Customer Guidance Regarding Water Quality in Buildings Located in Areas Damaged by Wildfire

Oregon Drinking Water Services
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Disclaimer: This document was prepared by the California Water Resources Control Board, Division of Drinking Water, with input from other drinking water professionals. It has been adapted for Oregon. Information provided below is based on limited experience and understanding of how public drinking water systems are impacted by wildfires. This document summarizes what has been observed in wildfire-impacted areas and is intended to provide recommendations for building owners regarding how to perform a minimum baseline analysis of potential chemical contamination. Because of the many variables and unknowns regarding fire-damaged drinking water systems, it cannot be guaranteed that following the recommendations below will necessarily protect water system users from adverse health impacts associated with the water. Water customers are encouraged to work with their local water supplier and local health authorities.

Purpose

The purpose of this document is to assist water customers (individuals, businesses, schools and others) receiving drinking water from water systems impacted by wildfires with addressing possible contamination of their drinking water and building plumbing.

Background

When a wildfire occurs, it can damage not only buildings, but also the pipes that deliver water to those buildings. Some damage is visible, like charring or melting, but other damage is less obvious, like contamination of the water or the pipes. After recent fires in California, contaminants such as benzene were detected in the water above drinking water standards in some locations. This problem was first documented during the 2017 Tubbs Fire in Santa Rosa, CA and subsequent investigation concluded that thermal decomposition (combustion, melting and/or pyrolysis) of plastics contributed to the contamination. Benzene can soak into the walls of plastic pipes and be slowly released over time. While water mains get flushed to some extent as water is used, it is possible that some benzene may remain in the pipes and other materials connected to the standing buildings and in the water within those pipes. Without testing, it is unknown which pipes may be affected.

Health considerations

According to the United States Centers for Disease Control and Prevention, long-term exposure (years) to benzene in air or water can affect bone marrow production of red and white blood cells and may cause anemia and immune system damage. Benzene is also a known human carcinogen, and long-term exposure can lead to leukemia (a cancer of the blood-forming tissues). For most people, their exposure to benzene is from gasoline and auto exhaust in the air, or from tobacco smoke.

The US Environmental Protection Agency sets the maximum allowable level of a contaminant in water delivered to the users of a public water system. This level, the Maximum Contaminant Level (MCL), for benzene is 5 micrograms per liter, or parts per billion. For water customers,

your risk from your drinking water is related to the levels, frequency and duration of your exposure.

Recommendations – Flushing
Residents who are concerned about possible benzene or other contamination should thoroughly flush all their pipes and in-building components (water heater, ice maker, etc). Flushing is accomplished by undertaking the following:
1. Cold water: allow each water tap (sinks, showers, outside hose-bibs, etc.) to run for about 5 minutes (multiple taps can be run at the same time but maintain vigorous flow).
2. Hot water: allow each hot water tap to run until the water turns cold.
3. Refrigerators and other water dispensers (such as under-sink filtration systems): run the water for several minutes, and then replace the filter if present.
4. Ice makers: follow the manufacturer's instructions for cleaning ice maker water lines, dispose of any existing ice, and dispose the ice from three refills.

Note: Concentrations of benzene in air are expected to be negligible; however, as an added precaution you may wish to ventilate your house while conducting the flushing by opening windows and turning on exhaust fans.

Water testing
Contact an Oregon accredited laboratory and let them know that you would like to have your drinking water tested for benzene in accordance with US EPA Method 524.2. The lab may bundle analysis with other contaminants, such as BTEX (benzene, toluene, ethylbenzene, and xylene) or regulated volatile organic contaminants (VOCs). Experience of the California State Water Resources Control Board indicates that in most cases benzene is an appropriate indicator of the presence or absence of other contaminants that could pose adverse health risks. Researchers note there have been instances where other contaminants have been found in the absence of benzene.

The laboratory should provide you with the necessary sample collection bottles as part of the analysis cost. The laboratory should also provide you with specific instructions on how to prepare and fill the sample bottles, along with other useful guidance. These must be followed carefully and precisely, to avoid inadvertent contamination from other sources (such as tobacco smoke, gasoline, your hands, hair, clothing, etc). In some instances, laboratories may offer services to collect the sample.

Please make sure that any sampler follows these instructions:
1. Stagnation**:** After the building plumbing is flushed following the process set forth above, the water should remain untouched and stay in the pipes for a minimum of 8 hours before sampling. Some researchers recommend stagnation for 72 hours. Avoidance of water use is necessary to give time for any chemicals present in the water pipes to move back into the water. This reduces the risk of receiving an inaccurate test result. It may be convenient to take your sample in the morning after the water sat overnight.
2. Sample Location**:** Once water has been allowed to stand, a sample is ready to be taken. The recommendation is it to take a cold-water sample at the kitchen faucet, which is typically the primary location where water is obtained for consumption. *Note: Do not use a faucet with a filter.* The California guidance that this document is derived from states that testing at the kitchen faucet should generally provide representative data about the water pipes in the house. However, some researchers suggest a need for multiple samples from both hot and cold taps and from the service line. If consumers wish, they may take additional samples as

well, such as at a bathroom faucet, or other faucets where people use the water for drinking. Consumers can also sample the water coming into the building by taking a sample at the entrance of the building, if available (generally the outdoor hose bib by the shutoff valve).
Sample Collection**:** Follow the instructions provided by the laboratory

a. Set up the sample bottles and any other materials in a clean location near the faucet to be sampled.
b. Measure and discard the first two cups (16 ounces) of water from the tap before taking the sample for analysis (This is to help ensure that the sample represents water in contact with the building pipes, and not the faucet, nor the water main in the street).
c. Fill the sample bottles as directed.
d. Complete any additional steps in accordance with the exact directions provided by the laboratory where the sample will be analyzed and deliver the sample to the laboratory as instructed.

Interpreting results

If your results come back as "non-detect (ND)," "below quantification limit," or less than 5 ug/L, then the water meets the State and Federal standard. In the event of a sample result for benzene that is higher than 1 ug/L, DWS recommends following the flushing steps above to collect a second sample and submit it to your laboratory. If the second sample confirms the presence of benzene above 1 ug/L, it is recommended that you contact your water utility for additional advice, and possible testing of water being served through their system to your property. You may also wish to contact your local or county health department for health-related questions.

In-building treatment options

"Point-of-use" units using granular activated carbon (GAC) or reverse osmosis (RO) will remove low levels of benzene and other organic contaminants. They can be installed at faucets used for drinking water. Select a treatment unit certified by the National Sanitation Foundation, NSF standard 53 for VOC removal. These units must be maintained according to manufacturer's specifications.

Additional information

Health information: ATSDR Toxicological Profile for Benzene, Public Health Statement for Benzene, August 2007. www.atsdr.cdc.gov/ToxProfiles

Flushing: Gary Burlingame, Sheldon Master and Joan Przybylowicz,"'Rinse the Tap' Advisories are a Refreshing Measure" Opflow, Vol 45, No 5, pp 22-24, May 2019

Treatment units: US EPA: "Investigating point-of-use and point-of- entry devices to enhance water security."

https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=498211&Lab=NHSRC

"Wildfire caused widespread drinking water distribution network contamination." AWWA Water Science, 2020, Caitlin R. Proctor, Juneseok Lee, David Yu, Amisha D. Shah, Andrew J. Whelton. https://doi.org/10.1002/aws2.1183