

## **Phosphorus: Just A Little is Too Much for Our Lakes**

### **What is Phosphorus?**

Phosphorus is a non-metallic chemical element that is commonly found in nature. It is an important mineral required by most living organisms. Phosphorus can be found in various forms, most commonly phosphate ( $\text{PO}_4\text{-3}$ ). However, when measuring the amount of phosphorus in aquatic systems, the total phosphorus is measured consisting of both the particulate and dissolved forms.

### **What are Phosphorus Sources?**

There are many sources of phosphorus in aquatic systems. These sources can be natural such as waterfowl waste, atmospheric deposition, weathering of geologic phosphate material, and plant decomposition; or they can be human induced such as fertilizer, agricultural and urban runoff, industrial and domestic sewage as well as faulty or overloaded septic systems.

### **Why is Phosphorus Important in Our Lakes?**

Phosphorus in our lakes is considered the "limiting nutrient." Phosphorus typically limits aquatic plant (macrophytes and algae) growth because it is less available for uptake than other nutrients (nitrogen) in aquatic systems. Different forms of phosphorus are available at different rates for aquatic plants. Orthophosphate is immediately available for uptake by algae while particulate phosphorus can become available over time through decomposition.

Even a small increase in phosphorus concentration can increase levels of algae and/or cyanobacteria, and corresponding chlorophyll-a concentrations. Excessive phosphorus concentration, along with an adequate supply of sunlight, can increase littoral macrophyte abundance and promote algal and/or cyanobacteria blooms, temporarily decreasing water transparency. As these cells die, they slowly settle into the deeper, darker waters of the lake bottom. Bacterial decomposition of abundant cell quantities depletes oxygen levels in the bottom waters. Anoxic (devoid of oxygen) water and sediments promote conditions that encourage the recycling of phosphorus back into the water column.

### **How can Phosphorus Sources be Managed?**

The importance of managing phosphorus in the watershed is essential to protecting and maintaining a healthy lake. Identifying phosphorus sources in a lake's watershed is the first step in developing a watershed management plan. Watershed activities that promote phosphorus loading typically include: lawn fertilization, irresponsible tree cutting; removing tree stumps, bushes and grasses; and increasing impervious surface areas, such as driveways, rooftops, parking lots etc. These activities can increase water runoff to the lake.

Watershed management plans should utilize best management practices and low impact development techniques to minimize the movement of phosphorus from the watershed to the lake. If a management plan doesn't exist or you don't have time to develop one, here are a few things you can do to minimize your impact on phosphorus loading.

- Plant native shrubs or other vegetation to reduce shoreline erosion and provide a vegetated buffer that helps to absorb nutrients before entering the lake.
- Maintain a properly working septic system and have it pumped regularly to decrease the amount of phosphorus leaching into groundwater.
- Use phosphate free fertilizers as required by law.
- Use phosphate free soaps and/or detergents in your home.
- Do not dump leaves or grass clippings in the lake or burn brush on the lake or near the shore.
- Clean up after your pets.
- Do not feed waterfowl.

## Maintain Your System

**Regularly pump-out your septic tank** when needed.

**Keep a record** of pumping, inspections, maintenance and repairs.

**Map out septic tank and other system components.** Either have a map or locate components with permanent stakes. This is useful for accessing the system and will prevent damaging system components when doing home maintenance or yard work.

**Don't park or drive heavy vehicles or equipment over the septic system** or any of its components.

**Don't build structures**, such as decks, patios or swimming pools, that would cover the absorption field or limit access to the septic tank and distribution box.

**Don't flush or use strong chemicals** and bacteria-destroying products, such as drain cleaners, solvents, paint, paint thinners, floor cleaners, sink cleaners, motor oil, antifreeze, pesticides, and photo chemicals. These may disrupt septic tank or absorption system operation. Household bleach, disinfectants, cleansers, antibacterial soaps, when used in normal household applications should not affect system operations.

**Don't flush materials that don't easily degrade**, such as paper towels, cotton swabs, personal hygiene products, condoms, medications, disposable diapers, coffee grounds, cat litter, cooking fats/oils, facial tissues, dental floss, cigarette butts, plastics, grease or bones.

**Avoid septic tank additives.** A septic tank that is properly sized and maintained will adequately manage household wastewater without the use of additives.

