Healthy Recreational Waters

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VERMONT
DEPARTMENT OF HEALTH

Healthy Recreational Waters • Contents

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Healthy Recreational Waters • Introduction

Purpose

Vermont's many beaches are ideal places for healthy physical activity. To protect both human and environmental health, the Vermont Department of Health recommends frequent monitoring for a variety of concerns.

Healthy Recreational Waters is designed to provide guidance to the managers and users of Vermont's recreational lakes, ponds, streams and rivers. All of us have a role to play in keeping our recreational waters a safe and healthy place for everyone.

Healthy Recreational Waters Objectives:

- Provide swimming area managers a framework for monitoring water quality, and a protocol for addressing incidences of contamination from a variety of sources.
- Provide Vermonters with easy to understand guidance on safe and healthy recreational waters.
- Strengthen partnerships among federal, state, local and private stakeholders.
- Contribute to the overall quality, safety and preservation of Vermont's recreational waters.

This guidance was developed with assistance from subject matter experts from the Vermont Agency of Natural Resources/ Department of Environmental Conservation and Department of Forests, Parks, and Recreation.

Implementation

Healthy Recreational Waters will be implemented beginning in the summer of 2012. This is an initial effort. We expect that as we learn from stakeholders, and as science and technology improves, this guidance will be revised.

Contact

Vermont Department of Health/Healthy Recreational Waters at 1-800-439-8550 Option 6 (VT only) or 1-802-863-7220 or **vdh.environmentalhealth@state.vt.us**

Factors Affecting Water Quality

Swimming, boating, wading and other healthy outdoor activities should be done at managed, safe and healthy locations. This section will introduce some of the factors that can affect recreational waters and beaches, and methods to reduce health and safety risks.

Biological Contamination

Water contaminated with fecal matter from human or other mammals can be a health risk. Sources of biological contamination can come from leaking or failed septic systems, agricultural, wildlife or pet feces, and bacteria shed by other bathers – especially from dirty diapers of babies or young children.

Human Waste or Sewage (Spills/Leaks)

System failures at sewage treatment facilities, failed septic systems, releases from boat and recreational vehicle holding tanks, pumping stations, damaged sewer lines, and portable toilets can all be sources of biological contamination.

- **IMPORTANT:** If a sewage spill is observed, restrict access to the swimming area and immediately report the spill to –

  Vermont Department of Environmental Conservation
  654-8980 (M-F 7:45 am - 4:30 pm)
  - or -
  State Hazmat Hotline
  800-641-5005 (after hours)

- Identify and reduce as much as possible any other sources of sewage. Monitor for releases of human waste from boats, for example.

Animal Feces (Agricultural/Wildlife/Pet)

- Animals' feces, whether from agricultural manure, wildlife, or pets that are brought to the beach, can be carried into the water from rain, or directly deposited into the water. Consider all potential sources of fecal contamination from animals when managing a swimming area.

- Reduce risk of contamination by restricting animals from swimming areas, or providing clear signs and outreach to beachgoers that they are expected to immediately collect and properly disposal of their pet's waste.

NOTE: It's difficult to tell the difference between the potential health risks that can be caused by human feces and the feces of other warm-blooded animals.

Human feces poses the most risk to other humans. However, the data regarding the potential health risks posed by other warm-blooded animals is more difficult to demonstrate. For the purposes of beach monitoring, the source of *E. coli* is not considered in the evaluation of the result. The U.S. EPA is now evaluating techniques and methods to do so and as they become available, the Health Department will evaluate them.

For evaluating potential sources, human-related sources will be considered the most likely to cause health effects in people.

Other Bathers & Diapers

- One of the most common causes of fecal contamination and illness at beaches is actually other bathers. Anyone who is experiencing diarrhea should stay out of the water. They risk making others sick by contaminating the water with feces and germs.

- Diapers and swim pants hold in some solids, but they do leak. Children or babies in diapers or swim pants that become soiled can easily contaminate the water. As other children are generally playing in the same area, the potential to spread illness to other children is very high.

- Swim diapers and swim pants are not a substitute for frequent bathroom breaks and diaper changing. Swim diapers and swim pants should be checked every 30 to 60 minutes and changed away from the beach in a designated diaper changing area.

- Children should not be “rinsed” off in the swimming area.

Chemical Contamination

Chemicals from spills or run-off or from natural toxins produced cyanobacteria can pose health concerns.

Spills or Run-Off

- **IMPORTANT:** Report chemical spills from fuel tanks or other sources immediately to –

Vermont Department of Environmental Conservation
802-338-4844 (M-F 7:45 am - 4:30 pm)
- or -
State Hazmat Hotline
800-641-5005 (after hours)

- Swimming may need to be restricted.

- Storm water or nearby tributaries may also carry fertilizers, pesticides and other chemicals into a beach or swimming area. Identifying and monitoring for potential sources in the immediate area of the beach is recommended for beach managers.

