

3. Why do parents need information on pesticide dangers and alternatives to pesticides

By Paule Hjertaas, B.Sc

- 1. Pesticide are used at much higher rates (3-5 times more per hectare) in cities than on farms and therefore have greater potential to impact adults and children.**
- 2. Homeowners do not use adequate precautions when using pesticides nor do they tend to store them adequately**
- 3. Studies have shown a series of serious recurrent problems with lawn care companies**
- 4. Pesticides can cause special problems for children from direct exposure, during fetal development, and through breast milk**
- 5. Most pesticide exposures occur without the knowledge or consent of the people exposed**

Background

1. Pesticide are used at much higher rates (3-5 times more per hectare) in cities than on farms

One estimate suggested that pesticide applications for lawns averaged 9 kg per hectare, compared to 2 kg per hectare for soybean farming. (15) A recent review and comparison of statistics and surveys by the Canadian Environmental Law Association found a similar relation between urban and agricultural pesticide use. (16)

The use of pesticides on private property affects not only the people living in the house, but their neighbours, as well as those who visit or provide services such as mailmen, painters, paperboys and girls, and those providing lawn care or landscaping services other than spraying.

2. Homeowners do not use adequate precautions when using pesticides, nor do they tend to store them adequately

Many people have blind faith that our governments would not allow any product that may negatively affect health to be registered and sold. (1 quoting 12) Therefore, homeowners tend not read and/or follow the safety precautions on labels. In particular, they are not aware of the risks of exposures during pregnancy and to children, nor that pesticides remain active and a risk for a period of time after application. (37quoting 38)

Home owners may not store pesticides adequately

Many homeowners store their pest control products in the home, often in the furnace room. The storage of common products near the air that circulates in the whole house has been known to contaminate homes and cause severe health problems to the residents of a home. Many pesticides are stored within easy reach of children. (37 quoting 39)

“Children are exposed to a variety of pesticides as a result of homeowners and condominium managers routinely using herbicides and insecticides. Accidental exposure can occur when pesticides are used or **stored inappropriately** by consumers who do not read the label or do not understand the information or the importance of the information provided on the label”. (39)

3. Studies have shown a series of serious recurrent problems with lawn care companies

Both an Ontario poll and an industry-commissioned Canada-wide survey showed that between 20-33 % of home owners use a lawn care service. (1, quoting 12 and 18).

a. Lawn care companies use more pesticide than home owners would

“ A 1991 study of pesticide use in Guelph, Ontario, calculated that professional applicators were using at least 3 times more herbicide and 39 times more insecticide per hectare than householders who apply products themselves.” (1, quoting 19) Survey respondents “who hired a lawn care company were 6 times more likely to have their lawns treated with chemical pesticides than those who managed the property themselves.” (1, quoting 12) More lawns of small to medium size were treated with pesticides by lawn care companies than by respondents managing lawns themselves (1, quoting 13).

b. Lawn care companies do not give adequate information regarding pesticides to people who hire them

Neither Federal or Saskatchewan Acts and regulations require companies to provide detailed information to their clients. (1, 20) “Less than half (41%) receive information from their lawn care service providers regarding the health and environmental risks and safety precautions of the pesticides being applied to their property.” (1, quoting 12) Clients do not trust the quality of the information given to them by their service provider. (1, quoting 12)

C. Lawn care companies have not been found to use pesticides according to regulations

A 2001 Ontario Ministry of the Environment inspection of pesticide applicators found almost 6 out of 10 applicators were in "serious violation" and one third were out of compliance with pesticide regulations. (17, 21)

d. Industry advertising commonly makes misleading statements about the safety of pesticides, even though such claims are illegal in Canada and the United States

Advertising of pesticides as safe, even when used as directed, is illegal under Canadian and U.S. law. A 1996 Canadian directive forbids the use of terms such as 'safe', 'safer', 'natural', or 'organic' in environmental claims on pesticide products. (10) The PCP regulations prohibit "*words stating, implying or inferring that a control product is approved, accepted or recommended by the Government.*" (33). The directive and regulation are regularly broken by industry. (1, lots of examples) Pesticide applicators often mislead consumers about the effects of pesticides and how to take safety precautions. (1, quoting 12) An Access to Information Act requested by the Toronto Environment Alliance (TEA) revealed that, since 2000, Health Canada has concluded 276 investigations into pesticide advertising (1, quoting 22). It took a petition by Earth Action to the Auditor General's department about false advertising by Bayer, Syngenta, Weed Man and Bobby Lawn Care to get the PMRA to issue its first convictions under this regulation in January 2004. (11)

