

Summer 2024 Shiga toxin-producing *Escherichia coli* (STEC) Outbreak associated with Lake Anna over Memorial Day Weekend

Last updated: June 21, 2024

- Updated the FAQ “Is it safe to swim or spend time at Lake Anna?” to include the recent Harmful Algal Bloom [swimming advisory](#) that is unrelated to the outbreak.
- Added a new FAQ “Is the Harmful Algal Bloom (HAB) swimming advisory issued on June 21, 2024, related to the STEC outbreak?” to clarify that these two events are **not** related.

Outbreak Investigation Summary These data are preliminary and subject to change. The epidemiologic investigation is ongoing. This website will be updated weekly on Tuesdays and Thursdays by 2 p.m.

Fast Facts

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| <ul style="list-style-type: none">• STEC cases: 25 confirmed and probable cases in residents of Virginia and other states. |
| <ul style="list-style-type: none">○ 9 cases identified as STEC O157 (most common type of STEC) |
| <ul style="list-style-type: none">• Hemolytic uremic syndrome (HUS) Cases: 7• Deaths: 0• Results water quality test results: indicate that fecal bacteria concentration were well below a level of public health concern. |

The Virginia Department of Health (VDH) is working with local and state partners to investigate an outbreak of [Shiga toxin-producing *Escherichia coli* \(STEC\)](#) in people who were in the Lake Anna area on and after the Memorial Day weekend (May 24–27, 2024).

STEC infection causes stomach cramps and diarrhea (often watery or bloody). Symptoms can also include vomiting, fever, and chills. In severe cases, the infection can damage organs, such as the kidneys. This can lead to [hemolytic uremic syndrome \(HUS\)](#).

VDH’s investigation is ongoing. The exact cause of the outbreak has not yet been identified, but lake water is the likely source. Environmental pollution from heavy rains, livestock, failing septic systems, boating discharge, and swimmers are potential sources

of illness when swimming in natural bodies of water. At this time, all primary cases¹ have been in people who reported exposure to the water in Lake Anna between May 24 and May 27.

Virginia uses the [national STEC case definition](#) and the [national HUS case definition](#) for counting probable and confirmed cases.

¹Primary cases are infections from direct exposure to the suspected outbreak source. Secondary cases are infections from close contact with someone who was infected.

STEC Case Details

Description

Case Type *

Age

Residency

Information

Primary: 23

Secondary: 2

Range: 1 to 45 years

Most cases (76%) are under 18 years of age.

Virginia: 21

Other state: 4

Environmental Testing

Summary of findings: The Virginia Department of Environmental Quality (DEQ) is assisting VDH in the outbreak investigation by collecting water samples at Lake Anna. Samples collected by DEQ on both June 11 and June 17 indicated that fecal bacteria concentrations (levels of bacteria associated with human or animal waste) in the water samples were well below a level of public health concern. This type of testing has some limitations. Water testing can provide clues about the water environment and level of general fecal contamination at a point in time, but they are not specific to all types of bacteria that can cause illness. At this time, it is not known whether the type of *E. coli* that causes severe illness, STEC O157, is present in Lake Anna.

DEQ conducts **routine** monthly water quality monitoring on Lake Anna from April to October each year. Water quality testing includes looking for fecal bacteria, specifically *E.coli*.

- The most recent **routine** samples for *E.coli* had been collected by DEQ on June 4, May 6, and April 2, and were taken near the Dam, at the Splits (down gradient from the State Park Beach), and mid-Lake (just below the Cocktail Creek area). The *E.coli* concentrations of each sample were so low that they could not be measured.

- The most recent **routine** samples for *E.coli* collected by DEQ near the Sandbar were taken on March 12 (816 counts/100ml), February 20 (173 counts/100ml), and November 13, 2023 (10 counts/100ml).

Exposure to any natural water, including swallowing untreated water or swimming with open wounds, represents a possible health risk, even when sample results indicate the water is “safe” for swimming. Children under the age of five, older adults, pregnant women, and those with weakened immune systems are at higher risk of contracting illness from open waters. Open waters are likely to have some level of bacteria present because this water is not disinfected. More helpful recommendations for healthy practices during water activities are available from VDH at [TheSwimGuide.org](https://www.vdh.virginia.gov/swim/) and from CDC at [How to Safely Visit Oceans, Lakes, and Rivers](https://www.cdc.gov/eis/fieldstudies/HowtoSafelyVisitOceansLakesandRivers.html) website.