**Avoid garbage disposals or grinders** because these substantially increase the accumulation

of solids in the septic tank and in the absorption field. If they are used, the septic tank size should be increased and pumped-out more often.

**Direct water treatment system discharges to a separate soil absorption system, if possible**, to minimize discharges to the septic system. However, as long as the system is well maintained and can accommodate the additional flow, water treatment system discharges can be directed to the septic tank in many cases.

**Direct drainage away from the septic system** from roof, cellar/footing (sump pump) and surface water run-off.

**Plant grass and other shallow-rooted plants over the absorption field.** Keep trees and long-rooted plants and shrubs away from the immediate area of the absorption area. Roots can grow into the pipes and clog the system.

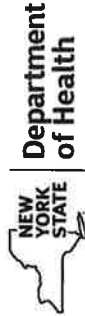
**Conserve water.** Check for defective toilet tank valves, repair leaky fixtures, and install appliances and fixtures that use less water and avoid wasteful practices.

**Regularly inspect and maintain any effluent pumps and alarms** that may be part of your septic system.

## Find Out More

**Contact the New York State Department of Health**  
Ph: (518) 402-7650, E-mail: [bpwsp@health.ny.gov](mailto:bpwsp@health.ny.gov)  
[health.ny.gov/DrinkingWater](http://health.ny.gov/DrinkingWater)

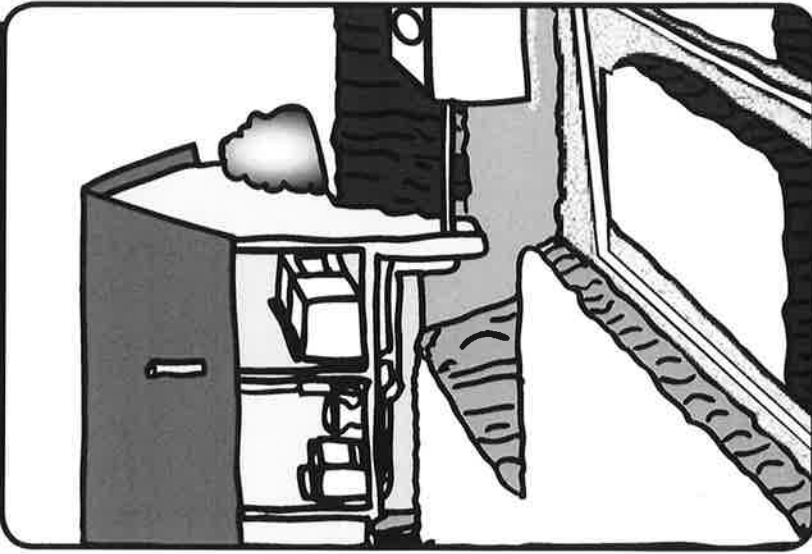
**Contact Your Local Health Department**  
[www.health.ny.gov/EnvironmentalContacts](http://www.health.ny.gov/EnvironmentalContacts)



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# Septic System Operation and Maintenance



A septic system will serve a home for a long time if it is properly located, designed, constructed and maintained. However, even the best designed and installed septic system will eventually fail without periodic maintenance. This guide briefly describes septic system components and how they should be maintained.

