

Risk/Benefit Statement

Important Information That Makes Sense

What is a Pesticide?

A pesticide is any substance or mixture of substances intended to control pest infestations. The word pesticide covers a broad range of products that control a wide range of pests. Pesticides may be broken down into two categories of products such as herbicides, insecticides, fungicides, piscicides, miticides and rodenticides. There is also another category known as plant growth regulators (PGR's). In the world of aquatic plant management, herbicides and algaecides are the most commonly used pesticides.

The Dose Makes The Poison

"Solely the dose determines that a thing is not a poison," observe Paracelsus, the father of modern toxicology, more than 400 year ago. Paracelsus was right. Prescription drugs, for example, are therapeutic if taken in small doses, but can be dangerous if abused or taken in overdose proportions. Pesticides, like antibiotics, are effective when used in the right circumstances, but can become a threat to the environment or even human health if improperly used. Just as in medicine, the risks inherent in a particular pesticide must be weighed against the benefits gained from its measured use.

Why are Pesticides Used?

Pesticides (Herbicides/Algaecides) are used to improve and maintained lake or pond will increase the value of your property. They can also improve the overall aquatic ecosystem. A lake or pond that is choked with aquatic weeds can lead to stunted fish populations. Certain types of algae can be toxic to man, fish, and other aquatic life. Pesticides can be used to bring a balance back into the aquatic ecosystem. It is important to know that all plants are not weeds. Therefore, no aquatic management plan should attempt to eliminate all plants from the aquatic system. Your professional lake manager has taken care to provide a program that both reduces nuisance aquatic plants and maintains some plants to provide food for aquatic organisms that depend on plants and algae for their very existence.

Toxicology

Toxicology is the measure of a substance to cause harm. The risk associated with harmful substances is a combination of toxicity of a substance and the amount of exposure to the substance. In case of aquatics both the toxicity and exposure are minimal. Most aquatic herbicides are mixed with water and evenly applied in a specific targeted area of the water body. Dilution soon effects the concentration of a herbicide in the water. Take the case of Reward (formerly Diquat) when applied at two gallons per surface acre (43,560 sq. ft.). A 150 pound person would need to consume 3,750– 7,500 gallons of treated water **immediately** after application, or 375,000 to

Relative Toxicity of Chemical Substances*

	Acute Oral-Rate LDC/50—mg/kg
Fluridone	10,000
Glyphosate	5,600
Table Salt	3,000
Aspirin	1,000
2, 4-D (DMA)	300—1,000
Copper Sulfate	300
Reward	230
Endothall	206
Caffeine	192
Nicotine	53
Sodium Cyanide	6.4

*From AQUAPHTYE, Volume 6, No. 1

LDC/50 (lethal dosage /50%); is the amount of active ingredient required to cause the death of one-half of the test population

750,000 gallons of treated water within 10 to 14 days post treatment to ingest enough Diquat dibromide to achieve a lethal dose concentration fifty percent of the time. The actual usage rates are far below the LD/50 rates. This means that an application would have to far exceed the maximum labeled rate to place enough herbicide in the water to achieve a LD/50 of that herbicide.

Typical application rates for Endothall based herbicides are between .1 ppm (parts per million) and 5 ppm. The LD/50 for Endothall is 230 ppm. Reward is normally applied at rates varying between .74 ppm and 1.48 ppm. These herbicide usage rates are expressed in parts per million, or even parts per billion in case of Sonar. The following comparisons may put these numbers (ppm or parts per million) into a better perspective.

Pesticide Classification

One Part per Million is equal to:
1 inch in 16 miles
1 minute in two years
1 penny in \$10,000.00
One Part per Billion is equal to:
1 inch in 16,000 miles
1 second in 32 years
1 penny in \$10 million dollars

Pesticides are given a classification upon registration (approved to be used) with the Environmental Protection Agency. There are two broad classifications of pesticides as established by the EPA. The first classification is **General Use Pesticides**. These are considered lower in risk and are available

for sale and used by the general public. Examples would be herbicides for dandelion control, weed and feed fertilizers, Copper Sulfate, Aquathol K, and Navigate (granular 2,4-D). The majority of herbicides used in aquatics are for general use. The second classification is **Restricted Use Pesticides (RUP's)**. These products include Reward and fish toxicants. These products can only be purchased by state certified and trained professionals. The Michigan Department of Agriculture currently certifies Commercial Pesticides Applicators, pursuant to Act 451, of Public Acts of 1994, part of 83 as amended.

Environmental Fate

Many questions are asked about what happens after a pesticide is used in a lake or pond. Generally, pesticides break down rapidly in the environment. Depending on the products used, a combination of sunlight, water chemistry, and microbial action break the pesticide down into natural components. Some pesticide ingredients bind with sediments and are no longer available as a herbicide.

