ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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Coliform Bacteria in Drinking Water

Minimal exposure to disease-causing organisms (bacteria, viruses, pathogens) in drinking water can cause immediate illness. Consuming small doses of microbiological contaminants in the coliform group of bacteria, such as *E. coli* and fecal coliform, has the potential to cause an immediate health risk; therefore, these are known as acute contaminants.

Testing water for total coliform bacteria reliably predicts the absence or presence of many types of coliform bacteria; it is the most commonly used standard for determining the bacterial quality of drinking water in the U.S. and the world. Other important illness-causing organisms are *Giardia* and *Cryptosporidium* protozoa, which occur in surface water sources and can be present even when total coliform are absent.

TOTAL COLIFORM AS AN INDICATOR

Total coliform are considered *indicator* bacteria, as this group of organisms is abundant in the environment although on their own do not imply an imminent health risk. If total coliform bacteria are present in well water, it is an indication (not certainty) that a pathway exists for disease organisms to be present in the water. When total coliform are detected in well water, confirmation testing and an inspection of the wellhead are recommended to evaluate how these organisms have entered the water supply. A properly constructed and maintained well water system should not have total coliform bacteria present.

If total coliform are detected in a public water system supply, immediate resampling and a system bacteria assessment are required. Contact NHDES Drinking Water and Groundwater Bureau at (603) 271-2513 and DWGBInfo@des.nh.gov for specific actions required following a positive total coliform detection.

TOTAL VS. E. COLI OR FECAL BACTERIA

There are a number of subsets within the coliform group. Fecal coliform including *E. coli* are an immediate health hazard, if sample results indicate the presence of these bacteria, **DO NOT DRINK** - boil the water for at least 1 minute prior to consumption or, if you cannot boil it, use alternate water.

Fecal coliform including *E. coli* have a relatively short life span compared to other coliform bacteria. They grow in the intestinal tracts of warm blooded animals including humans. Their presence indicates a strong likelihood that human or animal wastes are entering the water system. If *E. coli* or fecal coliform are detected in a public water system supply, a boil order will be issued requiring immediate (within 24 hours) public notice to all water users. A state inspection is conducted for every boil order and additional sampling and corrective actions are required in order to lift the advisory.

CONFLICTING COLIFORM DATA

Total coliform bacteria tests should be analyzed at an accredited water laboratory using approved laboratory methods. The most common methods indicate either presence/absence or a bacteria count as most probable number (MPN). Bacteria samples must be stored on ice and processed by the laboratory within 30 hours of sample collection. Sometimes bacteria tests from the same water supply, under the same conditions, are not consistent and need to be resampled. Reasons for such inconsistencies may be:

Sampling Error - Improper bacteria sampling is the most common reason for false positive results. A video by the Rural Community Assistance Partnership (RCAP) details the proper sampling procedures.

Varying Sampling Conditions - Bacteria naturally occur in clumps and are not evenly distributed in the water, so even samples collected within close physical proximity, or right after another, can show different results.

Unsanitary Sampling Tap – Samples can be contaminated by any particulate or unsanitary conditions at the sampling sink or tap itself. Always clean the tap and flush thoroughly before collecting a bacteria sample to ensure you are collecting a representative sample.

COMMON CAUSES FOR COLIFORM BACTERIA

Water Source and Construction - Rainfall washing across the surface of the ground picks up bacteria and viruses which are filtered out as water percolates through the soil, sand, gravel and bedrock. Properly constructed wells should not have bacteria present. Dug wells and springs are inherently more susceptible to bacterial contamination. Gravel or bedrock wells buried below grade, or with unsealed caps, are also highly susceptible to contamination. Corroded or leaking well casings provide a pathway for bacteria to enter the well. New well construction can introduce bacteria to groundwater. Always contract a licensed water well contractor if repairs to the well are required.

Well Pump Replacement, Plumbing Repairs, or Water Treatment Maintenance – These activities are often a source of bacteria contamination in wells. Licensed pump installers and water well contractors are required to properly flush and disinfect the well after any work is completed. Work on home plumbing (hot water tank replacement, treatment installations, leak repairs, etc.) will also introduce bacterial contamination. Licensed contractors are required to spot chlorinate and flush after any installations or repairs. Note that some water treatment systems such as softeners should not be chlorinated; contact the manufacturer for details on chlorination.

FOR MORE INFORMATION

Consult the Center for Disease Control or the U.S. Environmental Protection Agency for further guidance on interpreting the presence of coliform bacteria in drinking water, or contact NHDES Drinking Water and Groundwater Bureau, or the NH Water Well Board Program at (603) 271-2513 or dwgbinfo@des.nh.gov, and des.nh.gov.

Note: This fact sheet is accurate as of June 2019. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete.