

Information to Water Customers Regarding Water Quality in Buildings Located in Areas Damaged by Wildfire

(6.14.2019)

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 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 burning, but other damage is less obvious, like contamination of the water in 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 an extensive investigation with teams of experts concluded that thermal decomposition (heat related burning, 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 are essentially flushed after a wildfire, 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.

Health considerations

According to the United States Centers for Disease Control and Prevention, long-term exposure, which is defined as many 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).

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 goal is that waterborne illness should not be a concern for individuals or their communities.

The California drinking water standard, or Maximum Contaminant Level (MCL), for benzene is 1 microgram/liter (also written as 1 ug/L, or 1 part per billion). 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 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, hose-bibs, etc.) to run for about 5 minutes (multiple taps can be run at the same time; however, do not open so many that water pressure reduces);
2. Toilets: flush the toilets several times (at least three times);
3. Hot Water: If you are comfortable draining your water heater to flush sediments out or can afford to have a professional perform this activity for you, it is recommended to completely drain the tank in accordance with the manufacturer's instructions to effectively flush the tank, then follow the same process for flushing cold water taps (flush 5 minutes per tap). If you are not comfortable draining the tank, please perform the following steps to flush the tank and the hot water lines:
 - a. at the 2-3 fixtures closest to the water heater, flush as quickly as possible until the water runs cold. Once the hot water faucets have cold water coming from them, the water tank has been flushed. Close the taps.
 - b. Run the remaining hot water fixtures in the house for 5 minutes per tap.
4. Appliances that use water (dishwashers, washing machines, etc.): run an empty load utilizing both hot and cold cycles where applicable;
5. 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; and
6. Ice makers: You may follow the manufacturer's instructions for cleaning ice maker water lines, or you can dispose of any existing ice, and then 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 USEPA Method 524.2. Experience with the 2017 Tubbs fire strongly suggests that benzene is an appropriate indicator of the presence or absence of other contaminants that could pose adverse health risks. USEPA Method 524.2 can 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 your hands, hair,

clothing, etc). In some instances, laboratories may offer services to collect the sample. Please make sure that any sampler follows these sampling 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 critical 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.
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:** To collect a sample:
 - a. Either remove the faucet aerator (if present) or follow the steps below while keeping the faucet running at a low flow.
 - b. Measure and discard the first two cups (16 ounces) of water from the tap before taking the sample for analysis (Some sampling instructions will direct you to flush the water for 10 minutes, or more; however, the very short flush we recommend here is to help ensure that the sample represents water in contact with the pipes, and not the faucet or the water main in the street.); and
 - c. Fill the sample bottles, complete any additional steps in accordance with the exact directions provided by the ELAP certified 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 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.

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

| Type | County | Laboratory Name | Cert. # | Expiration Date | City, State Zip Code | Phone |
|------------|--------------|--|---------|-----------------|-----------------------|----------------|
| Commercial | Alameda | Elite Analytical | 2416 | 4/30/2020 | Livermore, CA 94551 | (925) 371-8821 |
| | | TestAmerica | 2496 | 1/31/2020 | Pleasanton, CA 94566 | (925) 484-1919 |
| | Contra Costa | McCampbell Analytical, Inc. | 1644 | 10/31/2019 | Pittsburg, CA 94565 | (925) 252-9262 |
| | Fresno | Agriculture & Priority Pollutants Laboratories, Inc. | 1312 | 9/30/2019 | Clovis, CA 93611 | (559) 275-2175 |
| | | BSK Associates | 1180 | 4/30/2020 | Fresno, CA 93706-1623 | (559) 497-2888 |
| | | Moore Twining Associates, Inc. | 1371 | 9/30/2019 | Fresno, CA 93721 | (559) 268-7021 |
| | Humboldt | North Coast Laboratories, Ltd. | 1247 | 7/31/2020 | Arcata, CA 95521 | (707) 822-4649 |
| | Kern | BC Laboratories, Inc. | 1186 | 5/31/2020 | Bakersfield, CA 93308 | (661) 327-4911 |
| | | Zalco Laboratories, Inc. | 2791 | 7/31/2019 | Bakersfield, CA 93308 | (661) 395-0539 |
| | Los Angeles | Advanced Technology Laboratories | 1838 | 12/31/2019 | Signal Hill, CA 90755 | (562) 989-4045 |
| | | American Analytics Inc. | 1471 | 3/31/2020 | Chatsworth, CA 91311 | (818) 998-5547 |
| | | American Environmental Testing Laboratory, LLC. | 1541 | 6/30/2019 | Burbank, CA 91504 | (818) 845-8200 |
| | | EMAX Laboratories, Inc. | 2672 | 6/30/2019 | Torrance, CA 90501 | (310) 618-8889 |
| | | Eurofins Eaton Analytical, LLC - Monrovia | 2813 | 2/1/2021 | Monrovia, CA 91016 | (626) 386-1100 |
| | | Michelson Laboratories, Inc. | 1198 | 5/31/2020 | Commerce, CA 90040 | (562) 928-0553 |
| | | Positive Lab Service | 1131 | 2/28/2020 | Los Angeles, CA 90021 | (213) 745-5312 |

