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Guidance for Issuing and Rescinding Boil Water Advisories

Decisions concerning boil water advisories can be made only at the local level based upon site-specific knowledge and conditions. The purpose of this section is to provide water purveyors and health and environment authorities with a summary of the important factors that should be considered before boil water advisories are issued or rescinded. Recent research indicates that holding water at a rolling boil for one minute will inactivate all waterborne pathogenic micro-organisms.

Communication Processes

An emergency team consisting of those responsible for source water protection, water treatment and distribution, water quality monitoring and public health surveillance should be in place to quickly respond to any drinking water-related incident that has had or may have had an effect on water quality or public health. This arrangement will allow for the rapid exchange of information so that remedial measures that may be required in the watershed, at the treatment plant or in the distribution system can be instituted without delay. Depending on the seriousness of the incident, the public health representative or other designated member of the team may issue a boil water advisory. The team should also have criteria in place to determine when an advisory can be rescinded. The arrangement should also allow for prompt communication of the advisory and related health risks to elected officials, the news media and the public.

Issuing a Boil Water Advisory

In most cases, boil water advisories are issued:

a) on evidence of:
   - significant deterioration in source water quality;
   - equipment malfunction during treatment or distribution;
   - inadequate disinfection or disinfectant residuals;
   - unacceptable microbiological quality;
   - unacceptable turbidities or particle counts; or

b) where epidemiological evidence indicates that the drinking water is responsible for an outbreak of illness.

The possible negative consequences of boil water advisories — for example, the risk of scalding, especially to young children and elderly people — should also be considered.

Boil water advisories are most frequently based on unacceptable bacteriological quality. In some jurisdictions, advisories are issued exclusively on the confirmed presence of unacceptable levels of total coliforms or heterotrophic plate counts; in others, they are issued in response to the presence of *Escherichia coli* or thermotolerant coliforms. The confirmed presence of excess total coliforms or heterotrophic plate counts in the distribution system, but not in water leaving the treatment plant, usually indicates that the distribution system is experiencing bacterial regrowth problems. As total coliform and heterotrophic bacteria are ubiquitous in nature, their presence in the distribution system does not necessarily indicate a health risk. Nevertheless, if remedial measures, such as flushing water mains and increasing chlorine residuals, do not correct this problem, then the local health authorities may wish to issue an advisory after consultation with the water purveyor and appropriate municipal officials. Conversely, the presence of *E. coli* in drinking water is a definite indication of human or animal faecal contamination and the possible presence of pathogenic micro-organisms. If the presence of *E. coli* is confirmed, a boil water advisory should be issued immediately. Some authorities prefer to use the presence of thermotolerant coliforms (faecal coliforms) as a trigger for the issuance of boil water advisories. However, as some species in this group — for example, *Klebsiella pneumoniae* — occur naturally in vegetation and soils as well as in faeces, they are not absolute indicators of faecal contamination. When thermotolerant coliforms are detected, their identity should be determined. If *E. coli* is present, a boil water advisory should be issued

immediately; if species other than *E. coli* are present, it is likely that the distribution system is experiencing bacterial regrowth. The water purveyor may wish to attempt to correct the problem before any decision on the issuance of a boil water advisory is made.

The mere presence of parasitic cysts or oocysts in treated drinking water is not usually sufficient justification for issuing a boil water advisory. Because the current methods for the routine detection of cysts or oocysts do not measure viability or human infectivity, their public health significance is unknown. Nevertheless, the presence of cysts or oocysts in drinking water receiving full conventional treatment may indicate inadequate filtration, a malfunction in treatment or penetration of sewage into the distribution system. In such cases, health officials may wish to monitor the general public for the associated gastrointestinal illnesses before considering issuance of an advisory. Certain parasitic illnesses — for example, cryptosporidiosis — may pose a more serious threat to people who have weakened immune systems. Severely immunocompromised individuals should be advised to discuss these risks and remedial measures with their physicians.

Rescinding a Boil Water Advisory

Boil water advisories are usually rescinded as soon as the microbiological quality, turbidity, disinfection residual or particle counts of the treated water in at least two consecutive sets of samples have returned to acceptable levels or when the treatment or distribution malfunction has been corrected and sufficient water displacement has occurred in the distribution system to eliminate any remaining contaminated water. In the case of an outbreak, advisories are usually rescinded after the above conditions have been met and when surveillance indicates that the incidence of the illness in the community has returned to background levels. Owing to lengthy incubation periods for some pathogens and their secondary spread, new cases of illness may occur after the period of contamination has passed. Conversely, a lack of new cases may indicate that the advisory is being followed and not that the causative situation has been rectified.

Boil Water Advisories and Other Water Quality Problems

There are certain water quality problems that cannot be rectified by boiling, yet for which boiling has been considered or advised as a solution. For example, boiling will not destroy the heat-stable cyanobacterial toxins. Boiling drinking water may remove some disinfection by-products (DBPs), but the exact conditions for their complete removal are unknown at this time. Many DBPs are not volatile and are not removed by boiling. For these reasons, the most appropriate position to take is that boiling has not been shown to reduce the health risks related to cyanobacterial toxins and DBPs and therefore cannot be recommended as a solution at the present time. It has not been demonstrated that boiling increases any negative health consequences from cyanobacterial toxins or DBPs.