

Wildfires Plus Heat Make Breathing Dangerous in America's West

By Amy Norton

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WEDNESDAY, Jan. 12, 2022 (HealthDay News) -- Wildfires and rising temperatures are exposing more and more Americans to an air pollution double-whammy of smoke and smog, a new study warns.

Researchers found that over the past 20 years, a growing number of people in western states have been simultaneously exposed to high levels of two kinds of air pollution: Fine-particle pollution generated by wildfires, and ground-level ozone.

Ground-level ozone is the main ingredient in smog, and reaches its highest levels on hot, sunny days.

The study found that between 2001 and 2020, exposure to high levels of that combined air pollution rose substantially in western states — by 25 million "person days" each year. That is a measure that considers both the number of people affected and the number of days of exposure.

On their own, each type of air pollution can have health effects, said researcher Deepti Singh, an assistant professor at Washington State University, in Vancouver, Wash.

Over the short term, they can make it harder to breathe, and aggravate existing heart disease or lung conditions like asthma.

And research suggests that simultaneous exposure to both types of air pollution may compound the damage, Singh added.

In 2020, wildfire activity in the United States was "well above" average, according to the National Interagency Coordination Center. That was largely because the fires were big, burning over 10 million acres altogether. It's part of a trend in recent years toward larger wildfires and prolonged fire seasons.

One driver of the increase is climate change, said Kristina Dahl, a senior climate scientist with the nonprofit Union of Concerned Scientists. Rising temperatures and drought mean more dry grass, brush and other vegetation — and more "fuel" for wildfires.

Then there are the "fire-suppression" policies that have allowed the overgrowth of that natural fuel, Dahl said.

The fires themselves take lives and destroy property, while smoke plumes darken the skies of entire regions. But air pollution from western wildfires can also spread thousands of miles, Dahl said, even affecting air quality on the East Coast.

Much of the research on that pollution has focused on particulate matter. What's unique about the new study, Dahl said, is that it looked at people's combined exposure to wildfire and ozone pollution.

That's important because wildfires do not emerge in a "vacuum," noted Dahl, who was not involved in the research.

The findings, published recently in the journal *Science Advances*, are based on air quality data from U.S. and Canadian government monitoring stations for 2001 through 2020. The researchers tracked people's exposure to days where both fine-particle pollution and ground-level ozone were especially high — in the top 10% of their annual levels.

Over time, the researchers found, those dual exposures became more common over large areas of the West, specifically during the late-summer wildfire season. And the trend was largely driven by a shift in the "seasonality" of particulate matter extremes.

In western states, Singh explained, particulate matter has traditionally been highest during colder months — when ozone pollution is naturally lower. But summer wildfires have upset that dynamic, causing more "co-occurrences" of both types of pollution.

Much of the increase has happened since 2015, coinciding with hot, dry summers and widespread wildfires.

In August 2020, there was a single day where over 68% of the western United States was exposed to extremes in both types of pollution — representing about 43 million people, the researchers noted.

"And we can expect these exposures to keep increasing," Singh said.

That's not to say nothing can be done. Since climate change is a driver, Dahl said that one key solution is to reduce emissions of heat-trapping greenhouse gases. They are released when fossil fuels are burned for electricity, heat and transportation.

Singh and Dahl both pointed to another way to combat wildfires: "prescribed burns." That refers to planned, carefully controlled fires that reduce the dense, dry vegetation feeding wildfires.

Those fires can themselves affect air quality, Dahl noted. But by reducing the chances of large wildfires, she said, it may be a case of an ounce of prevention being worth a pound of cure.

For the Climate, Biden Must Be More Aggressive in Ending New Truck and Bus Emissions

By Drew Kodjak

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At a gathering on the White House lawn last August, President Biden spoke of a future in which electric cars and trucks will be the only vehicles on the road. "The question," he said, "is whether we'll lead or fall behind" in the global race to achieve that vision.

Mr. Biden has been vigorous in pushing for the end of the internal combustion engine for cars and light trucks. In August he signed an executive order that called on the federal government to do all it can to ensure that half of those vehicles sold in the United States are electric by 2030.