4. Pesticides can cause special problems for children from direct exposure, during fetal development, and through breast milk

a. children

Children are both more exposed and more susceptible to pesticides than adults. (35) For their size children consume more food and drink than adults, and both of those can be contaminated by pesticides. (35) They play in ways that increase their potential exposure. As well, their growing and developing bodies can be particularly sensitive. (6)

The North West Coalition for Alternatives to Pesticides published a report on the some of the 2,300 school pesticide exposures reported to U.S. Poison Control Centers from 1993 to 1996. No mandatory reporting of pesticide poisonings in most of the U.S. states, lack of notification of use and many other reasons make the reported cases the tip of the iceberg only. Many illnesses resulted from registered pesticide products applied according to label direction, indoors or out, many for cosmetic reasons. Many people got sick up to several days after application. (34)

Pesticides can cause short-term illnesses in children, but also more lasting problems. Many authoritative review reports such as those by the US EPA (14, 24), Physicians for Social Responsibility (23), the Ontario College of Family Physicians (4), and review books such as "Having Faith" by Sandra Steingraber (8) conclude that many acute and chronic conditions are linked to pesticide exposure, several affecting children. One example is a recent study showing that early early-onset persistent asthma was 4.58 and 2.39 times more common respectively when a child was exposed to herbicides and pesticides. (36) Another is provided by Elizabeth Guillette who has been following the four and five year old Mexican children with severe neuro-cognitive deficits from pesticide exposure she studied in Mexico. (30) The neuro-cognitive deficits identified have persisted. In addition, as they grew older, the girls developed breasts 2 to 3 years earlier than the less exposed controls. These breast tissues were abnormal. For one out of three girls, they contain mostly fatty tissue, with no to very small glands (to produce milk). (31)

b. fetuses

Fetuses are especially sensitive to pesticides and other toxins as they are in full development. Scientists now know that the effect of a toxin on a fetus depends on much more than the dose. Genetics, timing, pattern (chronicity, frequency) and duration of the dose will also have an effect. (5) Low dose exposure to environmental chemicals - parts per billion or even trillion - during a critical window of development can cause permanent damage to organs and systems. (7, 23, 25) Current environmental exposures of the pregnant mother to organophosphates such as chlorpyrifos and diazinon caused low birth weight. The trend was reversed when these products were banned for indoor use. (26)

Birth defects are still astoundingly common in the U.S. at 3-4 % of American infants, with several thousands dying from major deformities every year. (8) Many birth defects have been linked to pesticide exposure during pregnancy. (8, 25, 27) Developmental delays (24, 25, 31), hyperactivity (31), behavioral disorders (24, 25, 31), motor dysfunction (24, 25, 31), nervous system disruption (6, quoting 24, 32) and learning disabilities (24, 28, 31) add to the toll pesticides take on human health.

C. Breast milk

Many pesticides, like hundreds of other toxins, concentrate in breast milk, contaminating the ultimate healthy food for babies. (7-8) Each nursing mother is passing persistent organic pollutants (POP) such as DDT, its metabolite DDE and dioxins to her child through her breast milk. There are no uncontaminated mothers. "Indeed, prevailing levels of chemical contaminants in human milk often exceed legally allowable limits in commercial foodstuff."(8, quoting 40)

Biologist Sandra Steingraber extensively researched this issue. She briefed the United Nations on breast milk contamination, and feels that we should redo the food chain pyramid to put babies on top, as many toxins are found at higher concentration in breast milk than in the mother's tissues. (8) It has also been shown that organochlorines nursing babies drink in breast milk are not excreted. (8, p.263)

5. Most pesticide exposures occur without peoples' knowledge or consent

There are no federal or provincial posting requirements i.e. for the most part, no one knows when one plays on, walks or drives by a pesticide-treated area. It is virtually impossible to determine what one is being exposed to, or predict potential adverse effects (on you, your loved ones, or your environment) because of poor (or no) public notifications following pesticide applications, and failures to disclose secret ingredients on pesticide labels.

