in Table 2.3 ("Estimated Age-Standardized Incidence Rates for Selected Cancers by Sex and Province, Canada, 2009") that – with the exception of Newfoundland, which has a lower reported incidence due to what is stated as an "underestimate" – the male cases of non-Hodgkin's lymphoma is virtually the same – 20 to 22 per 100,000 – across 9 Provinces. For females, the story is similar: 12 to 16 cases per 100,000, across all ten Provinces. It does not seem to matter how much or how little 2,4-D is used in a Province (the Prairies having the greatest rate of application): there is essentially no statistically significant change in the incidence rate.

Since the Society constantly attempts to promote the fear of possible negative effects of pesticides on children – particularly cancer – it bears having yet another look at *Canadian Cancer Statistics 2009*. Under the section entitled "Cancer in Adolescents and Young Adults (15-29 Years)," note the following:

However, most cancers in AYAs [adolescents and young adults] do not appear to be due to environmental carcinogens since individuals in this age group have not had enough time to accrue the mutations that lead to cancer. When a malignancy in AYAs has been linked to a

specific cause, that cause is usually exposures before birth or during childhood to *known carcinogens* or is a second cancer in patients who were treated with chemotherapy and/or radiotherapy for a prior malignancy.

(*Canadian Cancer Statistics 2009*, Canadian Cancer Society, Statistics Canada, and the Public Health Agency of Canada, p.70)

Furthermore, pesticides registered in Canada are *not* known carcinogens. The question that comes to mind here is: does anyone in the Canadian Cancer Society even read its own statistics and documents?

Continuing on the subject of 2,4-D, it should be noted that it has undergone numerous recent re-evaluations by both the PMRA and the U.S. Environmental Protection Agency (EPA). On August 8, 2007, the EPA stated: "The Agency has determined that the existing data do not support a conclusion that links human cancer to 2,4-D exposure" ("Decision not to Initiate Special Review," August 8, 2007, available online). In addition, the PMRA states: "No other international body considers 2,4-D to be a human carcinogen. Based on all available and relevant data, Health Canada agrees with this position" (*Questions and Answers: Final Decision on the Re-evaluation of 2,4-D*, PMRA, January 14, 2009, online). As to any other question about the carcinogenicity of 2,4-D, the toxicologist Dr. Frank Dost states, "the thoroughly understood mechanistic toxicology of this herbicide dictates that if it really is carcinogenic it would have to be by a mechanism never seen before, with a truly astonishing potency" (Dr. Frank Dost, *Analysis of Canadian Cancer Society Studies Used as a Basis for their Stance on Cosmetic Pesticides*, April, 2009).

I find the Society's position of instilling unfounded fear about pesticides to be quite disturbing. Even one death from cancer is too much, and the senseless campaign (along with the reckless spending of funds donated for research) on anti-pesticide advertising and support of activist road shows, is – without much doubt – going to result in more suffering among those less able to buy the expensive 'organic' products that they mistakenly believe are carcinogen-free. Another waste of donated funds is the fear-invoking advertisements the Society has run. Take, for example, the large ad that ran in numerous B.C. newspapers in 2008 featuring the face of a young child, and, included in the text, the following: "Did you know, for instance, that pesticide exposure might cause cancer?" These funds could actually have been used on something useful, such as to increase and reinforce public awareness of proper diets – an expenditure that might actually *save* lives. As evidence of this need to educate the public re the correlation between cancer and diet, a 2007 survey by the American Institute for Cancer Research found that 71% of Americans believe that cancer is caused by pesticide residue on produce, while only 49% believe that cancer could be caused by diets low in vegetables and fruit (*2007 AICR Facts vs Fears Survey: Summary*, American Institute for Cancer Research, online). I believe a similar situation is applicable to Canada.

The one thing the Society accomplishes by its anti-pesticide stance is the tarnishing of the reputation of a highly-respected organization. I, and others familiar with the real science, are doing everything in our power to enlighten the public to what is, in actuality, a waste of resources and reputation. My acquaintances and colleagues are in agreement that the Canadian Cancer Society should no longer be

the recipient of their donations. Whenever I can, I make the suggestion that available funds should be forwarded to those charitable institutions that are noble and sensible enough to abstain from fear tactics and attempts at uninformed political interference. I am receiving very positive and gratifying responses to this view.

The Canadian Cancer Society is tainting all the actual good works that the Society has done in the past, and indeed, much of which it is still doing at present. I was, however, very surprised to learn – as I did recently – that only 22% of the money contributed to the Society actually goes to research. This is also alarming to everyone to whom I speak, as they – and I – have always assumed that the majority of money collected goes towards searching for a cure for cancer, with a small amount required for administration and related costs: after all, yours is a ‘volunteer’ organization.

I also want to know why the Society chose to ignore the actual experts – the 350 PMRA scientists and the many other available experts nationally and internationally – while cherry-picking those epidemiological studies that seem to serve its purposes, and listening to the unscientific prejudices of the activist anti-pesticide groups with which the Society has aligned itself. Anyone with an open mind can find the scientific evidence proving the safety of proper pesticide use – but only if one is willing to take the effort to understand the *real* science. The Canadian Cancer Society makes the claim that it holds the same view as organizations such as the Canadian Medical Association and the Canadian Public Health Association, but, again, these are *not* scientists, and they have also obviously been swayed by the activist rhetoric and the unfounded claims of ‘scientific’ proof. Although they have not taken as forceful and active role as the Canadian Cancer Society, these groups will also share in the blame for an increased incidence of cancer, for their disinterest in seeking out the real scientific consensus. In the words of Dr. Len Ritter (Executive Director of the Canadian Network of Toxicology Centres):

To suggest to parents who’ve lost a child to cancer that maybe lawn chemicals contributed to their loss... I have very, very strong feelings about that. To imply that a woman dying of breast cancer may have been poisoned by her lawn – I don’t think that is morally correct. These people have endured enough.

