



Fact Sheet

Wildfire and Drinking Water

Potential impacts to public water systems after wildfires

Wildfires impact public water systems in many ways, ranging from immediate effects to long-term changes within watersheds. These changes may affect the water quality used at drinking water intakes, wells or springs.

Immediate impacts

Wildfires can cause immediate impacts to water systems through loss of structures or other infrastructure issues like loss of power, damage to treatment systems, and/or impacts to piping that distributes the water. This can result in boil water notices, the need to flush entire systems, or other repairs. Oregon Health Authority's [Drinking Water Services Program](#) provides regulatory and technical assistance for evaluating treatment and distribution system issues to ensure water systems are in compliance and providing safe drinking water to communities.

Public water systems that get their source water from streams, rivers and lakes may find that water has more sediment and is murkier. This is because wildfires can burn trees and plants, which makes it easier for the soil to erode, and because there is burnt material on the ground that can easily flow into rivers and streams when it rains. This extra soil and ash in the water can cause an increase in organic carbon, pH, manganese, iron, and nutrients like nitrogen and phosphorus in the water. This can make treatment challenging and possibly lead to algal or cyanobacterial growth. In addition, the watersheds may have increased risk of landslides, flooding, and debris flows that can impact infrastructure. The Oregon Department of Environmental Quality's [Drinking Water Protection Program](#) can provide technical assistance to address short-term stormwater and watershed stabilization efforts as well as longer term watershed evaluation, mitigation and restoration.

Fire retardant and drinking water quality

Firefighting agencies use a variety of materials as fire retardants including both long-term retardants, applied via air tankers or helicopter, and short-term fire suppressants, typically foams and gels. Long-term fire retardants are typically 10% fertilizer, primarily phosphorus. Phosphorous is a key nutrient for plant life so it can be taken up by plants surviving the fire. However, phosphorous that is not taken up by plants on the landscape may make its way to the nearest waterbody when it rains. Excess nutrients in water can affect the water quality and contribute to growth of plants and algae. Some fire retardants have also been known to contain "performance additives" that may contain metals. See DEQ's factsheet on [Cleaning up Fire Retardant and Fire Suppressants](#) for residential areas.

Translation or other formats

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Groundwater and wells

Although the source of water for wells and springs is naturally protected from wildfires, water systems may have challenges with short-term impacts due to depressurization or direct impact to infrastructure. These impacts could allow pollution to enter the system or lead to stagnant water lines that may need to be flushed. OHA Drinking Water Services provides [guidance for system flushing and subsequent sampling](#) for volatile organic compounds. Oregon Water Resources Department provides information on [evaluating and maintaining wells following a fire](#).

Longer term impacts of wildfire on drinking water

The extent of longer-term impacts, meaning one to 10 years after the fire, for drinking water systems using surface water intakes will depend on burn severity, riparian and watershed conditions and land management practices. Longer term impacts may include the following:

- Infrastructure damage from sediment and debris.
- Increased hydrologic and water-quality variability.
- Ongoing pulses of high turbidity and high pH.
- Altered seasonality of hydrological and chemical export from burned catchment.
- Risk of landslides, flooding, and debris flows.
- Increased sedimentation and debris in reservoirs and loss of storage capacity.

These conditions may increase suspended sediment and turbidity, pH, organic carbon, manganese, iron, and nutrients like nitrogen and phosphorus, all of which can create challenges for treatment and possibly lead to harmful algal blooms.

DEQ and OHA [Source Water Assessment reports](#) can tell the water system operator and community about the watershed or recharge area that supplies the well, spring or intake – what the agencies refer to as the “drinking water source area.” These reports also identify potential risks and susceptible areas within the source area. Information in the reports can be used in conjunction with burn severity maps to identify areas for stabilization and restoration.

Prevention – planning for the future

Many drinking water systems need additional work to address risks from wildfires. This work requires collaboration among drinking water providers, landowners, and restoration/conservation practitioners to achieve source water protection. While there are upfront costs to protect source water, the long-term costs of inaction or business-as-usual are often higher. Public water systems should be at the table to discuss water quality challenges and risk reduction strategies on forest lands, wildfire risks and preparedness, and funding opportunities. The DEQ and OHA [Drinking Water Source Protection programs](#) can assist public water systems and communities with developing protection strategies.

Mitigation and restoration measures

Post-fire assessments can be used to identify and prioritize recovery and restoration. Depending on the extent of wildfire damage in the state, there may be a more or less coordinated response to post-fire watershed assessment. For more information about conducting these assessments, see the wildfire and water quality fact sheet on [DEQ's wildfire response web page](#).

Partners and resources for restoration

Oregon's [fact sheet on funds and resources for drinking water source protection](#) provides descriptions and contact information for partners, resources and funds available to public water systems and others to assist with drinking water infrastructure and source protection projects including watershed stabilization and restoration. The Oregon Department of Emergency Management is also continuing to update resources on the [Oregon Wildfire Response and Recovery website](#).

Contacts

For questions about regulations, water quality, treatment plants, and testing, contact [OHA Drinking Water Services](#) at 971-673-0405 or Info.drinkingwater@odhsoha.oregon.gov. OHA is the agency responsible for implementation of the federal Safe Drinking Water Act.

Oregon protects drinking water through a partnership between DEQ and the OHA. DEQ is responsible for protecting the water quality of all water in Oregon, in particular water that is the [source of drinking water](#). For more information about DEQ's work, email drinkingwater.protection@deq.oregon.gov.

If you are concerned about your water from a private or domestic well see the following resources:

- [OHA Domestic Well Safety Program](#).
- Oregon Water Resources Department - [Evaluating and maintaining wells following a fire](#).
- [DEQ resources for private \(domestic\) well owners](#).

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