Severe smoke continues to blanket North American west

Adria French 1 August 2021

The wildfire season in the United States and Canada has continued to spread smoke across the North American west. In the US, Oregon's Bootleg Fire has grown to more than 413,000 acres (645 square miles)—over half the size of Rhode Island. Fires also burned on both sides of California's Sierra Nevada and in Washington state and other areas of the West.

The National Interagency Fire Center reports that 87 large fires have burned more than 1.7 million acres so far in the US, and a total of more than 3 million acres have been scorched since January. Large fires are also active in Washington, Idaho, and Montana, as well as across Canada.

The scale of the fires has cast smoke and in some cases ash across the entire continent. Air quality alerts were issued along the East Coast last week and will continue until at least Tuesday in cities such as Minnesota, where the air quality has been classified as either "unhealthy" or "very unhealthy." Strong winds also blew smoke from California, Oregon, Montana and Washington as far east as Pennsylvania, New Jersey and New York.

The dangerous levels of smoke in the atmosphere, quantified as the air quality index, are particularly dangerous for millions of agricultural workers, who are forced to work in increasingly inhospitable conditions. Over half of all farmworkers are undocumented, and the median income for all farmworkers is just \$7,500 per year, making them particularly vulnerable to the health and safety issues posed by the smoke. Moreover, child labor is legal in agriculture, with 12 year olds forced to work days comparable to their adult counterparts.

At a flower farm in Willamette Valley, Oregon, one worker who spends nine hours a day, six days a week planting, growing and packaging flowers for retail sales reported experiencing painful physical conditions. "The smoke doesn't let you breathe well. My throat hurt. There was a lot of black dust I was breathing in, and dirt coming from my nose," the worker, who asked to remain anonymous, reported to the Salem *Statesman-Journal*.

Her employer did not offer to pay workers if they chose to go home, so she continued working. Nothing has changed in her working conditions since last September, when smoke from the Beachie Creek and Lionshead fires started building up in the valley.

Thousands of agricultural workers in the area worked in smoky conditions during last year's Labor Day fires. Farmworker advocates reported hearing from countless people describing headaches, nausea, loss of appetite and other smoke-related symptoms, as well as pressure to continue working in dangerous conditions.

"The acute effects cause irritability, nausea, shortness of breath," said Sam Joseph, a pulmonary and critical care physician and professor at the Washington State University Elson S. Floyd School of Medicine to Northwest Public Broadcasting.

Breathing the air is dangerous on a day-to-day basis, and doctors say chronic exposure to smoke, year after year can lead to long-term health problems, especially for people with underlying heart and lung problems, children and senior citizens. Farmworkers are especially at risk.

Joseph said long-term exposure to wildfire smoke can lead to chronic cardiovascular diseases, like heart attacks (both fatal and nonfatal), irregular heartbeats and increased severity of asthma. These health problems are most troublesome for people who already experience heart and lung issues.

"In all smoke exposure, you're exposed to lots of particles and chemicals," Joseph said. "Some of the

chemicals include carbon monoxide and carbon dioxide and particulate matter, which we call soot."

Earlier studies have shown pollution from wildfire smoke is worse than scientists previously thought. In a report from 2017, researchers found smoke plumes had three times as much pollution as predicted in earlier estimates.

Wildfire smoke may also greatly increase susceptibility to SARS-CoV-2, the virus that causes COVID-19, which has to date killed more than 630,000 people in the US and 4.2 million internationally, as noted by official figures. According to new research from the Center for Genomic Medicine at the Desert Research Institute, Washoe County Health District, and Renown Health in Reno, Nevada, coronavirus cases increased nearly 18 percent after wildfire smoke covered Reno between August and October in 2020.

The authors compared the smoke levels in northern Nevada, which experienced 43 days of elevated levels of smoke to those elsewhere in the United States such as San Francisco, which experienced 26 days of elevated levels of smoke. They found that the health impacts caused by smoke can make individuals more susceptible to COVID-19, a largely respiratory disease.

"We believe that our study greatly strengthens the evidence that wildfire smoke can enhance the spread of SARS-CoV-2," said Gai Elhanan, one of the lead authors of the study.



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