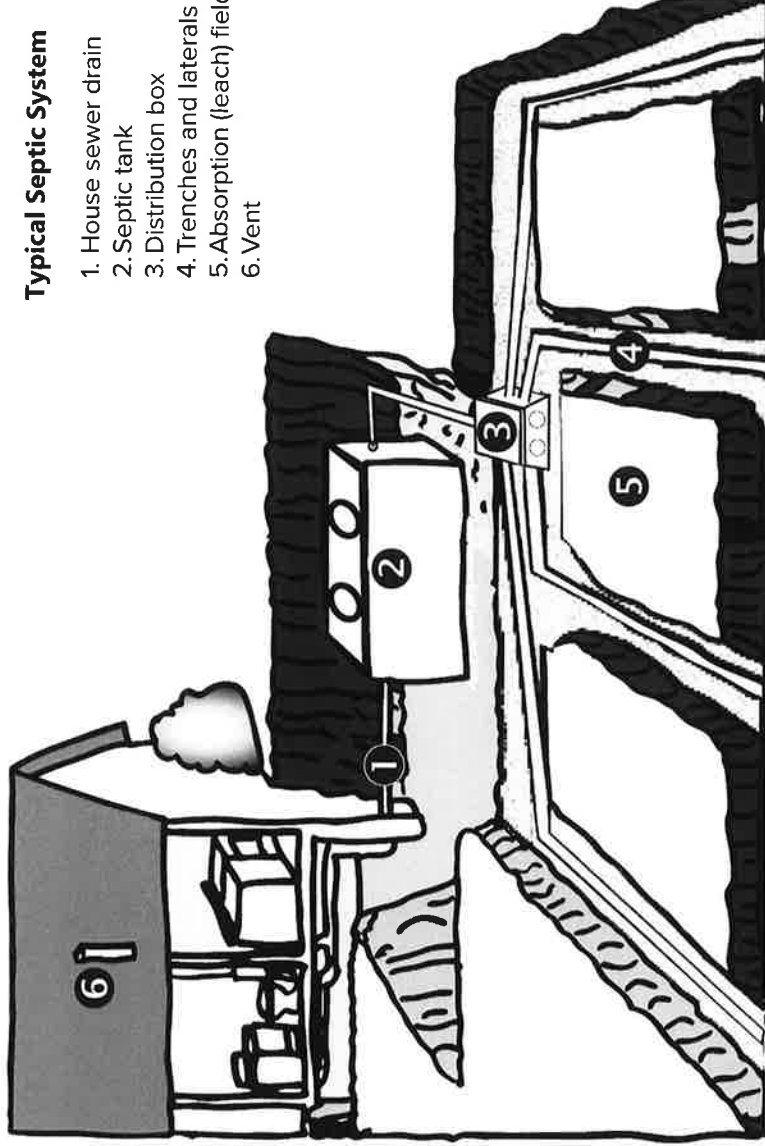
## Septic System Components

A septic system, also called an onsite wastewater treatment system (OWTS), is made up of a **house sewer drain**, **septic tank**, **distribution box** and **soil absorption (leach) field** (see *Typical Septic System diagram, right*).

1. The **house sewer drain** collects all the discharge from home fixtures, such as toilets, sinks, showers and laundry and connects to the septic tank.
2. The **septic tank** collects all the discharges from household plumbing and provides the needed time for wastes to settle or float. The heavy solids settle to the bottom of the tank where they are broken down by bacteria to form sludge. The lighter solids, fats and grease, partially decompose and rise to the surface to form a layer of scum. This process allows the partially treated wastewater to be released to the absorption field.
3. The **distribution box** evenly distributes wastewater from the septic tank to pipes in the trenches of the absorption field. It is important that each trench receives an equal amount of flow to prevent overloading to one part of the absorption field.
4. **Trenches** receive partially treated sewage.
5. The **absorption (leach) field** is a system of trenches and distribution pipes where wastewater is biologically treated by the surrounding soil. The system is partially filled with washed gravel, stone or a gravelless product. The absorption field must be properly sized, constructed and maintained to assure satisfactory operation and long life.
6. The **vent** permits gases that build up in the plumbing to exit the system.

## Typical Septic System

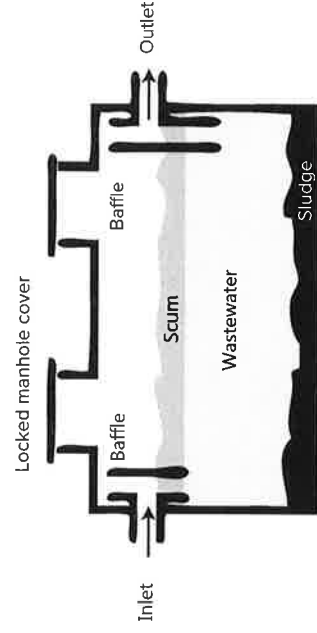
1. House sewer drain
2. Septic tank
3. Distribution box
4. Trenches and laterals
5. Absorption (leach) field
6. Vent



## Septic Tank Maintenance

**A septic tank should be pumped out every two to three years.**

A septic waste transporter (septic tank pumper) that is licensed by the New York State Department of Environmental Conservation can inspect, measure tank layers and pump out the tank when necessary.