Physical Hazards

Physical hazards can wash up on shore or under the water, particularly after flooding. Debris, trash, broken glass and other sharp objects can all pose injury hazards to beach goers.

- Conduct frequent inspections for the presence of physical hazards.
- Provide waste and recycling receptacles for use and change frequently.
- Discourage the use of glass containers at swimming areas.

Health Guidance

Swimming areas should be monitored or inspected frequently for potential hazards or sources of hazards: trash, spills, debris, cyanobacteria blooms, and *E. coli.* bacteria.

Sanitary surveys and routine bacteria monitoring of the water are strongly recommended at managed beach areas.

Sanitary Surveys

The sanitary survey is a key component of a healthy and safe beach. A sanitary survey can help identify and document potential sources of contamination. We recommend that you conduct a survey at the beginning of the recreational season and during the season if there is a change in water quality or environmental conditions (e.g. construction, change in animal policy, or extreme weather events).

The sanitary survey includes observations of general weather, water temperature, visual water quality, bather load and activity usage, discharge sources, waste, algae and wildlife.

Tracking this data will enable beach managers to evaluate swimming area conditions in real time and to compare historical observations.

A model sanitary survey form is included in **Appendix A.**

E. coli as an Indicator of Water Quality

In December 2011, the US EPA released draft guidance for recreational water quality:
http://water.epa.gov/scitech/swguidance/standards/criteria/health/recreation/upload/recreation_document_draft.pdf

In this scientific review of more than 20 years of data, EPA provided guidance for the density of E. coli that would warrant beach notification. The Vermont Department of Health's current guidance is based on this review.

What to test for and why:

In Vermont, *Escherichia coli (E. coli)* bacteria *is the* most used measure of *freshwater* beach quality for human health. *E. coli* density in water is used as a surrogate to identify if there is recent viable fecal matter present in the water.

Generally, *E. coli* bacteria itself does not present a human health issue, but its presence indicates that there may be other disease-causing germs, from fecal contamination, in the water.

The relationship between the density of *E. coli* bacteria and risk of human illness has been difficult to quantify. What is known is that the more fecal contamination in the water, the more likely someone will get sick. Identifying and limiting the sources of fecal contamination will decrease the risk of people getting sick.

A result in excess of the guidance value for *E. coli* density does not necessarily mean that the beach is unhealthy or polluted. A result below the guidance does not necessarily mean that the water is 100% safe. A result above the guidance value does mean that the beach warrants closer inspection as to the likely or possible cause(s). Sanitary surveys and frequent inspections are still important, even when results are below the guidance value.

The *E. coli* guidance value is a statistical calculation of when illness is more likely to occur, not a known density at which health effects will occur. *E. coli* results are not available until 18 to 24 hours after sampling. This makes the determination of the relationship to the health of the beach difficult.

Guidance value: *E. coli* bacteria density should not exceed 235 colony forming units (cfu) per 100 milliliters of water.

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Sampling Protocol

Sampling frequency and locations:

- Test beaches weekly (at a minimum) for *E. coli* density, preferably at the same time of day and in the same locations.
- Collect water samples at locations where water is about three feet deep.
- Samples should be taken one foot below the water surface.
- Do not mix or combine individual water samples in the same sample container.
- At beaches greater than 300 feet, more than one sample is recommended to obtain a more representative profile. Alternate numbers of sampling sites may be considered based on geographical features of the beach, potential contamination sources and bather usage. For example, if a beach has a known wildlife source (i.e. beaver pond) at one end, that site should be sampled separately from the other area of the beach.
- Samples should be tested by EPA Method 1603 or an equivalent culture-based method.

Sampling after heavy rains:

Additional testing may be warranted after periods of heavy rain when swimming areas are more likely to be flooded by potentially contaminated runoff.

- In the case of a significant rain event (more than ½ inch of rain in a 24 hour period) consider posting an advisory notice to inform beach users that *E. coli* may be high based on recent rain. If possible, re-sample after a significant rain.
- If re-sampling based on weather conditions is not possible, leave advisory posting up until next routine sample results are received. The advisory notice should be posted for at least 24 hours after a heavy rainfall event or until *E. coli* sample results are less than 235 cfu per 100 ml.

Blue-green Algae (Cyanobacteria)

Cyanobacteria are naturally-occurring bacteria, commonly called blue-green algae. Under certain environmental conditions, like warm calm weather and high amounts of nutrients, blooms or scums of cyanobacteria can form. Blooms may produce toxins. The appearance of blooms within a swimming area should cause the beach to close for swimming.

Cyanobacteria and Toxin Production

Some types of cyanobacteria will naturally produce compounds in their cells that can be toxic to humans and other animals. Not all cyanobacteria produce toxins. Types that are known to produce toxins may not produce them under all conditions. Assessing the potential risk from a cyanobacterial bloom to humans and animals can be difficult.

