



Lake Minnetonka Milfoil Treatments – Herbicide Safety

The LAKE MINNETONKA ASSOCIATION has coordinated the herbicide treatment to control Eurasian watermilfoil and curlyleaf pondweed (two invasive plant species) on three bays (Carmans, Grays and Phelps) beginning in 2008. Members and others in the community have concerns about the safety of the herbicides. Here, we address these concerns.

LAKE MINNETONKA ASSOCIATION Conclusions and Position

Conclusions

1. Eurasian watermilfoil and curlyleaf pondweed (invasive species) cause ecological harm.
2. Selective herbicides are the only feasible control tool.
3. Selective herbicides are safe (when used appropriately) according to most accepted standards.
4. All herbicides are toxic to some degree.
5. Concerns with herbicide toxicity and safety are valid.
6. The use of herbicides should balance all reasonable concerns.

Position

The LAKE MINNETONKA ASSOCIATION supports the milfoil and curlyleaf pondweed control project as detailed in the Lake Vegetation Management Plan (LVMP). The LAKE MINNETONKA ASSOCIATION believes the use of selective herbicides is appropriate for this project and represents a reasonable and responsible solution to the problems identified in the LVMP. While no control methods – even non-herbicides - are absolutely without risks, this project will result in net environmental benefits and we urge the support of the community.

The Analyses section, below, provides the basis for our conclusions and position.



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ANALYSIS

Lake Vegetation Management Plan

The bay-wide herbicide treatments are guided by a Lake Vegetation Management Plan¹ (LVMP), which is a MN DNR-approved plan. The LVMP's goals include:

Goal A. Eurasian watermilfoil and other invasive plants, such as curlyleaf pondweed, will be controlled throughout the respective bays in a manner that is safe and effective to reduce interference with recreational activities, reduce lakeshore cleanup and improve ecological health.

Goal B. Native submersed plants should be protected, except in localized areas where they pose a nuisance although control will be allowed in localized areas where native plants inhibit access to open water or prohibit recreation.

A Technical Committee, comprised of scientists, researchers and regulators from the US Army Corps of Engineers, the MN DNR, Three Rivers Park District, University of MN, Hennepin County Environmental Services, the Minnehaha Creek Watershed District, the Lake Minnetonka Conservation District and the Lake Minnetonka Association, in reviewing all management options determined that the use of selective² herbicides was the only feasible method to address the goal of controlling milfoil and curlyleaf pondweed in a safe, effective manner, while also protecting and enhancing native plants.

Herbicides Used in this Project

Two herbicides have been used in this project - endothall (2008 & 2009) and triclopyr (2009).

Toxicity, Testing, Safety & Regulation

All aquatic herbicides, including those used in our program, are toxic to some degree. Obviously, these herbicides are toxic to the target plants. Toxicity concerns relate to impacts to non-target plants, aquatic life and humans. Herbicides, those used in this project and all herbicides available for use in water, must undergo rigorous testing before they are allowed for use.

The following is excerpted from (<http://aquat1.ifas.ufl.edu/guide/sup7herb.html>):

Disastrous events of the past have caused the use of pesticides and other man-made chemicals to become a source of anxiety for the uninformed public. However, the U.S. EPA has responded to previous

¹ A copy of the LVMP is available on our website.

² 'Selective' refers to selectively targeting milfoil or curlyleaf pondweed and avoiding or minimizing impacts to other plants.



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mistakes by developing a program that requires stringent testing and strict regulation of herbicides and other pesticides prior to their commercial release for use in the environment.

EPA testing and registration enables the public to better understand the nature of the chemical being used and, by federal law, establishes minimum safety standards that safeguard public and environmental health. Herbicide testing and registration is paid for by the chemical manufacturer and the studies are intended to determine:

- which plants are affected by the chemical
- environmental conditions the chemical must be applied in (i.e., sunny, cloudy, etc.)
- proper methods of application for the chemical
- relative toxicity to certain test plants and animals
- rate that the chemical breaks down and its longevity (persistence) in the soil or water
- presentation of the chemical's [“use-label”](#)

REGISTERING AQUATIC HERBICIDES. Aquatic herbicides are a class of herbicides used to manage various aquatic weeds. No matter the level of state regulation, federal law mandates that any herbicides used in, on, or over water must have an aquatic registration. Aquatic registration requires additional EPA testing. This is because aquatic herbicides are more prone to spread (via water flow) and can result in wider exposure to people and the environment. Aquatic registration also takes special interest in the chemical's tolerance in fish and other aquatic species. Tolerance levels are determined through a series of tests that enables researchers to determine “no observable effect” levels in animal diets and quantification of residues in fish and water.