If you can smell pesticides, you have been exposed to measurable concentrations.

Pesticides are currently used in many public places without appropriate notification.

Pesticides are currently used without much notification in and around schools, apartment and public buildings, restaurants, hospitals, parks, on streets and sidewalks, by home owners and some commercial services, and along highways and roads. I understand that it is customary in many small towns to spray an outdoor public meeting area before the meeting to ensure no mosquitoes.

Many lawn care companies come without prior warning even to the customer. (9, 1 quoting 13) The customer therefore does not have the opportunity of closing the windows, bringing in the clothes that were on the line, or the children's toys on the lawn. Industry recognizes that in their own documents. (9) Even the city of Regina, which has a notification policy, only leaves signs up for 24 hours, a time insufficient to ensure protection of the public's health.

Conclusion

There is much evidence of the widespread occurrence of pesticides in our environment and even in our bodies. There is much evidence of harm of pesticide to human health, even at low doses, and solid evidence of harm to children from early fetal development, through breast milk, and throughout their growth period.

The Federal government recognizes that “consumers can choose wisely only when they are well informed”. (10) Unfortunately, There is much evidence that homeowners are not getting appropriate information on pesticide health and environmental risks, or on their alternatives. This lack of understanding of potential dangers leads people to ignore proper safety precautions when they use and store pesticides. The public’s right-to know is not being respected in that they and their families are often exposed to pesticides without their knowledge or consent.

Accurate, reliable information is essential to raise awareness, and allow parents to make informed choices to protect their children. It cannot be overstated.

References

1. Toronto Environmental Alliance; “Breaking the Law Pesticide Advertising and Public Deception”; Aug 2002; available free on-line from www.torontoenvironment.org
2. Kegley, S., PhD et al: “Secondhand Pesticides”; 2003; Californians for Pesticide Reform
3. **Air and water:** hundreds of scientific papers and research projects many by Saskatchewan researchers of various agencies (Allan Cessna - National Hydrology Institute, Raj Grover - Agriculture Canada, David Donald, Don Waite - Environment Canada, Renata Bailey - University of Regina) and even Sask Environment measurements of pesticides in Wascana Creek
Food: Alanna Mitchell ; “*Pesticide Residues on Canadian Produce Doubles* : report”; The Globe and Mail; Mon May 24, 1999; “*The studies say that nearly a quarter of Canadian produce randomly tested bears traces of pesticides, even after inedible skins are peeled off.*” “*Although the report says that just 1.2% of domestic produce shows residues at illegal levels, that violation rate is triple what it was at the beginning of the decade.*”
body burdens:
Center for Disease Control “Second National Report on Human Exposure to Environmental Chemicals”; 2003;
3a. O. Samuel, and M. Valcke; “Study on Body Contamination of Children in Quebec”; released at the *Pesticides in our Bodies/ A Toxic Legacy* conference, October 18th, 2004;
3b. Semchuk, K.M. et al; 1998; “Detection of Selected Herbicides in Human Blood Plasma Specimens from Sask. Farm Families and Others in Rural Prairie Residents”; presented at the 4th International Symposium *ARural Health and Safety in a Changing world A* in Saskatoon: 21.7 % of men, women and youth (12-15 y.o.) showed detectable levels of herbicides 4-5 months after the last agricultural application in the region.
4. Ontario College of Family Physicians; “Pesticide Literature Review”; plus many thousands of studies and reviews; April 2004, www.ocfp.on.ca; and “Our Stolen Future” (<http://www.ourstolenfuture.org>) for regular updates
5. J.P. Myers, Ph.D.; “Does “the dose make the poison?””; <http://www.protectingourhealth.org/corethemes/lowdose/doseresponse.htm>
6. C. Cox; “Ten Reasons Not to Use Pesticides”; Journal of Pesticide Reform/Winter 2001; vol 21, no 4 reason # 3
7. Evans, Nancy, Ed; “State of the Evidence What is the Connection Between the Environment and Breast Cancer?”; 3rd edition; 2004; Breast Cancer Fund and Breast Cancer Action and

