CALIFORNIA Water Boards

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# Information to Water Customers Regarding Water Quality in Buildings Located in Areas Damaged by Wildfire
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*Disclaimer: This document was prepared by the State Water Resources Control Board, Division of Drinking Water (DDW), with input from other drinking water professionals. 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 in areas impacted by wildfires with addressing possible contamination of their drinking water and building plumbing. This document includes information on potential health concerns, and advice on flushing pipes and testing the water.

## 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, at certain locations, contaminants such as benzene were detected in the water above drinking water standards. This problem was first documented during the 2017 Tubbs Fire in Santa Rosa, 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 for clean-up and recovery activities, 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. It is unknown without testing which pipes may be affected.

As a reference to the quantities of benzene anticipated from these events, consider a 100' water service line to a standing home that was contaminated initially with 100 micrograms/ liter (ug/L) benzene (greater than what has been found to date in standing homes). That

line has a volume of less than 10 liters of water, so less than 1 milligram benzene total (less than 1/10th drop of pure benzene). Subsequent non-potable use or flushing would remove most of this.

**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 State of California sets stringent drinking water standards at levels believed to have little or no adverse health risk to those drinking that water over their entire life, with an adequate margin of safety. The California drinking water standard, or Maximum Contaminant Level (MCL), for benzene is 1 ug/L. For water customers, your risk from your drinking water is related to the levels, frequency and duration of your exposure. Current studies show that your risk of getting leukemia is no greater than about 2 in 1,000,000, if you drank water at this level daily throughout your entire life.

**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 so equipped.
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 Environmental Laboratory Accreditation Program (ELAP) certified laboratory (see attached list) and let them know that you would like to have your drinking water tested for benzene in accordance with US EPA Method 524.2. Experience with the 2017 Tubbs fire indicates that benzene is an appropriate indicator of the presence or absence of other contaminants that could pose adverse health risks. US EPA Method 524.2 can

also be used to test for contaminants besides benzene, but the cost may be substantially higher.

The laboratory should provide you with the required 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. 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.* Testing at the kitchen faucet should generally provide representative data about the water pipes in the house. However, 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 (generally the outdoor hose bib by the shutoff valve).

3. 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.

<u>Interpreting results</u>

If your results come back as “non-detect (ND),” “below quantification limit,” or less than 1 ug/L, then the water meets the State standard. In the event of a sample result for benzene that is higher than 1 ug/L, you should follow the 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

Granular activated carbon (GAC) will effectively remove benzene and other organic contaminants from water. Point-of-use (POU) units containing GAC, or GAC combined with reverse osmosis (RO), are commonly available. They can be installed at faucets used for drinking water. 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