



Water Suppliers Impacted by Emergency Events

Emergency events like wildfires and flooding can impact water systems in many ways causing:

- **Physical damage** to water system components and equipment.
- **Poor quality source water** including pollution from flood waters and increased surface water run-off and turbidity.
- **Disrupted operations** with staff unable to do necessary maintenance and monitoring.
- **Power loss leading to:**
 - **Loss of supply** – if your system relies on pumps to distribute water to users, a loss of power can lead to pressure loss and an interrupted water supply.
 - **Backflow of contaminated water into the system** – this can occur when there is low or negative pressure in the distribution system. When this happens, contaminated water can enter the system through cracks in the piping or through cross connections with untreated water.
 - **Water treatment equipment malfunctions** – leading to untreated water entering the distribution system.
 - **Stagnant water** - water sitting in the distribution system can have microorganisms multiply, potentially resulting in health risks and/or taste and odour problems.



In the event of an emergency the water supplier must immediately inform their Environmental Health Officer. For after-hours or weekend emergencies, contact the Medical Health Officer on call phone number in your Emergency Response & Contingency Plan.

During the Event

- Refer to your Emergency Response and Contingency Plan (ERCP) for procedures specific to your system.
- **If** there is any doubt about the safety of the drinking water due to pressure loss, treatment disruption, or physical damage, issue a precautionary **Boil Water Notice (BWN)** and inform your Environmental Health Officer:
 - Boil Water Notification templates can be found at <https://www.interiorhealth.ca/information-for/businesses/drinking-water-providers-and-operators#public-notification-templates-for-operators>.
 - Environmental Health Officer contact information can be found at <https://www.interiorhealth.ca/YourEnvironment/AirQuality/Documents/Health%20Protection%20Offices%20Contacts.pdf>.

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- If there is a concern of chemical contamination – a **Do Not Consume (DNC)** or **Do Not Use (DNU)** notice may be required. This decision should be made in consultation with your Environmental Health Officer or a Medical Health Officer.

Returning to Normal Operations

- When safe to do so, inspect the water system to identify any damage. Check to ensure water treatment components are also working properly. (If your system is damaged, refer to the “[Is there damage to your water system?](#)” section below).
- After the water system is assessed, perform maintenance procedures including:
 - **Flushing the distribution system** – this involves clearing water from the pipes through hydrants, standpipes or other discharge points to remove stagnant water and potential contaminants. Flushing should be done prior to disinfecting. Techniques for flushing can be found in the “[Additional Resources](#)” section. [Appendix A](#) below contains specific information that can be supplied to homeowners to help guide them in flushing their building plumbing systems.
 - **Disinfecting the system** – this involves introducing chlorine into all or part of the water system to kill any harmful microorganisms that may be present.
 - **Water Wells** – if the system is supplied by a well, please refer to *Water Well Disinfection Using the Simple Chlorination Method* from the BC Ministry of Environment for information on well disinfection at: https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/water-wells/bc_gov_5402_water_well_disinfection_webbrochure.pdf.
 - **Distribution System** – the distribution system can be disinfected by introducing sufficient chlorine into the water mains to achieve an initial concentration of 25 mg/L (ppm). This solution should be allowed to stand in the pipes for 24 hours. At this point the water should be tested and there should be at least 10 mg/L of chlorine left. The pipes can then be flushed to remove the remaining chlorine. Refer to [Appendix B](#) below for more details.
- Ensure the water quality is safe by taking at least two sets of bacteriological samples at least 24 hours apart. If your system was potentially exposed to chemical contaminants, you may be required to test for additional parameters through an accredited laboratory. Consult with an Environmental Health Officer to see whether additional testing is required. After acceptable water quality results are obtained the public notification can then be lifted in consultation with your Environmental Health Officer.



Communication with water users: ensure messaging to customers is clear, concise and consistent. Provide updates using multiple forms of communication such as websites, local news outlets, social media, road signage, phone trees, and alert systems.

Emergency Response and Contingency Plan (ERCP): Everything that happens during an emergency can inform your ERCP. If something did not work, learn and identify a different approach.

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Is there Damage to your Water System?

- When it is safe to do so, assess and take note of any damage that has occurred. Contact a Qualified Professional (e.g. engineering consultant, plumber) for additional guidance in assessing the system and determining what repairs will be necessary.
- Once the infrastructure assessment has been completed, contact your Environmental Health Officer for further direction or approvals.
- If a wildfire has damaged or melted water system infrastructure a Do Not Consume (DNC) advisory may be required. When exposed to heat, plastic pipes can release volatile organic compounds (VOCs) into the drinking water. A loss of pressure in the distribution system can also siphon contaminants into the system through backflow. The water system may require targeted testing before the advisory can be removed.
- Water suppliers are encouraged to consult with their insurance provider to determine what coverage is available for fixing the system and/or covering other operational needs.
- In some circumstances, emergency repair work can be completed without a Construction Permit. Contact an Environmental Health Officer and consult with Interior Health Engineering Direct at 1- 855-743-3550 or EngineeringDirect@interiorhealth.ca before proceeding with any work. More information on Construction Permit applications can be found at <https://www.interiorhealth.ca/information-for/businesses/drinking-water-providers-and-operators#waterworks-construction-permit>.