Illnesses that May be Caused by Cyanobacterial Toxins

Depending on the type, amount and route of exposures, different types of health effects can be caused by cyanobacterial toxins.

- People may get rashes or other skin irritations from coming into contact with blooms. Usually these skin irritations are not associated with toxins, but rather other non-toxic compounds produced by blooms such as lipopolysaccharides (LPSs).

- Inhaling water droplets that have toxins in them may cause allergic-like reactions, runny noses, or sore throats.

- Swallowing water that has high levels of cyanobacterial toxins can cause:
  - Sharp, severe stomach problems like diarrhea and vomiting.
  - Liver or kidney damage that may take hours or days to show up in people or animals. Symptoms can include abdominal pain, diarrhea and vomiting.
  - Numb lips, tingling fingers and toes, or dizziness.

Specific background and guidance about blue-green algae can be found at **http://healthvermont.gov/enviro/bg_algae/bgalgae.aspx**

Posting, Notification and Closing Procedures

Posting Beach and Swim Areas

Healthy Recreational Waters has developed a three sign system that can be used to inform the public of current swimming water conditions.

Monitoring

This sign is posted during all normal water quality conditions. It can be customized to provide local contact information.

The sign should be removed if a NOTICE or ALERT level sign is posted. This sign can be re-posted once water quality conditions return to normal.

Notice

This sign is posted during or directly after a heavy rainfall event of greater than ½ inch over a 24-hour period.

The sign should remain posted for at least 24 hours after a heavy rainfall event or *E. coli sample* results are less than 235 cfu per 100 ml.

Alert

This sign should be posted when *E. coli* sample results are greater than 235 cfu per 100 ml.

The sign should remain posted until sample results are less than 235 cfu per 100 ml.

Notification of Beach Conditions

Any time that *E. coli* sample results are greater than 235 cfu per 100 ml, or if a beach is closed for other reasons, notify the following:

1. Beach Ownership / Management

2. Local Town Health Officer: Contact your local town offices or: http://healthvermont.gov/local/tho/tho.aspx for Town Health Officer contact information.

3. Vermont Department of Health: 800-439-8550 (tel) or 802-863-7483 (fax)

Closing Procedures

Beaches and other swimming areas should be closed if the following occur:

- *E. coli* sample results are greater than 235 cfu per 100 ml
- Known chemical spill or release occurs at or near the swimming area
- Known sewage spill or release occurs at or near the swimming area
- Known physical hazard could endanger the lives or safety of others
- Blue-green algae (cyanobacteria) scum within the swimming area

Re-opening Procedures

Swimming areas can be re-opened when:

- Results of *E. coli*. Bacteria are below 235 cfu per 100 ml of water
- Chemical spills or physical hazards have been addressed
- Blue-green algae (cyanobacteria) scums have cleared
- Blue-green algae (cyanobacteria) toxin testing results are below recommended values

Beaches and Swimming

A fun day at your local swimming area should begin and end with safety as a top priority. Be aware that beaches and other swimming areas can present risks and dangers.

Water Safety

Prevent Drowning

- Always swim with a buddy. Never allow someone to swim alone.
- Never leave young children unattended near the water. Never trust a child to watch another child.
- Learn to swim, and teach your children to swim.
- Make sure that members in your group swim in areas appropriate for their swimming ability.
- Always stay within arm's reach of young children
- Avoid alcohol. Do not drink and swim.
- Know where the closest phone is located.
- In case of an emergency, dial 9-1-1.

Prevent Illness and Injury

- Swim in designated swimming areas, preferably in areas supervised by lifeguards.
- Be aware of objects under the surface of the water such as rocks, and fallen trees.
- Pay attention to beach postings for information on water quality.
- Practice good hygiene before and after swimming.
- Do not swim if you are sick.

Sun Safety

Skin cancer is the most common type of cancer in the United States, with more than 3.5 million new cases diagnosed and 2.2 million people treated each year. Vermont, despite our short summers, has the second highest rate of skin cancer incidence in the U.S.

The vast majority of skin cancers in the U.S. are due to exposure to UV radiation from the sun. UV rays can even reach you on cloudy and hazy days, and can reflect off surfaces like water, cement, sand and snow.

Although everyone is at risk, sun protection is especially important for children, as every sunburn increases a child's chance of getting skin cancer in their lifetime. Childhood is also the time when important sun safety behaviors can be established.

Visitors to Vermont's swim and recreational areas often visit during peak sun hours, between 10 a.m. and 4 p.m., which are the most hazardous for UV exposure. Vermont recreational areas can help to protect Vermonters from overexposure to the sun by providing a setting where sun safety behaviors are easy to practice. Research has shown that when recreational areas provide supportive environments and education, sun safety behaviors will change.

