



Minnesota  
Pollution  
Control  
Agency

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# Health Issues/Use of Pesticides

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## What is known about pesticides

Since 1940 approximately 15,000 petroleum-based herbicides, insecticides, fungicides, and rodenticides have been created to kill unwanted plants and animals. These synthetic pesticides are unlike other techniques designed to kill and prevent the appearance of pests -- biological pesticides, good yard/housekeeping, diatomaceous earth dusts and soap sprays -- in important ways:

- They are poisons. While the toxicity of synthetic pesticides varies greatly, they are all designed to kill plants and animals, and exposure to some pesticides results in acute health effects in humans and “non-pest” plants and animals. Documented acute effects on humans include:
  - nausea, fatigue, skin and muscle reactions
  - respiratory problems
  - kidney and liver damage
  - nervous system damage

Documented acute effects on wildlife and plants include deaths of songbirds, waterfowl, eagles and other birds of prey.

- Some have been banned. The use of three dozen pesticides has been banned in Minnesota. DDT, banned federally in 1972, is among them.
- Some don't go away. A number of pesticides are stable in the environment -- in well water and in lake sediments, for example -- and their toxicity persists for decades. The most frequently detected pesticides in groundwater nationwide--dacthal metabolites-- have contaminated 6,000 wells.
- Some bioaccumulate. A number of pesticides accumulate in the fatty tissues of animals, and are passed on up the food chain to human tissue, where they can negatively affect human health and the health of unborn children by crossing over the placental barrier.

Some mimic hormones. Remarkably small amounts -- parts per trillion -- of some pesticides are capable of mimicking or blocking the normal action of hormones (especially estrogen) and disrupting the normal functioning of human and wildlife endocrine systems. Over 50 pesticides are known to be endocrine disrupters. These endocrine disrupters, which in general are persistent in the environment and bioaccumulate, may affect animal and human health decades after one small exposure.





Some scientists believe at least part of the reason for the following health effects may be the introduction of endocrine disrupters into the environment since 1940:

- Reproductive abnormalities (50 percent overall decrease in human sperm counts worldwide; endometriosis; feminized male fish in highly polluted sections of the Minnesota and Mississippi Rivers)
- Cancer (122 percent increase in female breast cancer since 1960; 300 percent increase in testicular cancer; 200 percent increase in prostate cancer)
- Birth defects (Eggshell thinning in bald eagles, brown pelicans, and double-crested cormorants; incompletely developed reproductive systems in Florida alligators. A four-year study of children born to licensed pesticide applicators in Minnesota and children born in crop-growing regions of the state suggests that pesticide use and exposure are associated with a significantly increased rate of birth defects.)
- Some suppress human immune systems. 16 common pesticides -- such as permethrin, used to kill nuisance mosquitoes and the active ingredient in head lice treatments -- have been shown to be toxic to the immune system in at least one of 4 accepted tests.

Since 1993 articles in *Chemical and Engineering News*, one of the chemical industry's trade magazines, have included statements such as "data on health risks for wildlife are strong; evidence of risk for humans is fragmentary, but suggestive and worrisome," and "immune system suppression linked to widely used pesticides."

### What is not known about pesticides

- Just how toxic they are. Figuring out which chemical exposure or combination of exposures out of many over a long period of time produces a specific health effect is very difficult. Estimates of risk can legitimately vary so much that, in a 1986 federal United States Environmental Protection Agency (USEPA) study of a carcinogen, the range of estimates was akin to either "buy[ing] a cup of coffee or pay[ing] off the national debt."
- Test data. Of the 34 pesticides commonly used on lawns, only two had been tested for long-term effects on humans and the environment as of 1993. Twelve are suspected human carcinogens. Of the

nearly 270 pesticides that must be reregistered with the EPA, only 19 had reached the end of their environmental and health effects' study as of 1993.

### What can one do?

Rather than using pesticides and living with the uncertainty of health and environmental risks, consider the following:

- Prevent the need for pesticides. For example, growing a healthier lawn will resist weeds and pests. Solving the underlying causes of lawn problems might involve maintaining less lawn, seeding grasses better adapted to your soil and location, improving your lawn care practices, and accepting a mix of turf grasses and other plants like clover. Talk with neighbors and read fact sheets available from various sources, such as the Minnesota Extension Service.
- Try mechanical and biological controls before synthetic chemical controls. Try traps, diatomaceous earth, soaps, herbal extracts, bacterial insecticides, natural predators, insect growth regulators (such as hydroprene and fenoxycarb), pheromones and pyrethrin-based insecticides before trying more toxic pesticides (such as chlorpyrifos or diazinon). The Minnesota Extension Service associated with the University of Minnesota and libraries have extensive "how-to" guides on these controls. This hierarchy of options
  - mechanical, biological, and then chemical controls
  - is a proven, cost-saving approach called integrated pest management and is practiced by some golf courses and schools in Minnesota.
- Use any pesticides carefully as a last resort, spot treating and carefully following all directions.

**For more information contact:**

Philipp Muessig  
 Minnesota Office of Environmental Assistance  
 520 Lafayette Road North  
 St. Paul, MN 55155  
 (651) 296-3417 or (800) 657-3843  
[philipp.muessig@moea.state.mn.us](mailto:philipp.muessig@moea.state.mn.us)  
<http://www.moea.state.mn.us>