

## Pesticides and Health Effects

The Toronto Public Health report “Lawn and Garden Pesticides: A Review of Human Exposure & Health Effects Research” summarizes toxicological and epidemiological studies on pesticides. It focuses on research into the health effects of the seven most commonly used lawn and garden pesticides in Canada. These include the insecticides diazinon, carbaryl and malathion, and the herbicides 2,4-D, mecoprop, dicamba and 4-chloro-2-methylphenoxyacetic acid (MCPA).

People can be exposed to pesticides from many different sources: trace levels in food, indoor pesticide use, and many different kinds of pesticide use out of doors. Because pesticide exposures come from so many sources, researchers have not been able to conduct a perfectly controlled scientific study on how lawn care pesticides may affect people’s health. Pesticides may impact on human health in many different ways and some health effects, such as cancer, may take decades to manifest.

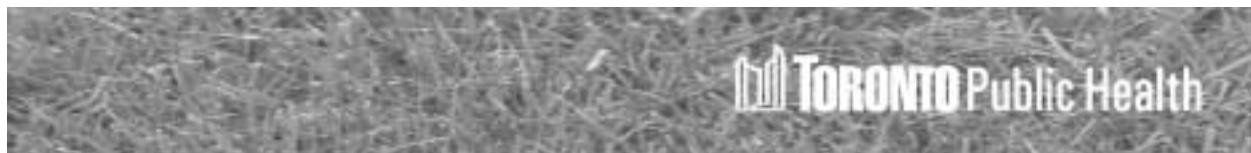
Pesticide use on private property in Toronto is widespread. A telephone survey conducted by Toronto Public Health found that 45 per cent of those surveyed use pesticides on their property.

Based on U.S. biomonitoring studies documenting the widespread presence of traces of some insecticides breakdown products in people’s urine, it is reasonable to expect that Toronto’s population is similarly exposed.

The best evidence for the possible health risk associated with commonly used lawn care pesticides comes from occupational studies (e.g. of agricultural workers and horticulturalists) and others who use these same pesticides on the job. These groups are subjected to higher exposures to pesticides than the general population and researchers are therefore able to make more reliable associations between pesticide exposure and adverse health effects.

In recent years, scientists have observed associations between pesticide exposures and adverse effects on reproductive and neurological health, and some forms of cancer. While not all studies show consistent results, a growing body of research suggests that even low levels of pesticides can have a negative effect on human health.

**Highlights of scientific studies...over**



# Highlights of scientific studies

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## Reproductive effects

- Some studies of men and women who work with pesticides (including pesticides used on lawns and in gardens) suggest they have increased risks of fertility problems, spontaneous abortion and miscarriage.
- Some studies (mainly of workers) suggest that maternal exposure during early pregnancy to pesticides used in gardening is associated with increased risks of several types of birth defects (such as cleft lip and palate, spina bifida, limb anomalies).
- The evidence is starting to show (although more research is necessary) that exposure in the womb to very low levels of hormonally active agents found in some pesticides may cause reproductive system abnormalities and may increase the risk of contracting some kinds of reproductive system cancers.

## Brain and Nervous System Effects

- Some studies of workers exposed over a long period to pesticides known to be neurotoxic (such as organophosphates, carbamates, and some fungicides) have shown impairment in information processing, memory and reflexes, as well as other subtle psychological, behavioural and cognitive effects.
- Researchers conclude that there is reasonable evidence for an association between exposure to pesticides and a moderately increased risk of Parkinson's Disease. More research is required to establish which pesticides contribute to the increased risks.

## Cancer

- Recent studies show increased risks of testicular, prostate and cervical cancers, Non-Hodgkin's Lymphoma (NHL) and multiple myeloma among those exposed – particularly farmers – to pesticides through their work. As with the neurological effects research, more studies are required to establish which pesticides contribute to the increased risks.

## Children

- Several studies have shown moderately increased risks of some cancers (particularly leukemia, non-Hodgkin's lymphoma and neuroblastoma) and some birth defects with pesticide exposure around conception, in the womb and in early infancy.
- Several studies in young animals suggest that the developing nervous system is particularly vulnerable to long-term cognitive effects from some insecticides, such as those from the organophosphates and carbamates classes. This has led to the phase-out of two common lawn insecticides in Canada. Chlorpyrifos is no longer available and diazinon will not be available to consumers after the end of 2002.
- A number of recent biomonitoring studies in the U.S. found that when samples of children were tested, more than 90% had traces of certain insecticides or their breakdown products in their urine. These very low levels were not associated with health effects but researchers caution that potential impacts may depend on the timing of such exposures in the young.