DEQ Sampling Sites for Lake Anna

 Green = levels below health concern

- Click on the expansion bars on the upper right of the map to make the map larger and see the full legend.

June 11, and June 17, 2024 sampling sites:

North Anna Branch - 0.3 miles above Sandbar
North Anna Branch - Sandbar
North Anna Branch - 0.3 miles below Sandbar
Lake Anna - Cocktail Cove North
Lake Anna - Cocktail Cove South
Lake Anna State Park Beach

The dots show the six sampling locations. The green color means fecal indicator bacteria are below levels of public health concern.

Lake Anna Civic Association (LACA) also conducts routine water quality monitoring on Lake Anna. More information on the water quality program conducted by LACA and their test results can be found at LACA's [Water Quality \(WQ\) and Cyanobacteria Data website](#).

What You Should Do

If you were in the Lake Anna area on Memorial Day weekend (May 24–27, 2024) or since and you experienced gastrointestinal illness (such as stomach cramps and

diarrhea), contact your [local health department](#) and seek medical care if you are still experiencing symptoms.

To prevent illness when swimming and boating in natural bodies of water, like lakes, rivers, or oceans, people should consider these steps for before, during, and after water activities.

Before visiting natural bodies of water:

- **Check online before visiting** the natural waters to see if the swim area is currently monitored, is under advisory, or has been closed for health or safety reasons. See the following:
 - www.SwimHealthyVA.com for Harmful Algal Bloom (HAB) and coastal beach maps
 - TheSwimGuide.org for Citizen Monitoring Group results
 - Lake Anna Civic Association's (LACA) [Water Quality \(WQ\) and Cyanobacteria Data website](#)
- **Avoid swimming for three days after a heavy rain.** Germs can come from overflowing sewage, polluted storm water and runoff from land.

While visiting natural waters:

- **Avoid swimming**
 - if you are sick with **vomiting or diarrhea** or if you have **skin with cuts** or open wounds
 - **near storm drains** (pipes that drain polluted water from streets).
 - **in water if there is a green film on the water. Keep pets out as well.** This film may indicate an algal bloom and some algae produce toxins that can make people sick.
 - **near the vicinity of livestock**
- **Never swallow untreated water.** Natural bodies of water, like rivers, lakes, and oceans, contain germs and contaminants, which can cause illness.
- **Keep sand away from your mouth and children's mouths.** Sand contains germs that can cause illness if swallowed.
- **Do not poop in the water.**
 - **Take kids on bathroom breaks and check diapers** in bathrooms or diaper-changing areas.
- **Wash your hands** after using the bathroom and before preparing and eating food. This is particularly important if you have been playing in or touching sand.
- For people with boats: **Properly dispose of human waste** by discharging boat sewage at marinas with a pump-out unit or dump station.
 - See [Pump-out locations around Virginia](#).

After visiting natural bodies of water:

- **Shower or bathe after swimming** to wash off possible germs and contaminants.

What Healthcare Providers Should Do

- Consider STEC testing in any person with diarrheal disease who was at Lake Anna on or after Memorial Day weekend.
 - Contact your [local health department](#) to arrange for testing through the Division of Consolidated Laboratory Services for individuals who have symptoms.
- Notify your [local health department](#) of any suspected cases of STEC or HUS by phone or [VDH's online Morbidity Report Portal](#).
- Encourage your patients to visit [TheSwimGuide.org](#) for healthy and safe swimming tips. Remind patients that handwashing is one of the best ways to prevent the spread of illness, especially for those with diarrheal illness.

For more information about this outbreak and how to stay safe:

The best place to get outbreak updates is on this website ([2024 Shiga toxin-producing *Escherichia coli* \(STEC\) Outbreak associated with Lake Anna over Memorial Day Weekend](#)). Updates will be provided on Tuesdays and Thursdays by 2 p.m.

More information is also available.

- For additional questions about this outbreak, contact VDH's Call Center at 877-829-4682 (Option 2), The VDH Call Center is available Monday–Friday (except holidays) from 8 a.m. to 5 p.m.
- For information about the types of illnesses, see VDH's [Shiga-Toxin Producing *E. coli* \(STEC\) Fact Sheet](#) and [Hemolytic Uremic Syndrome Fact Sheet](#).
- For recommendations on healthy practices during water activities, see [TheSwimGuide.org](#).