

Protect Your Pond, Protect Your Health



Your role in conserving the health of Cape Cod Ponds

We are all responsible for keeping our ponds clean. The ponds on Cape Cod provide many benefits to those living near them. As sources of potable water, habitats for fish and wildlife, and the recreation they provide, these waterbodies are invaluable. Environmental conditions on the Cape, such as permeable sandy soils, a sole source aquifer, and significant rainfall, make these ponds particularly sensitive to contamination and degradation. Water quality problems can occur as the result of pollution from septic systems and runoff from lawns and streets.

Therefore, it's important for everyone to do their part in protecting the quality of the ponds they live near.

Phosphorus

Phosphorus is an element that is found naturally in soil, rock, and other organic material. It is a necessary nutrient for plant growth and, for this reason, works well as a fertilizer. Phosphorus is a threat to water quality in ponds because it stimulates aquatic plants such as algae to grow as well.

As the level of phosphorus increases, algae will continue to multiply. When these algae eventually die off, they settle out to the bottom of the pond where they decompose. The process of decomposition requires oxygen. An excessive amount of algae will therefore deplete the oxygen levels in a pond. The depletion of oxygen can cause the death of some fish populations. High phosphorus levels and the subsequent algal blooms are also responsible for decreasing water clarity and producing foul odors.

Human activities contribute a great deal to the phosphorus loading that takes place. The human activities that add major sources of phosphorus to ponds are failing septic systems, the use of phosphorus-containing detergents and dish-soaps, runoff related to roads, land development, and alteration of the vegetation or lay of the land around them.

Phosphorus loading can be minimized by maintaining an effective septic system, leaving, or planting additional vegetation between your home and the shoreline as a "buffer", preserving the existing ground features, preventing runoff

from flowing freely into the pond, and practicing erosion control where necessary.

Algae

Algae are microscopic plants that grow naturally in ponds. Algae have the potential to grow to an enormous population, called an algal bloom.

Algal blooms can turn water a cloudy green or brown, and can appear as thick, green, slimy mats that float on the pond surface. Excessive algae in a pond can make the water look murky, damage the habitats of fish and other aquatic species, and may produce noticeably foul odors.

Under certain conditions, some blue-green algae (named for the pigment in its cells) can be toxic. Such conditions include: warm water temperatures, a neutral pH, and high levels of nutrients in the water. These toxins can be dangerous to pets, livestock, waterfowl, other animals, and can also be harmful to humans (see Health section).

Although we can't control the temperature or pH of a pond, we can limit the amount of nutrients (e.g., phosphorus) entering the pond, which would effectively prevent many algal blooms from occurring. Ensuring that your septic system is operating correctly, diverting runoff from roads, driveways, lawns, and gardens, not over fertilizing lawns and gardens, conscientious landscaping, and choosing non-phosphorus detergents are the best ways to prevent algal blooms in your pond.

Hazardous Chemicals

A wide variety of the products commonly found in our household are considered hazardous materials and care needs to be taken when disposing of them. These products can impact human health, the health of the nearby wildlife, and that of your pond.

Special care should be taken in storing and handling these products. Used motor oil, pesticides, paint thinners, and other chemical products should be stored in a dry, contained area to prevent spilling. Leave the labels on the containers so they can be easily identified. Be careful not to spill these products on the ground. Just a little bit of these substances can go a long way towards contaminating your soil, groundwater, and pond. When possible, less toxic products should be used.

Hazardous materials need to be disposed of properly. If these products are poured into your toilet, down the drain, or on the ground they will make their way into the groundwater, the pond, and maybe your drinking water. Most towns have special collection days to help you get rid of your unwanted hazardous materials in a safe manner. Call your Board of Health for information on these programs.

How Your Health Can Be Affected

The water quality of the pond that you bathe or boat in can directly affect your health.

Several studies have been conducted which have related the presence of pathogens (i.e., disease-causing microorganisms) to the occurrence of adverse health effects in swimmers. The pathogens associated with human fecal matter typically cause gastroenteritis, and may be present in the water as a result of a failing septic system or disposal of sewage by boats. Among the health effects observed in some studies were gastrointestinal symptoms (e.g., vomiting, diarrhea, stomach-ache, nausea), respiratory symptoms (e.g., sore throat, cough, chest cold, runny nose, sneezing), eye and ear symptoms (e.g., infections, earache, itchiness), dermal symptoms (e.g., skin rash), and fever.

Under certain conditions, some algae produce toxins that can harm those swimming in the water containing the toxins. The effects of these toxins that have been identified in humans include skin and eye irritation, dizziness, indigestion, cramps, and vomiting.

Another health issue Cape Cod residents should be aware of is Lyme Disease. The tall grasses and shrubs growing along ponds, that are beneficial to the water quality of the pond, are also the preferred habitat of deer ticks, the bite of which can cause Lyme Disease.

When walking in grassy or wooded areas, cover exposed skin with clothing and tuck pant bottoms into socks. Apply an insect repellent containing DEET (to clothes & body) or permethrin (to clothes only). Perform daily tick checks of yourself and your family. You may also want to discuss the benefits of the Lyme Disease vaccine with your doctor.

The Cape Cod Watershed

A watershed includes all of the area that contributes surface water or groundwater to a pond and lake. Each watershed is delineated by connecting the points of highest elevation around the waterbody.

The Cape Cod watershed is characterized by permeable, sandy soils and a sole source aquifer, the Cape Cod Aquifer. This aquifer is the primary source of drinking water for Cape Cod residents.