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|------------|----------------|---|---------|-----------------|-----------------------------|----------------|
| Commercial | Los Angeles | Weck Laboratories, Inc. | 1132 | 3/31/2020 | City of Industry, CA 91745 | (626) 336-2139 |
| | Napa | Caltest Analytical Laboratory | 1664 | 11/30/2019 | Napa, CA 94558 | (707) 258-4000 |
| | Orange | Enthalpy Analytical, LLC | 1338 | 10/31/2019 | Orange, CA 92868 | (714) 771-6900 |
| | | Eurofins Calscience, LLC | 2944 | 9/30/2019 | Garden Grove, CA 92841-1427 | (714) 895-5494 |
| | | Orange Coast Analytical, Inc. | 2576 | 1/31/2020 | Tustin, CA 92780 | (714) 832-0064 |
| | | Sierra Analytical Laboratories, Inc. | 2320 | 9/30/2019 | Laguna Hills, CA 92653 | (949) 348-9389 |
| | | TestAmerica Irvine | 2706 | 6/30/2019 | Irvine, CA 92614-5817 | (949) 261-1022 |
| | | Truesdail Laboratories, Inc. | 1237 | 7/31/2020 | Irvine, CA 92612 | (714) 730-6239 |
| | Placer | Excelchem Laboratories, Inc. | 2119 | 3/31/2020 | Rocklin, CA 95765 | (916) 543-4445 |
| | Riverside | Babcock Laboratories, Inc. | 2698 | 5/31/2020 | Riverside, CA 92507 | (951) 653-3351 |
| | Sacramento | California Laboratory Services | 1233 | 6/30/2019 | Rancho Cordova, CA 95742 | (916) 638-7301 |
| | | Continental Water Laboratory | 2955 | 1/31/2020 | Sacramento, CA 95828 | (916) 379-2323 |
| | | Sparger Technology, Inc. | 1614 | 11/29/2019 | Sacramento, CA 95827 | (916) 369-7688 |
| | San Bernardino | Clinical Laboratory of San Bernardino, Inc. | 1088 | 1/31/2020 | Grand Terrace, CA 92313 | (909) 825-7693 |
| | Santa Clara | Torrent Laboratory, Inc. | 1991 | 4/30/2020 | Milpitas, CA 95035 | (408) 263-5258 |
| | Sonoma | Alpha Analytical Laboratories Inc. | 2303 | 4/2/2020 | Petaluma, CA 94952 | (707) 769-3128 |