Acceptable toxicity level is defined as the level of pesticide present in fish or water in which a lifetime of human consumption is not likely to cause adverse health effects in humans. The following assessments are used during the chemical evaluation process:

- Residue Chemistry Data
- Environmental Fate Data
- Degradation Studies
- Metabolism Studies
- Mobility Studies
- Dissipation Studies
- Accumulation Studies
- Hazard to Humans and Domestic Animals
- Teratogenicity Studies
- Mutagenicity Studies



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There are numerous and voluminous studies and reports available through the US EPA and other sources (for example, Extoxnet – Oregon State University). Suffice it to say, the herbicides used in this project have been determined to be safe according to the US EPA through the regulatory process described above.

An example of toxicity study results:

- Endothal is "... safe to fish in 100-500 ppm (parts per million) concentrations."³
- The concentrations used in the Lake Minnetonka project are up to 2 ppm.

Concerns have been expressed regarding the removal of milfoil or curlyleaf pondweed and impacts to fish habitat. It is a specific objective of this project to protect native plants because they are valuable fish habitat. In cases where milfoil or curlyleaf pondweed are the only plants in a lake, their removal could have negative impacts to fish habitat. However, in Lake Minnetonka, there are native plants in the treated areas prior to the treatments and these are specifically protected, therefore removal of milfoil or curlyleaf pondweed does not impact fish habitat.

This can also be viewed another way. There is evidence that milfoil or curlyleaf pondweed, left uncontrolled, diminish the diversity and abundance of native plants. So, not controlling these invasive plants also has impacts to fish habitat.

The MN DNR has determined the use of these two herbicides to be safe in our project as the MN DNR:

- Has approved the LVMP
- Has granted permits for the use of these products
- Has provide grant funding for this project

Are these herbicides absolutely safe? No. Nothing is absolutely safe.

However, we must keep this issue in perspective. For example, water is poisonous. There are known cases where people who have drunk as little as two gallons of water in a short time have been poisoned and died. If we compare this to the EPA's margin of safety for the herbicides used in lakes, a person would have to consume hundreds of gallons of lake water every day for their entire lives before toxic effects would be likely to be detected. So, in this sense, the water is more toxic than the chemicals it might contain through the herbicide applications.

³ Source: <http://extoxnet.ost.edu/endothal>



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Public concern, even fear, with the use of aquatic herbicides exists (see: <http://www.watoxics.org/issues/pesticides-in-lakes/aquatics-problems>). However, their feared risks are seldom specified or quantified in an objective manner. For example, the website listed in the previous sentence cites environmental and human health concerns:

“Invasive aquatic plants represent a serious problem for some Washington lakes. Unfortunately, many aquatic weed infestations are dealt with through the use of aquatic herbicides -- chemicals that are applied directly to lakes and can seriously harm the ecosystem, endangered species, and threaten human health.”

However, no specific or objective analyses are presented.

According to the EPA, no herbicide may be registered for aquatic use if it has more than a 1:1,000,000 chance of “causing significant harmful effects to human health, wildlife, or the environment.” To put this in another perspective, the life-time risk of:

- Dying in a car accident is 1:83
- Dying by a lightning strike is 1:80,000
- Dying by being struck by an asteroid is 1:200,000

In other words, you have at least:

- A 12,000-times greater risk of dying in a car accident
- A 12-times greater risk of dying from a lightning strike
- A 5-times greater risk of dying by being struck by an asteroid

then from exposure to aquatic herbicides.

Finally, the infestation of Eurasian watermilfoil or curlyleaf pondweed is a form of biological pollution, which when uncontrolled causes ecological harm. So even doing nothing entails environmental risks.