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# ENVIRONMENTAL Fact Sheet

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## Boil Water Advisories

The possible presence of microbiological pathogens in drinking water supplies is a significant concern in the protection of public health. This risk of contaminants can be minimized through such measures as complying with required setbacks of water sources from septic systems, proper disinfection at the source where needed, and maintenance conducted as part of a program to prevent back-siphoning of contamination into the supply mains. Despite these measures, however, there are occasional bacterial incidents that represent a significant threat to the safety of a public water supply.

As a safeguard until corrections can be made, NHDES may issue a boil water advisory to the system. The notice generally advises that all water that is used for consumption should be brought to a boil, then kept at a vigorous boil for at least one minute. Such advisories may be issued for the following reasons.

**Detection of fecal coliforms (including *E. coli*).** Every public water system conducts periodic monitoring for coliforms and, when coliforms are detected, fecal coliforms. In municipal systems, monthly monitoring is typically required at several locations in the system, with the number of sites determined by the system's service population. Presence of coliforms indicates a possible deficiency that allows inadequately treated water into the system and that can be corrected as a high-priority maintenance item. Presence of fecal coliforms, on the other hand, indicates a more urgent problem that requires immediate attention. Any detection of fecal coliforms triggers NHDES notification to the water system and the immediate issuance of a boil water advisory.

**Lapse in distribution system integrity.** Water distribution systems normally operate at a minimum positive pressure to prevent infiltration of untreated water into the system. Backflow of contaminated water into the distribution system is a concern whenever water pressure drops, or could drop, below 20 pounds per square inch (psi) as measured at ground level. Operation of the water system at pressures below this level increases the possibility of back-siphoning of contaminated water into the piping system. Such a pressure drop can occur because of broken mains, loss of stored water (especially in small systems), or long-term loss of power or source capacity. In the case of water main breaks, water supply owners can often isolate main breaks to complete repairs without pressure loss to other areas within the distribution network. Breaks occasionally occur that cannot be isolated and require interruption of service over a much wider area. The widespread loss of service may require a Boil Water Advisory (Boil Order). Public water systems can place themselves on an advisory (Precautionary Boil Order) for this reason. These have the same lift requirements as NHDES-imposed advisories (see the following page).

**Detection or suspicion of waterborne pathogens.** Disinfection through use of chlorine or other oxidants has been shown to be effective for inactivation of most bacteria, viruses and other microorganisms that represent a health risk. However, there are other pathogens, most notably protozoans, which are

extremely resistant to chemical attack and may be inactivated only after high dosages or unusually long contact times. Because of this resistance, protozoans may be present even though routine coliform monitoring indicates an otherwise safe supply. Pathogens of note are *Giardia lamblia*, which has been the target organism in the mandated filtration of surface water supplies, and *Cryptosporidium parvum*, an organism that gained widespread infamy in a 1993 Milwaukee outbreak that was responsible for more than 100 deaths. Infections by either of these organisms are reportable to the New Hampshire Division of Public Health Services and are of importance because of their more profound effect among immuno-compromised populations. Detection in the water supply may be very difficult given the long incubation periods, diagnostic procedures, and extended times for water sampling and analysis. The determination that these protozoans are present in the water supply frequently depends on collection of circumstantial evidence. A safe approach under these circumstances is to issue a boil water advisory when there is reasonable suspicion of contamination of the water supply.

Boil water advisories can be lifted by NHDES when system corrections have been completed and water quality indicators are acceptable. In the case of fecal coliform presence, the boil water advisory typically remains in effect until a minimum of two consecutive sets of samples show the absence of coliform and any outstanding system defects have been corrected.

Experience at NHDES has shown wide variation in circumstances where boil water advisories are necessary. Notification of the public leads to numerous inquiries regarding uses that require prior boiling, boiling procedure, and corrective action taken by the water supply owner. Restaurants, health clinics, and hospitals are especially affected. Close communication among staff of NHDES, the Division of Public Health Services, and local officials has been essential.

#### **For More Information**

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or [dwgbinfo@des.nh.gov](mailto:dwgbinfo@des.nh.gov) or visit our website at [des.nh.gov](http://des.nh.gov).

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