The streams, ponds, and groundwater that make up the Cape Cod watershed are all connected to one another. Because of this, water and the substances in it can travel between the streams, ponds, and groundwater. Thus, any contaminant within the watershed has the potential of affecting the water quality of the ponds, as well as the drinking water source. This is why it is so important to limit the inputs of pollution at each source

CONTACTS

Massachusetts Department of Public Health
Center for Environmental Health
250 Washington Street
Boston, MA 02108
(617) 624-5757

Massachusetts Department of Environmental Management
100 Cambridge Street, Room 1905
Boston, MA 02202
(617) 727-3180

Barnstable County Health Department
(508) 362-2511

Cape Cod Commission/Water Resources Department
(508) 362-3828

This information booklet was produced by the Mass. Department of Public Health, the Mass. Department of Environmental Management, and the Great Sand Lakes Task Force.

Activity/Pollution Source	What you can do to help
Septic Systems	DO <ul style="list-style-type: none"> • have your septic system pumped regularly (every 2-3 years). • check the sludge level in your septic tank every year. When sludge fills half of your tank, it needs to be pumped. • organize neighborhood septic tank pumping. • conserve water.
	DON'T <ul style="list-style-type: none"> • pour hazardous materials or strong cleaning agents down your drain or in your toilet. • use chemical additives for septic system maintenance.
Landscaping, Yardwork, Pesticide and Fertilizer Application	DO <ul style="list-style-type: none"> • leave naturally vegetated areas along pond shores intact. • leave trees and shrubs along shorelines and streambanks in place. • plant deep rooted, native vegetation along shorelines and streambanks. • maintain the natural topography and keep site disturbance (excavation, plant and turf removal, etc.) to a minimum. <i>(See Health section for concerns relevant to vegetation)</i> • use fertilizer sparingly.
	DON'T <ul style="list-style-type: none"> • apply an excessive amount of pesticides to your lawn and garden. <i>Avoid using if possible.</i> • dispose of grass clippings, leaves, branches, or other plant debris in the pond.
Shoreline Alteration, Construction	DO <ul style="list-style-type: none"> • contact your Conservation Commission if you are interested in building (e.g., extensions, decks, sheds, docks, etc.) within 100 feet of the shoreline. • leave vegetation and rocks on the shoreline in place.
	DON'T <ul style="list-style-type: none"> • build new beaches, piers, or make any other alteration to the land within 100 feet of the water without first contacting your Conservation Commission.
Hazardous Materials	DO <ul style="list-style-type: none"> • contact your Board of Health for information on hazardous materials collection and disposal. • store hazardous materials carefully in a dry, safe, and contained area. • keep labels on the containers so you can identify the product.
	DON'T <ul style="list-style-type: none"> • dispose of oil, paint, paint thinner, or other chemicals on the ground, in your septic system, or down storm drains.
Runoff from roofs, lawns, Driveways, and roads	DO <ul style="list-style-type: none"> • prevent water from your roof, lawn, driveway, and street from flowing directly into the pond. • divert runoff into depressions, or flat, vegetated areas.
Boating	DO <ul style="list-style-type: none"> • be careful when handling gas to avoid spills and fix any leaks. • use pump-out facilities and on-shore bathroom facilities.
	DON'T <ul style="list-style-type: none"> • release raw sewage or garbage into any waters.
Detergents	DO <ul style="list-style-type: none"> • use non-phosphate detergents.
	DON'T <ul style="list-style-type: none"> • clean anything in the pond with soaps, detergents, or cleaning agents. • wash your car or boat near ponds or streams.

Septic Systems

A septic system works by collecting your household waste into a tank where solids are separated out. The liquid waste travels through a leach field that is designed to allow the soil to filter out pollutants (i.e., bacteria and viruses) in the wastewater. The septic system relies heavily on naturally occurring microorganisms to consume a good part of the waste.

While a septic system that is well built and cared for will generally not contaminate waterbodies, there are several things that can cause problems. Excessive waste in your tank, dumping or applying chemicals or

Agents to your septic tank that kill the microorganisms that break down the waste, and an accumulation of products that cannot be broken down can cause your septic system to malfunction and leak bacteria, phosphorus, and other nutrients into groundwater and ponds.

Thus, it is important to have your septic tank pumped out regularly and keep substances that kill microorganisms and products that can't be broken down out of your septic system.

Questions and Answers

Q: How do I know if the pond is safe for swimming?

A: For information on water quality testing currently taking place or to request that a pond be tested for bacteria content (e.g., fecal coliform), call your local Board of Health.

Q: Who do I call if I spot a pollution problem in a pond?

A: Call your local Natural Resources Officer or Board of Health. If problem is extremely urgent (e.g., a spill), call Emergency Response at (508) 946-2856.

Q: Who can answer my questions about soil erosion or agricultural runoff?

A: The Natural Resources Conservation Service office can be reached at (508) 362-9332 for questions about erosion and runoff.

Q: How can I find out which detergents contain no or low phosphorus?

A: Call the Department of Environmental Management (See Contacts section) to request a copy of "The Lake Book", which contains information on the phosphorus content of different detergents in addition to more detailed information relative to lakes and ponds.

Q: How do I know if there's an invasive plant problem at my pond?

A: Call your local conservation agent or natural resource officer to request a site visit. The Massachusetts Department of Environmental Management (See Contacts section) can provide you with a copy of their Invasive Plant Guide. The photos and drawings in this guide can be used to identify the plants that are present near you.

Q: How do I protect my waterfront from Canadian Geese?

A: Allow the grass to grow tall near the shore of the pond, or plant shrubs such as juniper to repel geese. Do not feed the geese.