8. Steingraber, Sandra; 2003; "Having Faith"; her web site is <http://www.steingraber.com/>
9. personal communication with Regina lawn care company clients; and "IPM accreditation helps arm superintendents in their battle against chemical pesticide bashers"; TURF & Recreation; <http://www.turfandrec.com/>; Jan/Feb 2004 Pages 58-61 which is attempting to set standards regarding several points mentioned in the text such as not apply pesticides unnecessarily, not selling programs that are based on numerous pesticide applications (the current standard), removing items from the lawn, and many others.
10. Environment Label Claims and Advertising of Pest Control Products; (DIR96-02) March 15, 1996 - 41Kb; <http://www.pmra-arla.gc.ca/english/pdf/dir/dir9602-e.pdf>
11. Pesticide companies ordered to change ads; CBC News Online staff; 16 Jan 2004; <http://www.cbc.ca/stories/2004/01/16/Consumers/pesticide040116>
12. Oracle Poll, November 2001. "Pesticide Use Survey Results Prepared for the Toronto Environmental Alliance". 44 pgs.
13. Toronto Public Health, April 2002. "A Survey of Toronto Residents' Awareness, Uses and Attitudes Towards Lawn Pesticides". 28 pgs.
14. U.S. EPA; "America's Children and the Environment"; December 2000; EPA # 240-R-00-006; [http://yosemite.epa.gov/ochp/ochpweb.nsf/content/ACE-Report.htm/\\$file/ACE-Report.pdf](http://yosemite.epa.gov/ochp/ochpweb.nsf/content/ACE-Report.htm/$file/ACE-Report.pdf)
15. Standing Committee on Environment and Sustainable Development, House of Commons Canada. "Pesticides: Making the Right Choice for the Protection of Health and the Environment". May 2000. 212 pgs.
16. Canadian Environmental Law Association. 2002. "Urban versus Agricultural: Pinning Down the Numbers on Pesticide Use." *The Intervenor* (27):1. http://www.cela.ca/newsletter/detail_art.shtml?x=1260
17. Canadian Environmental Law Association. 2002. "Pesticide Applicators Failed 70 % of Inspections in 2001" *The Intervenor* (27):1. http://www.cela.ca/newsletter/detail_art.shtml?x=1261
18. Ipsos-Reid Corporation, May 2001. "Attitudes to Pest Control Study" Commissioned by Scotts Canada, SC Johnson and Nu-Gro. 15pgs.
19. J. Struger, et al, 1994. "Chapter 6: Environmental Concentrations Of Urban Pesticides" in *Current Practices in Modeling the Management of Stormwater Impacts*; CRC Press, Boca Raton, FL. Pgs.85-98.
20. The Pest Control Products (Saskatchewan) Act; The Pest Control Products Regulations, 1995; The Pest Control Act; Chapters P-7 and P-8 of Statutes of Saskatchewan;
21. Ontario Ministry of the Environment, March 14, 2002. "Inspections: Pesticide Applicators". <http://www.ene.gov.on.ca/envision/swat/work/pesticide.htm#inspections>
22. Health Canada Access to Information and Privacy Centre. July 11, 2002. File: A-2002-00336. (Note: no information on the outcomes of these investigations was available).
23. Greater Boston Physicians for Social Responsibility; "In Harm's Way"; <http://psr.igc.org/iHW-project.htm> , with a link to the leading scientists who endorsed it.

