

Herbicides and Water Quality



The Vermont and New York Master Gardener Programs, supported by the University of Vermont and Cornell Extension and Lake Champlain Sea Grant, support the objectives of the Lake Champlain Management Plan and Basin Program. This factsheet is intended to help prevent or reduce pollution coming from residences within the Lake Champlain Basin.



Caution is required with all herbicides

Almost all pesticides (including herbicides) can be damaging if they are not used exactly as their labels state. Improper application or spills may not only damage desirable plants but can be harmful to birds, bees, fish, beneficial insects, and humans.

Everyone gardens over groundwater and near surface water, whether there is a stream flowing through the backyard or not. Water that flows off your property is carried into nearby streams, drainage ditches, or storm sewers and eventually flows into Lake Champlain. It is the responsibility of all gardeners to make choices that are the least harmful to our waters.

Potential to pollute

The extent to which an herbicide may find its way into ground or surface water depends on a number of factors: solubility (whether it readily dissolves in water); adsorptive qualities (how tightly it can bind to clay

and humus particles in the soil); and degradation (how fast soil microbes or other factors break it down into harmless components).

Other factors that influence an herbicide's potential to pollute are:

- soil texture (sand, silt, clay, and organic matter content)
- slope of the land where it is used
- proximity of groundwater to the soil surface
- presence and depth of hardpans and other impermeable layers
- amount and timing of rainfall or irrigation

Finally, human behavior greatly affects whether any chemical has the potential to pollute. As every herbicide is developed to solve specific weed problems, the homeowner must take care to use the right chemical (if any) for the target and to strictly follow all label in-

structions. Check with your local Extension office for advice on organic alternatives to herbicide use, lawn care without pesticides, and herbicides recommended for specific weed problems.

Alternative weed control

Before choosing an herbicide, the homeowner or gardener has several non-toxic alternatives to consider. In the case of lawns, a competitive species of turfgrass—kept thick by mowing 3 inches tall—will effectively block most weeds. Test the soil to ensure the proper nutrients are there to promote healthy turfgrass. Hand pulling the encroachers is often sufficient. Further, a healthy, thick lawn prevents water runoff and erosion. Spot treating with herbicides

should only be used as a last resort.

Flower and vegetable gardeners can control weeds using mulch—from newspaper or black plastic to wood chips, straw, pine needles, leaves, or grass clippings. In larger plots, intercropping with such cover crops as clover may be suitable, and proper tilling (shallow tilling only when needed) decreases weed emergence.

Finally, new developments in weed control include using low-toxicity, safe, soap-based herbicides; flame weeding; and allelopathy (the use of plants such as oats that inhibit weed seed germination). The Vermont or New York Master Gardener Programs or local University of Vermont or Cornell Extension offices (see contact information listed below) can offer additional information on non-chemical weed management.

Master Gardener Program

University of Vermont Extension: (800) 639-2230; pss.uvm.edu/mg/mg/


Burlington area: (802) 656-5421

Cornell Cooperative Extension: Clinton County: (518) 561-7450; Essex County: (518) 962-4810

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