



- [Home](#)
- [About the Program](#)
- [What's New!](#)
- [Education & Outreach](#)
- [Kid's Place](#)
- [Lake Facts](#)
- [Local Partners & Grants](#)
- [Opportunities for Action](#)
- [Water Quality](#)
- [Living Natural Resources](#)
- [Recreation & Culture](#)
- [Links](#)

Can't Find it Here?
[Visit the Site Map](#)

Toxic Substance Pollution

Toxic substances are elements, chemicals or chemical compounds that can poison living plants and animals, including humans.

Although Lake Champlain levels are low compared to more industrialized areas such as the Great Lakes, there is still cause for concern. A survey of Lake bottom sediments showed elevated levels of mercury in many parts of the Lake, and several other toxic substances in specific locations. Fish consumption advisories have been issued in both New York and Vermont due to elevated levels of mercury and polychlorinated biphenyls (PCBs) in some fish species' tissues.

More on Toxic Substances...

- [Toxic Substances of Concern](#)
- [Sites of Concern](#)
- [Fish Advisories](#)
- [Tips for Preventing Toxic Pollution](#)

Toxic Substances of Concern

The Lake Champlain Basin Program reviewed the substances found to date in Lake Champlain and ranked them as "high priority" and of "potential concern." Ranking was based on the extent and levels at which they are found, the risk that they may pose to human health, and the risk they may pose to the ecosystem. This set of priorities will be used to: 1) direct further research on presence and effects; 2) serve as a focus for source identification efforts; and 3) direct management efforts, including source reduction, treatment and remediation.

High Priority	Potential Concern
PCB's	ammonia
mercury	persistant chlorinated pesticides
arsenic	phthalates
cadmium	chlorinated phenols
chromium	chlorine
dioxins/furans	copper
lead	VOC's (benzene, acetone)
nickel	pesticides (atrazine, alachlor)
PAH's	strong acids and bases
silver	potential pollutants such as flouride
zinc	

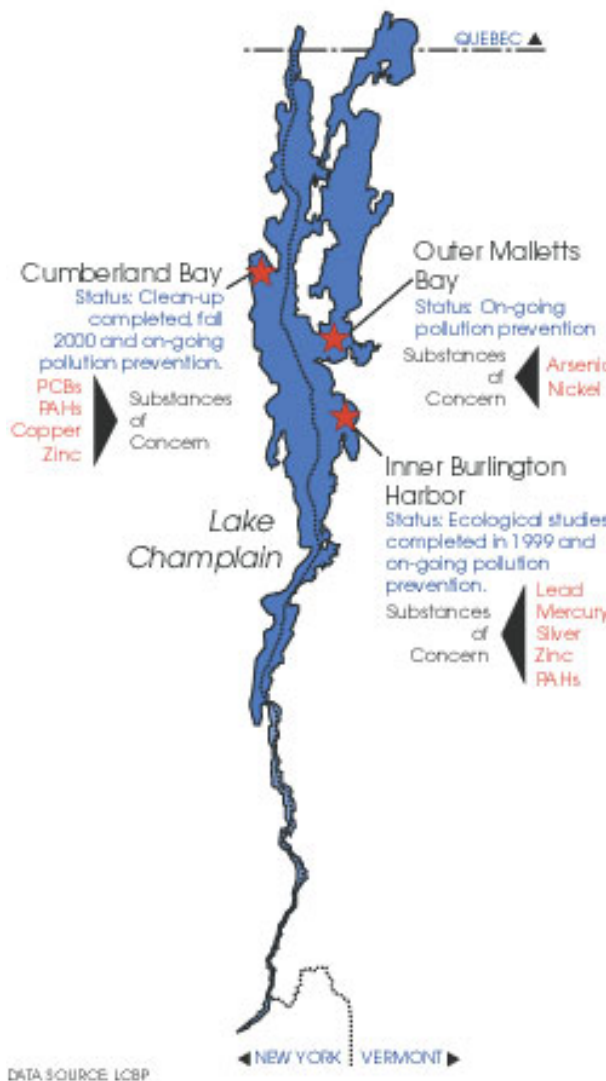
Note:

- *High priority* toxic substances merit highest priority for management action because they are found in Lake Champlain sediment, water or biota at levels above appropriate standards or guidelines, which indicates potential human health or ecosystem risks.
- *Potential concern* toxic substances do not pose a known risk to human

health or the environment based upon existing standards, but they are known to have detrimental effects in other systems where chemical concentrations are greater. These substances should be monitored more extensively and their effects studied further.