How to create a sun safety supportive environment:

- Assess the availability of shade at your site. When there is no natural shade, consider planting trees or providing permanent or portable shade structures where visitors can get out of the sun.
- Include sun safety tips in any materials you present to the public, such as summer program brochures and community newsletters.
- Provide staff with shade umbrellas and wide-brimmed hats for their protection, and encourage them to use sunscreen and wear sunglasses and protective clothing.
- Keep a supply of sunscreen at program sites for staff who may have forgotten theirs.
- Provide sun safety education and materials to your staff, visitors and participants in any swimming lessons.
- Post a checklist at drop-off locations for parents that itemizes recommended items: hat, sunscreen (SPF 15+), t-shirt, lip balm and sunglasses

- If possible, post sun safety signs at your public sites.

- Set a good example. If you and your staff practice sensible sun habits, visitors to your site will too.

General Sun Safety Tips:

- Stay out of the sun as much as you can! Whenever possible, avoid exposure to the sun from 10 a.m. to 4 p.m. Stay in shady areas or under umbrellas to keep your sun exposure to a minimum and help keep cool. Keep babies under 12 months out of the direct sun.

- Wear protective clothing! Whenever possible, wear, a shirt or other clothing to minimize your sun exposure, and a wide-brimmed hat that shades your face, ears, and neck.

- Use sunscreen that is labeled broad spectrum or at least SPF 15 and can filter both UVA and UVB rays. Pay special attention to your face, nose, ears and shoulders.

- Wear sunglasses that filter UV to protect your eyes and the skin around your eyes.

- Don't use tanning beds, tanning booths, or sunlamps.

Sun Safety means using all sun safe tips together for maximum protection from the sun's harmful UV rays.

For more information on sun safety:

Centers for Disease Control
http://www.cdc.gov/cancer/skin/

Environmental Protection Agency
http://www.epa.gov/sunwise/doc/vt_facts_web.pdf

Boating

In total, Vermont has more than 800 lakes and ponds, 284 larger than 20 acres. Vermont is also home to over 7,000 miles of rivers and streams. Rivers such as the Winooski, the Batten Kill, the Lamoille, and the West are excellent for kayaking, tubing, fishing, and canoeing.

While enjoying yourself on the water, it's important to keep your safety and the safety of others a top priority. Accidents on the water can happen quickly.

Take all safety precautions:

- Always wear a properly fitted life jacket, also called a personal floatation device (PFD).
- Never go out on the water while under the influence of alcohol.
- It's best not to go out alone. If you do, let others know your route.
- Constantly scan for potential hazards and changing weather.
- Know you skill level and avoid conditions that exceed your skills.
- Dress appropriately for changing weather.
- Carry a first aid kit.
- Inspect your boat, canoe or kayak and equipment before every trip.
- Know the waters. Carry along river guides, maps or depth charts.

For more information on boating safety:

Vermont Department of Motor Vehicles/ Motorboat Training & Safety
http://www.boat-ed.com/vt/handbook/

National Safe Boating Council
www.safeboatingcampaign.com

American Canoe Association
http://www.americancanoe.org/?page=Top_10

Fishing

Fishing is generally not a dangerous activity but, as with any other outdoor recreational activity, there are potential health and safety hazards to be aware of.

Fishing Safely

- Be aware of your surroundings – especially when casting a line – to avoid trees, power lines and other people.
- Any time you are in a boat or wading in deep or fast moving water, make sure you are wearing a personal floatation device (PFD).
- Wear appropriate footwear to protect your feet from stray hooks, rocks, twigs and other hidden objects.
- Always fish with another person, or tell someone else your plans if you go alone.
- Handle all fishing equipment responsibly. Hooks, knives and tools can be dangerous when not properly used.

Eating Fish

The Vermont Department of Health recommends that people limit their consumption of some fish caught in Vermont. These advisories are based on tests of fish caught in Vermont waters and scientific information about the harmful effects of mercury and, in the case of large lake trout in Lake Champlain and all fish in the Hoosic River, PCBs (polychlorinated biphenyls).

You can mix and match fish (that you catch or buy) with the same limits, but once you meet the lowest limit, eat no more fish that month. Do not eat the monthly limit within a single week.

Store-bought fresh and canned fish – including tuna– have mercury levels that are about the same as many Vermont-caught fish. Add in store-bought fish when you decide how many fish meals to eat each month.

For more information call 1-800-439-8550 and dial 0 when prompted.

Vermont Department of Health Fish Consumption Alert
http://healthvermont.gov/enviro/fish_alert/documents/Fish_Alert_2007.pdf

Swimming Pools

Swimming pools provide a great opportunity for exercise and recreational activities. Although swimming pools are generally managed to keep swimmers safe and healthy, it's important to follow basic practices in and around a pool and teach children to do the same.