24. EPA; "America's Children and the Environment *Measures of Contaminants, Body Burdens, and Illnesses*"; second ed; Feb. 2003; 240-R-03-001
http://www.epa.gov/envirohealth/children/ace_2003.pdf
25. <http://www.pesticides.org/educmaterials.html> and <http://www.protectingourhealth.org/> for more information on linkages between pesticide exposure and specific health effects;
26. R. M. Whyatt, et al; "Prenatal insecticide exposures, birth weight and length among an urban minority cohort"; doi:10.1289/ehp.6641 (available at <http://dx.doi.org/>) online 22 March 2004
27. G.M. Shaw, C.R. Wasserman, C.D. O'Malley, et al., "Maternal pesticide exposure from multiple sources and selected congenital anomalies", *Epidemiology*, 1999, 10(1): 60–66.
28. G. Solomon, O. Ogunseitán, and J. Kirsch, "Pesticides and Human Health", Physicians for Social Responsibility and Californians for Pesticide Reform (San Francisco, CA) 2000, see <http://www.psrla.org/pesthealthmain.htm>.
29. H. Swan et al; Sept 2003; "Semen Quality in Relation to Biomarkers of Pesticide Exposure"; *Environmental Health Perspectives*; Volume 111, Number 12
30. I. Voccia, et al. 1999. « Immunotoxicity and pesticides: a review". *Toxicol Ind Hlth*. 15: 119-32.
31. EA Guillette, et al. 1998. "An anthropological approach to the evaluation of preschool children exposed to pesticides in Mexico." *Environ Health Perspect*. 106: 347-53.
32. D. Ecobichon D. 1994. "Organophosphorus ester insecticides" In: *Pesticides and Neurological Diseases*; (Ecobichon DJ, Joy RM, eds). CRC Press, Boca Raton, FL; pp 71-250
33. PCPA regulations C.R.C.,c.1253, section 51c
<http://laws.justice.gc.ca/en/P-9/C.R.C.-c.1253/165008.html#rid-165098>
34. Northwest Coalition for Alternatives to Pesticides; "Unthinkable Risk How Children Are Exposed and Harmed When Pesticides Are Used at School"; April 2000
35. National Research Council, National Academy of Sciences, "Pesticides in the Diets of Infants and Children", National Academy Press, Washington, DC, 1993: 184-185
36. M.T. Salam et al; "Early-Life Environment Risk Factors for Asthma: Findings from the Children's Health Study"; May 2004; EHP 112 #6
37. J. Wargo, PhD; "Risks of Lawn Care Pesticides Including Inadequate Packaging and Labeling"; Environment and Human Health, Inc;
http://www.ehhi.org/reports/lcpesticides/lawnpest_full.pdf
38. USEPA. "Consumer labeling initiative phase II report". Prepared for Office of Pollution Prevention and Toxics by Abt Associates. Contract Number 68-W6-0021. October 1999.
39. USEPA. "A statewide campaign to reduce residential pesticide exposure in pre-school age children"; Pesticide environmental stewardship program.
http://www.epa.gov/oppbppd1/PESP/regional_grants/2001/r5b-2001.htm.
40. T. Schettler et al; "Generations at Risk: Reproductive Health and the Environment"; Cambridge MIT Press. 1999, p 205

Executive Summary. PESTICIDES ARE USED WIDELY in agriculture in the United States. Their application has improved crop yields and has increased the quantity of fresh fruits and vegetables in the diet, thereby contributing to improvements in public health. But pesticides may also cause harm. It does not examine the wide range of pesticide exposure patterns that appear to exist within the U.S. population. It looks only at the average exposure of the entire population. Concern about the potential vulnerability of infants and children to dietary pesticides led to U.S. Congress in 1988 to request that the National Academy of Sciences (NAS) appoint a committee to study this issue through its National Research Council (NRC). Wind energetics uses inexhaustible kinetic energy of the wind, totally for free, and thus it is not subject to inflation. In this manner, it reduces the dependence on the import of raw materials for power generation, namely from regions characteristic for their political instability. The basic technological principle of wind farms does not change much nowadays, but it is their reliability, efficiency and last but not least their size that grow gradually. Therefore, rotors are the cardinal components of a WT and they have experienced a surprising development for the past 30 years, as for their size, aerodynamic characteristics and operation regimes. For example, back in 2004 there were 90% of WT with a rotor diameter below 60 m in Germany. Pesticides used to control pests (e.g. parasites and disease vectors) and predators have been reported to cause pollution when they enter groundwater and surface water. Active molecules or their degradation products enter ecosystems in solution, in emulsion or bound to soil particles, and may, in some instances, impair the uses of surface waters and ground-water (World Bank, 2007). Land use and landscape The trend to larger production units, and their regional concentration, certainly has the potential to adversely affect surrounding land use and the appearance of the landscape. 1 VND = Vient 1. Pesticide use involves multiple contaminants that have differing characteristics 2. Exposure of the population to contaminants can arise from unspecified sources as well as clearly delineated sources; sometimes it is difficult to identify the sources of pesticide emissions 3. The costs incurred to measure pesticide emissions are high 4. There may be interactions among different types of pesticides. Outline the links between hazard, risk, impacts, and social cost. Hazard - physical and chemical properties like boiling point, color, volatility Risk - probability of exposure, taking into accou