Sites of Concern in Lake Champlain

Toxic Sediments and Clean-up Actions



Most toxic substances found to date in Lake Champlain occur at levels that do not pose a known threat to human health; however, a few areas in the Lake have toxic substances found in higher concentrations than in the rest of the Lake, or are found together at one location.

Reduction and prevention actions will be targeted to these sites of concern. While it is understood that these areas may not be the only sites of concern, they are sites where action to reduce and prevent contamination by toxic substances should begin. Areas where future problems can be prevented will also be targeted for pollution prevention activities.

- [Home](#) | [Site Map](#) | [About the Program](#) | [What's New](#) | [Education & Outreach](#) | [Kid's Place](#) | [Lake Facts](#) | [Local Partners & Grants](#) | [Opportunities for Action](#) | [Water Quality](#) | [Living Natural Resources](#) | [Recreation & Culture](#) |

Links

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[Home](#)
[About the Program](#)
[What's New!](#)
[Education & Outreach](#)
[Kid's Place](#)
[Lake Facts](#)
[Local Partners & Grants](#)
[Opportunities for Action](#)
[Water Quality](#)
[Living Natural Resources](#)
[Recreation & Culture](#)
[Links](#)

[Can't Find it Here?](#)
[Visit the Site Map](#)

Fish Advisory in Lake Champlain

Pollutant levels in the waters of Lake Champlain are generally low, and most fish species do not have specific advisories. However, some contaminants have been found to be higher in certain fish and wildlife because of the processes of bioaccumulation and biomagnification. Advisories have been issued against consumption of lake trout and walleye because levels of PCBs and mercury, respectively, exceed Food and Drug Administration (FDA) criteria.

New York Advisory

Based on an FDA tolerance of 2 parts per million for PCBs and an action level of 1 part per million for mercury, the New York State Department of Health advises that an individual eat no more than one meal per week of freshwater fish, no more than one meal per month of large walleye (over 19 inches) or lake trout (over 25 inches) caught in Lake Champlain. Women of childbearing age and children under 15 are advised to not eat any fish from Lake Champlain. Additionally, the New York advisory recommends that consumption of American eel and yellow perch from Cumberland Bay should be limited to no more than one meal per month. No brown bullhead should be eaten from Cumberland Bay (New York State Department of Health, 2000).

Vermont Advisory

The Vermont Department of Health advises that people should eat not more than one meal per month of walleye, three meals per month of lake trout (over 25 inches), and six meals per month of all other fish caught in Vermont state waters. Women of child-bearing age and children under 6 are advised to not eat any walleye, limit consumption of lake trout to one meal per month, and limit consumption of all other fish caught in Vermont state waters to two meals per month. The Vermont advisory for lake trout in Lake Champlain is more restrictive. Adults should limit their consumption of lake trout (over 25 inches) caught in Lake Champlain to one meal per month, and women of childbearing age and children under 15 should not eat any lake trout from Lake Champlain.

References:

- NYS Department of Health. 2000-2001. Health Advisory: Chemicals in Sportfish and Game. Albany, NY. 14 pp.
- Bill Bress. VT Department of Health. Personal communication.

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- [Home](#)
- [About the Program](#)
- [What's New!](#)
- [Education & Outreach](#)
- [Kid's Place](#)
- [Lake Facts](#)
- [Local Partners & Grants](#)
- [Opportunities for Action](#)
- [Water Quality](#)
- [Living Natural Resources](#)
- [Recreation & Culture](#)
- [Links](#)

Can't Find it Here?
[Visit the Site Map](#)

Action Tips!