Typical Septic Tank

**CAUTION! Never enter a septic tank because it contains toxic gases that can be deadly.**

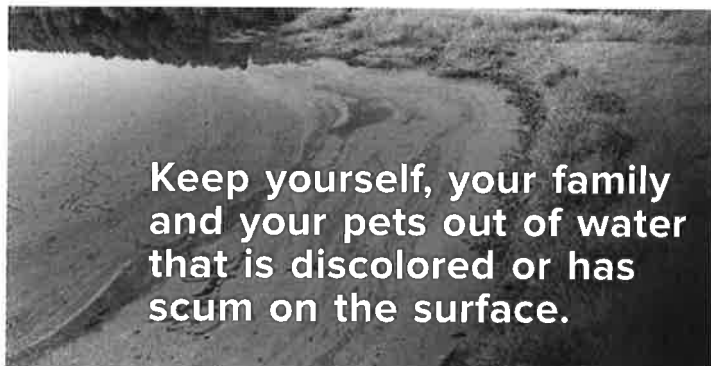
# Harmful Algal Blooms

## Know it, Avoid it, Report it!

### KNOW IT!

#### WHAT ARE HARMFUL ALGAL BLOOMS (HABs)?

Most algae are harmless, but exposure to toxins and other substances produced by *harmful* algal blooms can make people and animals sick. HABs can impact drinking water, and cause discolored water, floating scums, and unpleasant odors that can reduce the value of a lake or river. HABs are sometimes called *blue-green* algal blooms even though they can be various colors.



#### CAUSES, PREVENTION & RESPONSE

Scientists do not fully understand the exact causes of HABs. They occur most often in waters high in phosphorus and/or nitrogen. New York State has many programs and activities to reduce phosphorus and nitrogen from entering the water from surrounding lands.

DEC's HABs Program, in cooperation with the NYS Department of Health and the NYS Office of Parks, Recreation and Historic Preservation, works to identify and respond to HABs. DEC and DOH investigate HABs reports, sample blooms and conduct research to learn more about HABs.

### WHAT TO DO

#### AVOID IT!

It can be hard to tell a harmful algal bloom from a non-harmful algal bloom, so it is best to avoid swimming, boating, fishing or other recreation in discolored water that looks like it might have a bloom. Avoid eating fish caught from areas with a bloom. Never drink, prepare food, cook, or make ice with untreated surface water, even if there is no visible bloom.

#### IF CONTACT OCCURS

- Rinse thoroughly with clean water.
- Stop using the water.
- Seek medical attention if vomiting, nausea, diarrhea, skin, eye or throat irritation, allergic reactions or breathing difficulties occur.
- Report symptoms to local health department or the NYS Department of Health.
- Take care to remove algae from pet fur.

#### REPORT IT!

If you think you see a harmful algal bloom, fill out a **Suspicious Algal Bloom Report Form** and submit it with any pictures to: [on.ny.gov/habform](http://on.ny.gov/habform).

-or-

call: **518-402-8179**

If you experience any health effects from a HAB, report them to your local health department:

-or-

email: [harmfulalgae@health.ny.gov](mailto:harmfulalgae@health.ny.gov)

#### CONTACT & LINKS

For updates about the location and status of HABs from spring through fall, see [www.dec.ny.gov/chemical/83310.html](http://www.dec.ny.gov/chemical/83310.html)

-or-

sign up for DEC's email newsletter **Making Waves** at [www.dec.ny.gov/about/661.html](http://www.dec.ny.gov/about/661.html)

For information on the NYS HABs Initiative and funding opportunities, see:

<https://on.ny.gov/HABsAction>

**DEC:** [on.ny.gov/hab](http://on.ny.gov/hab)

**NYSDOH:** [www.health.ny.gov/environmental/water/drinking/bluegreenalgae](http://www.health.ny.gov/environmental/water/drinking/bluegreenalgae)

**EPA:** <https://www.epa.gov/cyanohabs>

**NYS Department of Environmental Conservation  
Division of Water**

625 Broadway, Albany, NY 12233-3508

Phone: (518) 402-8179 | email: [HABsinfo@dec.ny.gov](mailto:HABsinfo@dec.ny.gov)

#### WHAT DO HABs (USUALLY) LOOK LIKE?

The appearance of HABs can vary. Colors can include shades of green, blue-green, yellow, brown, red, or white

SPILLED PAINT APPEARANCE



PEA SOUP APPEARANCE



STREAKS ON SURFACE



FLOATING DOTS OR CLUMPS