Regulations

Currently professional lake managers are regulated by two different agencies. The Michigan Department of Agriculture provides licensing and certification of commercial applicators who can then provide services for hire. In the case of public waters, the Michigan Department of Natural Resources and Environment issues permits for the control of nuisance aquatic plant and algae using herbicides and/or algaecides.

Dept. of Agriculture (MDA)

The Department of Agriculture mandates that any company offering aquatic weed control service must have both a commercial license and personnel with a pesticide applicator's certificate. For certified applicators to maintain their license they must either participate in a MDA approved continuing education course or take a written exam every three years. They may also attend conferences and meetings that present the latest research concerning aquatic pesticides, proper usage, and new application techniques with the industry. One such group here in Michigan is the Midwest Aquatic Plant Management Society which hold it's annual meeting each spring. The MDA also determines what pesticides are allowed for use in Michigan. All pesticides used in Michigan must be registered with the MDA and the EPA. If you have a question about a particular pesticides, contact you professional lake manager. If he or she cannot answer your question, please feel free to contact the MDA, Pesticide and Plant Management Division in Lansing at (800) 292-3939.

Dept. of Natural Resources & Environment (DNRE)

The Department of Natural Resources and Environment provides permits for herbicide and algaecide applications in public waters. Public waters are defined any body of water with: an overflow (continuous or intermittent), two or more owners, or ten surface acres or larger in size. The DNRE Water Bureau also can answer questions that you may have by calling (517) 241-7734.

Product Registration

All products are regulated by EPA and must maintain registration with the agency. The EPA determines if a product will be a **general use pesticide** or a **restricted use pesticide**. This is an ongoing process. EPA may at anytime ask for additional data related to a given product and may request to see any data that a company has on any registered product. Companies are required to keep all data on a pesticide for the life of the compound. This means that with older compounds they may have to keep data that is over 50 years old and be able to provide it to EPA on request. Registration and re-registration of a compound is estimated to cost the producer between 2.4 and 4.0 million dollars. The cost of research and development for new products is typically between \$30 and \$70 million dollars before the first product can be sold commercially.

Common Sense

All pesticides can cause harm when used improperly or by those who lack proper pesticide-use training. However, applications will be made where there is little chance for direct exposure from a herbicide in its concentrated form to anyone who is not a pesticide applicator. If a treatment on your lake or pond has been done, and you cannot find a notice indicating that any water, call your professional lake manager and ask what is done and if any precautions need to be taken.

It should be noted that there are two distinct categories for treatments. The first category is treatment for the control of nuisance aquatic plants. These treatments normally are done using herbicides that place water-use restrictions on the treated areas of the water body. Signs are posted in the treatment areas indicating any special precautions that should be taken. The second category is algae control treatments. These treatments are almost always done using copper based products which place no water-use restrictions on the treated waters where applied.

Should you observe an unusual effect following a pesticide application, immediately wash with soap and water. Then call your professional lake manager. Should they not be available consult with your physician. It is important to provide the doctor with any information you may have concerning the pesticide maybe obtained by contacting the Poison Control Center at (800) 764-7661 or the National Pesticide Telecommunications Network at (800) 858-7378.

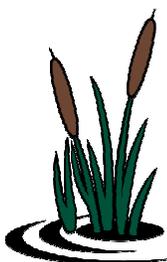
Water Use Restrictions

The use of aquatic herbicides can result in water-use restrictions being placed on waters that have been treated. These water-use restrictions may include a "no swimming" restriction" and/or "no fish consumption" and "irrigation" restrictions. When an application is done that places water-use restrictions on a water body, signs are posted along the area that was treated. These signs should include the name of the pesticides used, the date of application, any restrictions that apply, and the name, address, and phone numbers(s) of the company or person that applied the pesticides. If you should inadvertently use the water and then find out an application was done and water-use restrictions are in effect, first take a good shower and then give your professional lake manager a call. Odds are nothing will occur because the volume of water will dilute the pesticide to the point that it is not a real threat to people or animals (see the "dosage" discussion above). Be sure to give your professional lake manager a call anyway. In conclusion, if you have any questions or would like a Product Specimen Label or Material Safety Data Sheet give your professional lake manager a call as well.

General Comments

Overall great care and thought has gone into determining the best management program for the control of nuisance aquatic plants, algae, and/or invasive wetland species for your water body or property. The herbicides/algaecides selected will provide good control with minimal risk. Our approach is to control exotic invasive species and managing high-use areas while leaving some unmanaged areas allowing for a better balanced ecosystem.

Should you have any comments or questions please contact your professional lake management company listed below.



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Proud member of: Michigan Aquatic Managers Association

"Dedicated to the Professional Management of Michigan's Aquatic Resources"