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| Commercial | Sonoma | Brelje and Race Laboratories, Inc. | 1243 | 7/31/2019 | Santa Rosa, CA 95404 | (707) 544-8807 |
| | Stanislaus | GeoAnalytical Laboratories, Inc. | 2585 | 3/31/2020 | Turlock, CA 95380 | (209) 669-0100 |
| | Ventura | Capco Analytical Services | 2332 | 3/31/2020 | Ventura, CA 93003 | (805) 644-1095 |
| | | Fruit Growers Laboratory | 1573 | 7/31/2019 | Santa Paula, CA 93060 | (805) 392-2000 |
| | | Pat-Chem Laboratories | 1531 | 5/31/2021 | San Fernando, CA 91340 | (818) 639-5300 |
| | Mendocino | Alpha Analytical Laboratories, Inc. | 1551 | 6/30/2019 | Ukiah, CA 95482 | (707) 468-0401 |
| | Shasta | Basic Laboratory, Inc. | 1677 | 12/31/2019 | Redding, CA 96001 | (530) 243-7234 |
| | Solano | Delta Environmental Laboratories | 1857 | 2/28/2020 | Benicia, CA 94510 | (707) 747-6081 |
| | Nevada | Cranmer Engineering, Inc. | 1936 | 8/31/2019 | Grass Valley, CA 95945 | (530) 273-7284 |
| | Monterey | Monterey Bay Analytical Services, Inc. | 2385 | 10/31/2019 | Monterey, CA 93940 | (831) 375-6227 |
| | Santa Barbara | Oilfield Environmental & Compliance Inc. (OEC) | 2438 | 10/31/2019 | Santa Maria, CA 93454 | (805) 922-4772 |
| | Out-of-State | Alpha Analytical, Inc. | 2019 | 7/31/2019 | Sparks, NV 89431 | (775) 355-1044 |
| | | ALS Environmental - Kelso | 2795 | 7/8/2019 | Kelso, WA 98626 | (360) 577-7222 |
| | | American Water Central Laboratory | 2737 | 10/31/2019 | Belleville, IL 62220 | (618) 235-3600 |
| | | EMSL Analytical Inc. | 1877 | 6/30/2019 | Cinnaminson, NJ 08077 | (800) 220-3675 |
| Eurofin Eaton Analytical, LLC | | 2920 | 9/16/2019 | South Bend, IN 46617 | (574) 233-4777 | |

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| Commercial | Out-of-State | Eurofins Lancaster Laboratories Environmental, LLC | 2792 | 1/31/2020 | Lancaster, PA 17601 | (717) 656-2300 |
| | | Friedman and Bruya, Inc. | 2946 | 4/5/2020 | Seattle, WA 98119 | (206) 285-8282 |
| | | IEH Analytical Laboratories | 2625 | 6/17/2019 | Seattle, WA 98103 | (206) 632-2715 |
| | | National Testing Laboratories, Ltd | 2568 | 4/30/2020 | Ypsilanti, MI 48197 | (734) 483-8333 |
| | | Pace Analytical National Center for Testing & Innovation | 2932 | 6/30/2019 | Mount Juliet, TN 37122 | (615) 758-5858 |
| | | Pace Analytical Services, LLC | 2929 | 12/31/2019 | Minneapolis, MN 55414 | (612) 607-1700 |
| | | Pace Analytical Services, LLC - New Orleans, LA | 2928 | 6/30/2019 | St. Rose, LA 70087 | (504) 469-0333 |
| | | SGS North America Inc - Dayton | 2909 | 6/30/2019 | Dayton, NJ 08810 | (732) 329-0200 |
| | | TestAmerica Denver | 2513 | 1/8/2020 | Arvada, CO 80002 | (303) 736-0100 |
| | | TestAmerica Laboratories, Inc | 2938 | 6/30/2019 | Nashville, TN 37204 | (615) 726-0177 |
| | | TestAmerica Savannah | 2939 | 6/30/2019 | Savannah, GA 31404 | (912) 354-7858 |
| | | Western Environmental Testing Laboratory | 2523 | 7/31/2019 | Sparks, NV 89431 | (775) 355-0202 |
| Public | Alameda | Alameda County Water District Water Quality Laboratory | 1524 | 5/31/2020 | Fremont, CA 94538-6348 | (510) 668-6527 |
| | | Dublin San Ramon Services District | 1272 | 8/31/2019 | Pleasanton, CA 94588 | (925) 846-4565 |
| | | East Bay Municipal Utility District | 1060 | 12/31/2019 | Oakland, CA 94623-1055 | (510) 287-1432 |
| | | Zone 7 Water Quality Laboratory | 1403 | 12/31/2019 | Livermore, CA 94550 | (925) 454-5779 |