(quoted in “Pesticide Panic Zaps the Facts,” by Margaret Wentz, *The Globe and Mail*, May 24, 2003)

The Society may state that its ‘suggestive’ body of evidence also includes ‘peer-reviewed published studies,’ such as Sears *et al*, “Pesticide Assessment: Protecting Public Health on the Home Turf” (*Paediatric Child Health*, Vol. 11, No 4, April 2006). This is an unscientific paper I often see provided as “proof” of a problem with pesticides. Dr. Keith Solomon, writing in 2007, stated that “the paper [Sears] published is so rife with errors that it would make an undergraduate blush with shame. The latter part is merely a political diatribe against the PMRA.” This paper has often been attributed to the Canadian Paediatric Society, but you will find that this group actually has no official stance on pesticides. Furthermore, many of these ‘peer-reviewed’ studies in publications generally have not even had their data verified or analyzed for accuracy (see “Check the Numbers,” Ross McKittrick and Bruce McCullough, *National Post*, February 19, 2009).

In fact, Dr. Dost also makes the case that:

Publications about pesticides all too frequently emerge from researchers who know nothing of the way the chemical they study is used, or the way it behaves in the environment or in the organisms that may absorb it. When reviewers have the same limitation, we find time and journal space wasted on work that tells nothing about possible risk, mechanism or other usable information. If the work makes no sense, the most elegant methodology cannot make it useful.

(“Peer Review at a Crossroads: a Case Study,” Dr. Frank N. Dost, *Environmental Science and Pollution Research*, August 13, 2008)

Those opposed to even the proper use of pesticides have certainly been experts in some areas: e.g., the leading of both the general public and some medical organizations down the dark path of anti-science; and the convincing of municipalities – and some Provincial Governments – of impending doom. In British Columbia, the Society asserts that “approximately three-quarters of all British Columbians believe that pesticides have a negative impact on their health, as well as the health of their children and pets” (“BC Health and Environmental Powerhouses Call for Cosmetic Pesticide Ban,” Canadian Cancer Society Press Release, April 20, 2009). I doubt that figure is close to the truth, but even if it were, can it be much of a surprise when the Society and other activist anti-pesticide groups spread their unscientific fears in the media and elsewhere, and real scientists are no longer heard? So, here you have proof (assuming the poll is even correct) by your own survey that people are increasingly frightened by the supposed effect of pesticides on their health. Is it logical to assume that this instilled fear of pesticides allows the public to discern ‘cosmetic’ from agricultural, or any other category of pesticide?

The bottom line:

Neither epidemiology nor toxicology supports the idea that exposures to environmental levels of synthetic industrial chemicals are important as a cause of human cancer.

(Dr. Lois Swirsky Gold, Dr. Bruce N. Ames, and Thomas H. Slone, “Misconceptions about the Causes of Cancer,” in *Human and Environmental Risk Assessment, Theory and Practice*, 2002)

“There's no scientific basis for it.”

Answer given by Sir Richard Doll (preeminent epidemiologist of the 20th century, credited with the first published paper showing a causal link between smoking and cancer) when asked in 2003 if he would support a ban of pesticides in the city of Guelph).

(quoted in “Pesticide panic zaps the facts,” by Margaret Wentz, *The Globe and Mail*, May 24, 2003)

The public supposition that synthetic pesticides are dangerous because they kill insects fails to recognise that natural pesticides, that we consume every day in abundance, do exactly the same thing.

(“A Critical Assessment of Organic Farming-and-Food Assertions,” Dr. Anthony Trewavas, *Crop Protection* 23, 2004)

This is not a letter that should ever have had to be written, and none of the above should have had to be explained. The Canadian Cancer Society – and medical associations – only needed to check with real scientists with real expertise in the science of pesticides. I want the Society to fully realize and appreciate the scope and recklessness of the path upon which it is now treading. Before your organization – that had previously been built upon a solid reputation – was impetuously steered into new territory, it had the obligation and responsibility to take the time to consider the possible and likely consequences to human health.

The Society's seeming refusal to examine all sides of the cosmetic pesticide issue is inexcusable. The Canadian Cancer Society should never have reached its present position of contributing to (instead of attempting to lessen) the increased incidence of cancer and suffering. What an ironic – and sad – fate for the Society.

I do not slight the valuable contributions that the volunteers of the Canadian Cancer Society provide: it is the unwise actions of its administrative board and unqualified advisors that I question.

I welcome your comments on all of the above.

John J. Holland (former CCS supporter)
Communications Director
Integrated Environmental Plant Management Association of Western Canada
Email: iepma@shaw.ca

cc: Premier Gordon Campbell
Prime Minister Stephen Harper
Honourable Jim Prentice, Minister of the Environment
Dr. Michael Ignatieff, Leader of the Opposition
Dr. Richard Aucoin, Executive Director, PMRA
Ms. Trish MacQuarrie, Director General, PMRA
Mr. Al Johnson, Director, WorkSafeBC
Ms. Shantal Nadeau, Executive Assistant, Canadian Medical Association
Canadian Nurses Association
Ms. Kathryn Seely, Public Issues Manager, Canadian Cancer Society, BC/Yukon
Ms. Heather Logan, Senior Director, Cancer Control Policy and Information, Canadian Cancer Society