Get Involved to Protect Your Lake

There are many ways you can get involved helping Lake Champlain and its Basin. Check out our action tips on the following:

- [Watershed Planning](#)
- [Lake Champlain Environmental Issues](#)
- [Phosphorus Pollution Reduction](#)
- [Toxic Substance Pollution Prevention](#)
- [Human Health Protection](#)
- [Fish and Wildlife Protection](#)
- [Nuisance Aquatic Plant and Animal Prevention](#)
- [Wetland Protection](#)
- [Cultural Resource Protection](#)

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Watershed Planning Action Tips

Citizen's can get involved in planning at the local level:

- Start or join a [local watershed association](#) to address pollution problems within the watershed.
- Become a member of planning boards and commissions in your municipality or county to help ensure a future that is beneficial to the Lake
- Attend public meetings and information sessions concerning your local watershed to learn about its unique qualities and resources.
- Involve as many different key players as possible when planning for your local watershed.

[More about Local Level Planning](#)

[More Action Tips](#)

Lake Champlain Environmental Issue Tips

There are many ways to get involved and informed about environmental issues facing Lake Champlain and its Basin. Here's a few tips to get you started:

- Visit your local library to read about the Lake Champlain Basin, its history, characteristics, and problems.
- Join a civic organization, such as one that protects the Lake or a local watershed or one that promotes compatible economic development.

- Attend conferences, lectures, and presentations about Lake Champlain issues.
- Support the activities of organizations focused on improving water quality and natural habitat of Lake Champlain and its tributaries. Some of these activities include stream clean-ups, shoreline stabilization, and the planting of buffer strips around tributaries.

[More about Educational Opportunities](#)

[More Action Tips](#)

Phosphorous Pollution Reduction Tips

Help reduce phosphorus in Lake Champlain:

- Become an active member of a [local watershed](#) group.
- Use conservation practices on agricultural lands.
- Plant trees and vegetation to help hold soil in place and reduce erosion, particularly in areas next to surface water.
- Properly maintain your septic system, especially by pumping every few years.
- Wash your car with non-phosphorus and biodegradable soap on your lawn rather than on your driveway so that excess water and detergents can soak into the grass.
- Do not use unnecessary fertilizers; first, have your soil tested.
- Do not disturb ground cover unless absolutely necessary.
- Do not rake your yard waste into nearby streams, lakes or stormwater gutters.

[More about Phosphorus Pollution](#)

[More Action Tips](#)

Toxic Substance Pollution Prevention Tips

Many toxic substances come from residential sources, not just industrial sources. Please be sure to do the following to help prevent pollution from toxic substances:

- Keep cars and boats in good working order and recycle your oil.
- Walk or ride a bicycle rather than driving an automobile.
- Use environmentally sound products, such as baking soda, vinegar, and lemon juice to clean your home.
- Do not pour chemicals or motor oil down storm drains or into your septic system.
- Do not top off your gas tank when refueling your automobile.
- Do not throw away materials like paint that could be used by others.
- Do not use anti-freeze or other chemicals to keep ice fishing holes open.
- Recycle batteries and fluorescent light bulbs.

[More about Toxic Substance Pollution](#)

[More Action Tips](#)

Human Health Protection Tips

You can help protect your health and the health of others:

- Properly maintain your septic system, especially by pumping it out every few years.
- Obey posted signs at area beaches closed because of high fecal coliform levels.
- Do not dump sewage from your boat or home directly into the Lake.
- If you use water drawn from the Lake through a private water system, periodically test the water quality at your faucets for your safety.
- Do not swim in areas of the Lake where combined sewers or storm sewers discharge.
- Encourage your town or city to periodically test the outflow of their combined sewers or storm sewers for levels of fecal coliform and toxic contaminants.