- Practice good hygiene.
- Don't swim when you have diarrhea. This is especially important for children in diapers.
- Wash your child thoroughly (especially his or her bottom) with soap and water before swimming.
- Take your children on bathroom breaks often.
- Change diapers in a bathroom, not at poolside.
- Don't swallow the pool water.

Swimming pool managers who are looking for guidance on how to properly manage a swimming pool are encouraged to follow the Centers for Disease Control & Prevention's *12 Steps for Prevention of Recreational Water Illness*: http://www.cdc.gov/healthywater/swimming/pools/twelve-steps-for-prevention-rwi.html

The State of Vermont does not have statewide regulations concerning the maintenance and testing of public swimming pools. The Vermont Department of Health offers guidelines for designing and operating public swimming pools. For a copy, call 800-439-8550.

For more information: CDC - Healthy Recreational Water
http://www.cdc.gov/healthywater/swimming/

Resources

Appendix A: Sanitary Survey Form

Appendix B: Sanitary Survey Guide

Appendix C: Recreational Water Sample Data Sheet

Appendix D: Signs

Appendix E: Fact Sheets

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VERMONT DEPARTMENT OF HEALTH

Recreational Water Sanitary Survey

NAME OF BEACH AND TOWN **DATE AND TIME OF SURVEY**

_____ _____

TYPE OF BEACH: STATE MUNICIPAL OTHER-PUBLIC OTHER-PRIVATE

SURVEYOR NAME(S): TITLE, ORGANIZATION:

_____ _____

GENERAL BEACH CONDITIONS

Air Temperature ____°C OR °F
WIND: Calm Light Moderate Strong DIRECTION _____
Hours since last rain event <24 <48 <72 >72 Amount of rain ___inches
Weather Conditions:_____
Sky Condition: Sunny Mostly Sunny Partly Sunny Mostly Cloudy Cloudy

Wave Intensity: Calm Normal Rough
Comments / Observations:

WATER QUALITY

Water Temperature____˚F Recent change in color? Yes No
Odor: None Septic Algae Sulfur Other_____
Clarity / Turbidity: Clear Slightly Turbid Turbid Opaque
Comments / Observations:

BATHER LOAD

Number of people in the water:____ Number of people out of water:____
Total number of people at the beach_____

List activities seen

Type of Activity	Bathing	Watercraft	Playing in sand	Other
Number of People				

Comments / Observations:

POTENTIAL POLLUTION SOURCES

Sources of Discharge

Type	River	Pond	Wetland	Outfall	Other (specify)
Name of Source(s)					
Amount					
Flow Rate					
Volume					
Characteristics					

Floatables Present: Yes No Please circle the following if floatables found:

Type	Street Litter	Food Litter	Medical Items	Sewage Related	Fishing Related	Building Materials	Household Waste
Example	Cigarette Filter	Beverage Container	Syringes	Condoms, Tampons	Fishing Line, lures	Pieces of Wood, siding	Plastic Bags

Amount of Beach Debris/Litter on Beach: (percent of beach area)
None Low (1-20%) Moderate (21-50%) High (>50%)

Amount of Algae in Near-shore Water: (percent of swim area coverage)
None Low (1-20%) Moderate (21-50%) High (>50%)

Amount of Algae on Beach (percent of beach length)
None Low (1-20%) Moderate (21-50%) High (>50%)

Types of algae found

Type	Periphyton	Globular	Free Floating	Other
Description	Attached to rocks, stringy	Blobs of floating material	No Obvious mass	

Color of algae found
Light green bright green Dark green Yellow Brown Other

Presence of Wildlife and Domestic Animals

Type	Geese	Gulls	Dogs	Other (Specify)
Number				

List the number and species of bird found dead on the beach

Number of dead fish found on the beach:____ Is this more than normal?____

Comments / Observations:

Vermont Department of Health
Sanitary Survey Guidance

General Beach Information

Name of Beach and Town: Provide common name of beach and town it is located in

Date and time of Survey: Proved date and time of day sanitary survey was conducted.

Type of beach: Circle the appropriate type of beach.

Surveyor name: Provide name(s) of individuals conducting the sanitary survey.

General Beach Conditions

Air Temperature: Provide air temperature in degrees Celsius or degree Fahrenheit at time when survey was conducted. Temperature reading should be done in the shade. Air temperature, in combination with other conditions can increase the likelihood of higher levels of microorganisms at certain times.

Wind: Select one of the wind descriptions that best match conditions at time sanitary survey was conducted.
Calm: water surface smooth and mirror-like
Light: Small wavelets, crests glassy, no breaking
Moderate: Large wavelets, crests begin to break, scattered whitecaps
Strong: many whitecaps, some spray

Wind Direction: Wind direction is reported as the direction which the wind is coming from.

Hours since last rain event: Bacterial contamination of beaches can result from rain events. Record of rainfall events can be used to predict bacterial contamination of beaches.