But when it comes to electrifying heavy trucks and buses, among the most polluting vehicles on the road, the country is in danger of falling behind the efforts of other nations. After the global climate summit in Glasgow last fall, 15 nations, including Canada and Britain, agreed to work together so that by 2040, all trucks and buses sold in those countries will be emission-free.

Missing from that group was the United States (and China and Germany, for that matter). Developing standards in the United States to make those vehicles electric is essential if the nation is to meet its global climate commitments. Heavy-duty trucks are responsible for nearly a quarter of the greenhouse gas emissions from the nation's transportation sector, itself the biggest contributor of those emissions in the economy. Clearly this segment of the transportation sector cannot be ignored.

But Mr. Biden has not yet set a deadline for when new models of those vehicles must be emission-free. The United States must be more aggressive. One opportunity for action could come this month, when the Environmental Protection Agency is expected to propose more stringent air pollution standards for heavy-duty vehicles.

The president did issue an executive order in December that set in motion a plan for all new cars and trucks purchased by the federal government to be emission-free by 2035. But for the United States to maintain its economic edge, address environmental injustices, improve public health and accelerate job growth, joining those nations pushing for all newly sold trucks and buses to be emission-free by 2040 is essential.

Beyond their impact on the climate, emissions from those vehicles have pernicious effects on human health. Tractor-trailers, delivery vans and heavier-duty pickup trucks make up only 10 percent of vehicles on the road, but they spew 45 percent of nitrogen oxide emissions and 57 percent of fine particulates, known as PM 2.5. Both are linked to premature death and chronic illnesses, including heart disease, lung cancer, stroke and childhood asthma.

The oldest and dirtiest diesel trucks are concentrated in urban areas around ports, industrial warehouses and freeways near low-income communities, making this an important environmental justice concern. A study by the Environmental Defense Fund found that eliminating pollution from freight trucks in urban

areas and other communities by 2035 and from all new trucks and buses by 2040 could prevent 57,000 premature deaths by 2050.

Heavy-duty trucks are driven more than cars. UPS's 127,000 drivers drove about 3.3 billion miles worldwide in 2020, which averages out to nearly 26,000 miles per driver, nearly double the distance an average personal vehicle is driven in the U.S. Because electric vehicles cost less than half as much to drive as those using diesel fuel or gasoline, shifting away from internal combustion engines would provide large economic benefits to high-use commercial fleets. For instance, California estimates its zero-emission truck program will result in several billion dollars in fuel savings by 2040.

Medium- and heavy-duty truck manufacturers understand these economic benefits and are already investing in zero-emission technologies. These efforts have the potential to transform at least 30 percent of their new trucks to zero-emission vehicles by 2030 — and as much as 100 percent of the additions to urban fleets of transit buses, trash trucks, postal vehicles, cargo vans and heavy-duty trucks.

Vehicle makers are equally ambitious. Ford, for instance, whose F-series dominates the medium-duty truck market, has set a target of 2030 for 40 percent of new vehicle sales to be all electric. The company's recent \$11 billion investment with its main battery cell supplier in electric vehicle manufacturing includes plans to electrify its entire F-series lineup, including its F-750, which weighs as much as 18 tons.

U.S.-based bus companies are also moving forward on electrification. The bus manufacturer Proterra is experimenting with lightweight designs to increase electric vehicle range.

Private sector demand is high for zero-emission vehicles. By 2030, Amazon is aiming to have 50 percent of its shipments made by electric or nonmotorized vehicles. FedEx plans to electrify its entire pickup and delivery fleet by 2040, the same year Walmart intends to complete converting its fleet to vehicles powered by electricity, hydrogen or renewable diesel fuel.

State governments also have zero-emission ambitions. California, 14 other states and the District of Columbia — which together account for more than one-third of truck registrations in the U.S. — plus the Canadian province of Quebec, share the goal of having 30 percent of new sales of emission-free heavy-duty vehicles within their borders by 2030.

But we still need national leadership. Without spelling out targets, Mr. Biden's executive order calling for emission standards for heavy-duty trucks and buses leaves a big hole in his climate change plans. To fulfill his ambitions on climate change, he must work with vehicle manufacturers, utility companies, urban communities and labor unions to ensure that all new truck and bus sales are emission-free by 2040.