[More about Human Health](#)

[More Action Tips](#)

Fish and Wildlife Protection Tips

Please help protect the Lake Champlain Basin's fish and wildlife:

- Keep domestic animals out of sensitive habitats such as alpine areas and bogs.
- Fence livestock out of riparian zones.
- Use measures such as streambank fencing, constructed wetlands and buffer strips to control nonpoint source pollution that causes habitat degradation.
- Use landscape practices which are beneficial to living natural resources and their habitats.
- Help limit the spread of water chestnut, zebra mussels, purple loosestrife and other nuisance nonnative species that can have negative effects on native fish and wildlife species and their habitats.
- Work with federal and state agencies and nonprofit organizations to protect fish and wildlife habitat through conservation easements and habitat protection and restoration programs.
- Learn to identify plant and animal species in the Basin to help researchers and managers better understand the distribution of these species in the Basin.

[More about Fish and Wildlife](#)

[More Action Tips](#)

Nuisance Aquatic Plant and Animal

Prevention Tips

You can help prevent the spread of nonnative nuisance aquatic plants and animals:

- Each time a boat or other item is used in water bodies infested by zebra mussels or other nuisance aquatic species, the boat, trailer, and equipment should be carefully inspected for evidence of these species. Remove any mussels or vegetation and dispose of them in the trash.
- Drain all water from the boat, including the bilge, live well, and engine cooling system.
- Dry the boat and trailer in the sun for at least five days, or if you use your boat sooner, rinse off the boat, trailer, anchor, anchor line, bumpers, engine, etc. with hot water or at a car wash.
- Leave live aquatic bait and bait used in infested waters behind—either give it to someone using the same water body, or discard it in the trash.
- When recreating in areas infested with Eurasian watermilfoil, be careful not to break apart the plant since milfoil spreads by plant fragments.
- Contact the Vermont Department of Environmental Conservation, the Lake Champlain Basin Program, and the New York Department of Environmental Conservation to find out how to become involved in monitoring and outreach activities to help prevent the spread of nuisance nonnative aquatic species in the Lake Champlain Basin.

[More about Nuisance Nonnatives](#)

[More Action Tips](#)

Wetland Protection Tips

You can help protect wetlands and preserve wetland habitat:

- Become more aware of the presence of wetlands in your community and educate yourself and others about wetlands and why they should be protected.
- Do not plant nuisance aquatic plants, such as purple loosestrife, which displace wetland species and provide few benefits for wildlife.
- Support organizations that restore and/or protect wetlands.

[More about Wetlands](#)

[More Action Tips](#)

Cultural Resource Protection Tips

We can all help protect the cultural resources that make our communities special places to live:

- Think about what gives a community a *sense of place*. Encourage children to take a closer look at historic buildings and structures. Host a photo identification contest at the local library. Display ten or more close-ups of neighborhood buildings or structures. Zoom in on architectural features or patterns. Invite children to identify the photos. Award prizes at the end of the contest.
- Never sandblast historic brick buildings. It removes the protective

glaze from the brick face.

- When re-painting, use mortar that is softer than the brick; never use concrete!
- Get involved in local planning decisions.
- Is there a museum or public historic building in your town that needs a face lift? How are the windows? Hire a consultant to do a training session on repairing historic sash. Rather than charging attendees, have each adopt one window for repair, one at a time.
- Take nothing from historic sites but photos and memories. Removal of artifacts is forbidden by law.
- SCUBA divers should allow wet suits and equipment to dry at least five days after diving in waters contaminated by zebra mussels and before diving in uncontaminated waters. If SCUBA divers do not have five days between dives, wet suits and equipment should be rinsed in 120 degree water for twenty minutes before diving in waters not infested by zebra mussels.

[More about Cultural Resources](#)

[More Action Tips](#)

[Home](#) | [About the Program](#) | [Opportunities for Action](#) | [Lake Facts](#)
[Water Quality](#) | [Living Natural Resources](#) | [Recreation and Culture](#) | [Education](#)
[Publications](#) | [Events](#) | [What's New!](#) | [Links](#) | [Action Tips!](#) | [Grants](#)

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