Amount of rain: Should be reported in inches using a rain gauge.
Heavy rain events over a short period of time may correlate to increased bacteria levels in water due to runoff.

Weather Conditions: Provide description of current weather conditions.

Sky Condition: Select the closes current sky condition.

Sunny	Mostly Sunny	Partly Cloudy	Mostly Cloudy	Cloudy
No Clouds	10 % clouds	10-50% clouds	50-90% clouds	100% clouds

Wave Intensity:
Calm: Smooth
Normal: 1-2 ft
Rough: >2ft

Water Quality

Water Temperature: Provide water temperature in degrees Celsius or degrees Fahrenheit at time when survey was conducted.

Water temperature is important in assessing the quality of potential habitat for aquatic species and pathogenic organisms.

Recent change in color? : This may indicate recent or ongoing contamination of water.

Odor: Select appropriate description if applicable. An odor given off by a water body can indicate pollution, such as sewage, present at the beach.

Clarity / Turbidity: Turbidity is a measure of the cloudiness of water. Particles that contribute to cloudiness may be inorganic, organic, or biological. Turbidity should be measured with a turbidity meter if available. A visual estimation can be made if not available.

Clear Slightly Turbid Turbid Opaque

Bather Load

Bather Load: Report number of bathers in the water as well as those on the beach. Identify types of activities and number of people involved in activity. Heavy bather loads can potentially cause significant elevation in bacterial counts.

Potential Pollution Sources

Sources of Discharge: Visible sources, including rivers, ponds, and outfall may carry contaminants that affect bathing beach water quality.
Amount, flow, and volume can be reported as **high**, **medium** or **low**.

Floatables Present: Floatable debris in water can become a physical and bacterial hazard in bathing water.
Report the types and amount of floatables observed in the water at time of survey.

Amount of beach debris/litter on beach: Beach debris or litter can pose an immediate health hazard to beachgoers and can be a source of bacterial contamination to the beach.

Amount of Algae in Near-shore Water/ Beach: Algae can be nuisance as well as a health Hazard. Decaying algae often produces a foul smell that may deter recreational activities.

Types of Algae Found: Descriptions of algae can be found on survey form. If Blue Green Algae / Cyanobacteria is suspected, refer to the Cyanobacteria Community Guidance Document.

Presence of Wildlife and Domestic Animals: Waste from these animals can cause bacterial concentrations to rise above recreational water standards.

Record the number and species of animals present.

VERMONT DEPARTMENT OF HEALTH

Recreational Water Sample Data Form

Name of Beach & Date of Sample

_____

General weather conditions (circle best option)			
Rain in last 24 hours:_____ inches			
none	light rain showers	steady showers	heavy rain/ thunderstorms

Current day (expected conditions)			**Daytime Temperature (average)**	
Sunny	Cloudy	Rainy	less than 60F	80-90F
			60-70F	90F+
			70-80F	

Water Clarity (circle one)	Clear	Slightly Turbid	Turbid

Algae present?
No
Yes If so, color _____

Debris present (check (√) if present)	**on beach**	**in water**
food-related (cans, wrappers)		
medical/sewage-related (condoms, diapers)		
other trash (bags)		

Wildlife present? (If so, which? circle)	
Geese	Dogs
other birds	Other

MONITORING

Water is considered safe for swimming

The water at this beach is tested regularly during the swimming season.

For current beach conditions contact:

_____

For more information on the Healthy Recreational Water project or general health questions, contact the Vermont Department of Health at healthvermont.gov or 1-800-439-8550

Posted on: _____

NOTICE

Water **MAY NOT** be safe for swimming due to recent heavy rain.

Studies show bacteria may increase to unhealthy levels for a day after heavy rainfall.

The water at this beach is tested regularly during the swimming season.

For current beach conditions contact:

_____

For more information on the Healthy Recreational Water project or general health questions, contact the Vermont Department of Health at healthvermont.gov or 1-800-439-8550

Posted on: _____

ALERT

Do not swim — High Levels of Bacteria

The water at this beach is tested regularly during the swimming season.

For current beach conditions contact:

_____

For more information on the Healthy Recreational Water project or general health questions, contact the Vermont Department of Health at healthvermont.gov or 1-800-439-8550

Posted on: _____

VERMONT
DEPARTMENT OF HEALTH

Healthy Recreational Waters

Vermont is home to thousands of fresh water lakes, ponds, rivers and streams. Our waters are a great destination for everything from swimming to fishing to boating and tubing.

What are healthy beaches?

Healthy beaches are both safe and clean. But beaches and other swimming areas do not stay healthy all the time. Many factors can influence the overall health and safety of recreational waters: bacterial contamination, chemical spills, storm water runoff, harmful algae blooms, physical hazards, etc.

How can water become contaminated with bacteria?

One major source of harmful bacterial is fecal contamination, which can come from diapers, feces from people, pets or wildlife, malfunctioning septic systems, storm water runoff and sewage treatment overflows.