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| Public | Contra Costa | Contra Costa Water District Laboratory | 1548 | 6/30/2019 | Concord, CA 94520 | (925) 688-8091 |
| | Fresno | City of Fresno Wastewater Management Division Laboratory | 1288 | 8/31/2020 | Fresno, CA 93706-9458 | (559) 621-5140 |
| | Kern | Kern County Water Agency | 1082 | 12/31/2019 | Bakersfield, CA 93308 | (661) 634-1516 |
| | Los Angeles | City of Pasadena Water Quality Laboratory | 1473 | 3/31/2020 | Pasadena, CA 91103 | (626) 744-3704 |
| | | City of Santa Monica/Water Quality Laboratory | 1469 | 3/31/2020 | Los Angeles, CA 90025 | (310) 434-2658 |
| | | Environmental Monitoring Div. (EMD) Lab. at Hyperion Treatment Plant (HTP) | 1723 | 1/31/2020 | Playa Del Rey, CA 90293 | (213) 485-2210 |
| | | Long Beach Water Department Water Quality Laboratory | 1409 | 2/28/2020 | Long Beach, CA 90806 | (562) 570-2482 |
| | | Los Angeles Dept. of Water & Power, Water Quality Laboratory | 1336 | 9/30/2020 | Pasadena, CA 91101-1658 | (213) 367-8523 |
| | | Metropolitan Water District of Southern California - Water Quality Laboratory | 1618 | 9/30/2019 | La Verne, CA 91750 | (909) 392-5065 |
| | | Nestle Waters North America - Quality Assurance Laboratory | 1698 | 1/31/2020 | Los Angeles, CA 90021 | (213) 763-1350 |
| | | Santa Clarita Valley Water Agency Water Quality Laboratory fka Castaic Lake Water | 2104 | 9/30/2019 | Santa Clarita, CA 91350-2173 | (661) 297-1600 |
| | Orange | Irvine Ranch Water District | 1101 | 1/31/2020 | Irvine, CA 92612 | (949) 453-5800 |
| | | Orange County Water District | 1114 | 2/28/2020 | Fountain Valley, CA 92708-6930 | (714) 378-3347 |
| | Sacramento | City of Sacramento, Water Quality Laboratory | 1508 | 5/31/2021 | Sacramento, CA 95826 | (916) 808-3737 |
| | San Bernardino | Inland Empire Utilities Agency - Laboratory | 1808 | 10/31/2019 | Chino, CA 91708 | (909) 993-1813 |
| | San Diego | City of San Diego Water Quality Laboratory | 1058 | 11/30/2019 | La Mesa, CA 91942 | (619) 668-3232 |

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| Public | San Mateo | San Francisco PUC - Millbrae Laboratory | 1449 | 2/28/2020 | Millbrae, CA 94030-2048 | (415) 920-4742 |
| | Santa Clara | California Water Service Company - San Jose | 1621 | 9/30/2019 | San Jose, CA 95112 | (408) 367-8314 |
| | | City of Sunnyvale Environmental Laboratory | 1340 | 10/31/2019 | Sunnyvale, CA 94088 | (408) 730-7260 |
| | | Santa Clara Valley Water District | 1205 | 5/31/2020 | San Jose, CA 95123 | (408) 630-3228 |
| | Sonoma | Laguna Environmental Laboratory | 1126 | 2/28/2020 | Santa Rosa, CA 95407 | (707) 543-3363 |
| | Solano | City of Fairfield, Water Treatment Plant Laboratory | 1472 | 3/31/2020 | Fairfield, CA 94533 | (707) 437-5386 |
| | | City of Vallejo Water Department Laboratory | 1558 | 6/30/2019 | Vallejo, CA 94589 | (707) 649-3472 |
| | Tulare | City of Porterville Laboratory | 1653 | 10/31/2019 | Porterville, CA 93257 | (559) 782-7510 |
| | Out-of-State | NSF International | 2918 | 4/1/2020 | Ann Arbor, MI 48105 | (734) 769-8010 |

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