Additional Resources

➤ **Drinking Water Advisories and communicating with water system users**

BC Guide for Communicating with Water Users.

https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/documents/guide_for_communicating_with_water_users.pdf

Drinking Water for Everyone – map showing drinking water advisories in the Interior Health region.

<https://drinkingwaterforeveryone.ca/>

Interior Health website - advisory templates.

<https://www.interiorhealth.ca/information-for/businesses/drinking-water-providers-and-operators#public-notification-templates-for-operators>

➤ **Wildfire & Volatile Organic Compounds**

United States Environmental Protection Agency – Build Wildfire Resilience.

<https://www.epa.gov/waterutilityresponse/build-wildfire-resilience>

➤ **Other Resources**

BC Small Water Systems Online Help Centre – technical resources, templates, and free webinars and courses to support safe, clean, and reliable tap water.

<https://smallwatersystemsbc.ca/>

Province of British Columbia Drinking Water Quality – resources for water system operators.

<https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/drinking-water-quality/resources-for-water-system-operators>

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Appendix A – Information for Homeowners

Procedure for Flushing Your Home and/or Building Plumbing System

All water systems that have been shut down should be flushed as there will be stagnant water in the lines.

- If in doubt, seek the services of a trained professional such as a plumber. In most cases, instructions for flushing various appliances can be found in owner's manuals provided with water softeners and other equipment. It is recommended that these instructions should be followed.
- Consider running inside taps using a hose and/or buckets to drain the water outside instead of into the septic tank.

General Plumbing System Flushing Procedure:

1. Flush the water line to the house by running outside taps to waste for five minutes. Once the main line is flushed, then the house plumbing system can be flushed.
2. Flush household pipes/faucets by running each cold-water faucet on full for at least five minutes. Remove all aerators (screens on end of taps) to ensure there is enough flow through taps.
3. Follow the manufacturer's instructions for flushing the hot water tank. Shut off the breaker at the electrical panel and wait at least two hours before flushing the hot water tank to allow the water to cool. (For gas or propane hot water tanks, please follow the manufacturer's instructions for turning off the element and pilot light). Run the hot water taps until the warm water runs out and cold water is coming from the hot taps. Once all of the water has been flushed from the hot water taps, turn off all of the taps and turn the breaker back on to the hot water tank.
4. For other appliances such as in-line filters, treatment systems, water softeners, fridge water dispensers with direct water connections or water tanks: Run enough water to completely replace at least one full volume of all lines and tanks. If your filters are near the end of their lives, replace them.
 - Water softeners: Run through a regeneration cycle.
 - Reverse Osmosis (RO) units: Replace pre-filters, check owner's manual.
 - Replace other water filters, as they are disposable and may be contaminated. This applies especially to carbon filters.
5. Other appliances such as coffee makers, Brita filters, or bathroom Water Piks that are not directly connected to a water line but may have been used during the event should also be thoroughly cleaned and flushed.

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Appendix B – Information for Water Suppliers

Chlorine required to produce 25 mg/L concentration per 100ft (30.5m) of water main, by diameter (as described in AWWA Standard C651-14)

Pipe Diameter		100% Chlorine		1% Chlorine Solution*	
Inches	Millimetres	Pounds	Grams	Gallons	Liters
4	100	0.013	5.9	0.16	0.6
6	150	0.030	13.6	0.36	1.4
8	200	0.054	24.5	0.65	2.5
10	250	0.085	38.6	1.02	3.9
12	300	0.120	54.4	1.44	5.4
16	400	0.217	98.4	2.60	9.8

**Please note that commonly used sources of chlorine are household bleach (5.25% chlorine) and industrial strength bleach (12-15% chlorine). These will need to be diluted to achieve a 1% chlorine solution.*

To determine how to obtain the required 1% chlorine (sodium hypochlorite) solution, use the dilution calculator provided at - <https://www.publichealthontario.ca/en/health-topics/environmental-occupational-health/water-quality/chlorine-dilution-calculator>.

If the online calculator cannot be accessed, the dilution calculation formula is as follows:

$$C1 \times V1 = C2 \times V2 \text{ where,}$$

C1 is the initial concentration of the bleach (sodium hypochlorite) solution.

V1 is the volume of the bleach to be diluted with water.

This is what you are trying to calculate.

C2 is the concentration of the diluted bleach solution you are preparing.

V2 is the volume of bleach solution you are preparing.