How are Vermont beaches monitored and tested?

Vermont State Parks follow the Health Department's *Guidelines for Healthy Beaches*. Swimming areas are sampled before the start of the swimming season and then at least once a week, depending the conditions of the water body.

Municipal or non-profit managed public swimming areas should be monitored regularly according to the Vermont Department of Health's *Healthy Recreational Waters Guidelines*.

What can I do to help keep Vermont beaches healthy?

- Properly dispose of litter/animal wastes.
- Do not go swimming if you are feeling ill – especially if you have diarrhea.
- Do not feed birds or other wildlife on or near swimming areas.
- Do not dump anything in a storm drain.
- Report any suspected pollution event to beach management.

What can I do to protect my health?

- Heed posted advisories or closings.
- Do not swallow beach water and try not to get it in your mouth.
- Stay out of the water 48 hours following a significant rain event.
- Shower after swimming.
- Wash hands before eating.
- Do not go in the water if you have diarrhea.

What does an advisory or beach closing mean?

This sign is posted during all normal water quality conditions. It reminds bathers that the water is routinely monitored, and provides local contact information for the swimming area.

This sign is posted during or right after a heavy rainfall event of more than ½ inch over a 24-hour period. This sign should remain posted for at least 24 hours after a heavy rainfall event, or *E. coli sample* results are less than 235 cfu per 100 ml. Local contact information is provided.

This sign is posted when *E. coli* sample results are greater than 235 cfu per 100 ml. This sign should remain posted until sample results are less than 235 cfu per 100 ml. The beach should be closed to swimming when this sign is posted.

For more information:

Vermont State Parks http://vtstateparks.com/htm/swimming.htm

Vermont Department of Health http://healthvermont.gov/enviro/water/recwater.aspx

Centers for Disease Control & Prevention http://www.cdc.gov/healthywater/swimming/index.html

VERMONT
DEPARTMENT OF HEALTH

Swim Water Testing

Do you know the quality of the water at your favorite swimming area?

Rivers, ponds, lakes and streams may contain disease-causing microorganisms. Swimming in these waters may result in health effects such as minor skin rashes, sore throats, diarrhea or more serious problems.

Children tend to spend more time in the water than adults. They are also more likely to accidentally swallow water when swimming and, for this reason, they are more likely than adults to get sick. However, infants, the elderly, and people with weakened immune systems are most at risk of becoming seriously ill.

What is swimming water tested for?

Water in ponds, lakes and rivers is tested for *Escherichia coli,* commonly known as *E. coli*, to determine whether it is suitable for swimming. *E. coli* is a bacterium that is comes from human or animal wastes. Its presence in water means that other disease-causing microorganisms may be present as well.

When should water samples be taken?

Water samples should be taken at the peak times and at the most popular locations for swimming – in other words, where and when the people are. Once the sample is taken, deliver or mail it to the laboratory as soon as possible. Testing should be done within 30 hours after the sample is collected, so if you mail the sample, use first class or overnight delivery. Because conditions can change quickly, testing early in the week leaves time to take follow-up samples in the same week if first results show high levels of bacteria not suitable for swimming.

The Vermont Department of Health Laboratory swimming water test kit is called 'Kit SW' and costs $15. This includes bottle, instructions, paperwork, insulated container and the cost of analysis. Samples are accepted Monday through Friday, 7:45 a.m. to 4:00 p.m.

Test results for samples submitted to the Health Department Laboratory on a Friday will normally not be available until the following Monday, unless special arrangements are made.

Where should samples be taken?

Water samples should be taken in an area where the water is at least three feet deep. The sample should be taken one foot below the water surface. Detailed sampling instructions are included with the test kit.

How often should water be tested?

The Health Department recommends that swimming water at town beaches and other public recreational areas be tested at least once a week from Memorial Day to Labor Day. Additional testing may be warranted after periods of heavy rain when swimming areas are more likely to be flooded by runoff. People who have a pond or private swimming area on their own property should test for water quality periodically throughout the summer months.

What does the *E. Coli* test result mean?

E. coli in water is measured as the number of bacteria found in 100 milliliters (mls) of water. In Vermont, when the test result at a public swimming area is 235 *E. coli*/100mls or less, it means that the water is considered suitable for swimming. A result greater than 235 *E. coli*/100 mls means that the water is not considered suitable for swimming.

When should the swimming area be closed?

If the test result is greater than 235 *E. coli* /100 mls (unsuitable), the Health Department recommends that the swimming area be closed and posted immediately. The beach area should stay closed, and not re-open until a follow-up test result confirms that the *E. coli* level has decreased to 235 *E.* coli/100mls or below (suitable).

Follow-up samples should be taken at the same location as the original sample.

How can I order test kits?

To order a 'Kit SW' from the Vermont Department of Health Laboratory, call 1-800-660-9997 (within Vermont) or (802) 863-7335. Payments can be made using a credit card or a check. Order forms can be requested from the Laboratory or found online:

http://healthvermont.gov/enviro/ph_lab/documents/watertestform.pdf

Where can I get more information?

For your town:

Contact your town health officer with questions about your town's public swimming area testing protocols or results. You can ask your town clerk for your town health officer's contact information, or use the town health officer search tool at the Health Department's website:
http://healthvermont.gov/local/tho/tho_list.aspx

About recreational water quality:

Vermont Department of Health
http://healthvermont.gov/enviro/water/recwater.aspx

Environmental Protection Agency
http://www.epa.gov/waterscience/beaches/

VERMONT
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Swimmer's Itch (Cercarial Dermatitis)

What is swimmer's itch?

Swimmer's itch (also called cercarial dermatitis) appears as a rash on this skin. It caused by an allergic reaction to certain parasites that infect some birds and mammals. These microscopic parasites are released from infected snails into fresh and salt water (such as lakes, ponds and oceans). The parasite prefers certain birds or mammals (not humans). But if it comes into contact with a swimmer, it burrows into the skin and causes an allergic reaction and rash. Swimmer's itch is more common during the warmer months, and is found around the world.

Swimmer's itch is not the only rash that you may get after swimming in fresh or salt water.

How do the parasites get into water?

The adult parasite lives in the blood of infected animals such as ducks, geese, gulls, swans, and some aquatic mammals such as muskrats and beavers. The parasites produce eggs that are passed in the feces of infected birds or mammals.

If the eggs land in water, they hatch and release small larvae. These larvae swim in search of a certain species of aquatic snail.

If the larvae find one of these snails, they infect the snail, multiply and develop further. Infected snails release a different type of larvae (or cercariae) into the water. This larval form then swims about searching for a suitable host (bird, muskrat) to continue its life cycle. Although humans are not suitable hosts, the larvae burrow into the swimmer's skin, and may cause an allergic reaction and rash.

Because these larvae cannot develop inside a human, they soon die.

What are the signs and symptoms of swimmer's itch?

Within minutes to days after swimming in contaminated water, you may experience tingling, burning, or itching of the skin. Small reddish pimples appear within 12 hours. Pimples may develop into small blisters. Scratching the areas may result in secondary bacterial infections. Itching may last up to a week or more, but will gradually go away.

Swimmer's itch is caused by an allergic reaction to infection, so the more you swim or wade in contaminated water, the more likely you are to develop more serious symptoms. The greater the number of exposures to contaminated water, the more intense and immediate symptoms of swimmer's itch will be.

Should I see my health care provider for treatment?

Most cases of swimmer's itch do not require medical attention. If you have a rash, you may try the following for relief:

- Use corticosteroid cream
- Apply cool compresses to affected areas
- Bathe in Epson salts or baking soda, or soak in colloidal oatmeal baths
- Apply baking soda paste to the rash (stir water into baking soda until it reaches a paste-like consistency)
- Use an anti-itch lotion, and try not to scratch. Scratching may cause the rash to become infected. If itching is severe, your health care provider may suggest a prescription-strength lotion or cream to lessen your symptoms.

Can swimmer's itch be spread from person to person?

Swimmer's itch is not contagious and cannot be spread from one person to another.

Who is at risk for swimmer's itch?

Anyone who swims or wades in infested water may be at risk. Larvae are more likely to be in shallow water by the shoreline. Children are most often affected because they tend to swim, wade and play in the shallow water, and are less likely to towel dry themselves when leaving the water.

Once water is contaminated, will it always be unsafe?

No. Many factors must be present for swimmer's itch to become a problem in water. Since these factors change (sometimes within a swim season), swimmer's itch will not always be a problem. But there is no way to know how long water may be unsafe. Larvae generally survive for 24 hours once they are released from the snail. However, an infected snail will continue to produce cercariae throughout the remainder of its life. For future snails to become infected, migratory birds or mammals in the area must also be infected so the lifecycle can continue.

Is it safe to swim in my pool?

Yes. As long as your swimming pool is well maintained and chlorinated, there is no risk of swimmer's itch. The specific type of snails must be present in order for swimmer's itch to occur.

What can be done to reduce the risk of swimmer's itch?

- Towel dry or shower immediately after leaving the water.
- Do not swim in areas where swimmer's itch is a known problem, or where signs have been posted warning of unsafe water.
- Do not swim near or wade in marshy areas where snails are commonly found.
- Do not attract birds (by feeding them, for example) to areas where people are swimming.

Encourage health officials to post signs on shorelines where swimmer's itch is a current problem.

For information on swim water testing: *http://healthvermont.gov/enviro/water/recwater.aspx*

This fact sheet is for information only and is not meant to be used for self-diagnosis or as a substitute for consultation with a health care provider.

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