Effects of West Coast wildfires go beyond evacuations and air quality

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While the continuing West Coast wildfires have forced people to evacuate homes, the dirty air is trapping others indoors, impacting mood and exposing people to toxic particles. What's more, rainfall hitting charred areas could trigger landslides.

And of course, all of this is happening during the coronavirus pandemic.

Norbert Schwarz, Provost Professor of Psychology and Marketing at the USC Dornsife College of Letters, Arts and Sciences and the USC Marshall School of Business and an expert in mood, judgment and risk perception, said there's a reason behind people's sense of impending doom.

"The weird color of the sky—from orange to bloody red to oddly green—is upsetting because it drives home that the threat is close," he said. "It isn't burning somewhere far away. It is right here, and it is affecting you. Moreover, you can't escape it because it is in the air you breathe. It surrounds you, and it can seep into your house. That's very different from watching wildfires on TV or 'knowing' about climate change. It makes it palpable, local and real."

Anxiety and depression for most individuals is already its peak, as pandemic-related adjustments to distancing from relatives and friends and job losses have been psychologically daunting.

"The orange skies resulting from the fires is another adjustment that we have been forced to make over the past few weeks," said April Thames, a USC Dornsife associate professor of psychology and psychiatry. "The dangerous air quality creates another risk in addition to COVID-19. Being stuck indoors with the orange and gray smoky skies poses an even greater risk for feelings of despair, hopelessness and depressed mood."

West Coast wildfires lead to increasingly unhealthy air

The plume of smoke casting a pall over much of California is spreading eastward across the country. It contains chemical carcinogens, as well as

odor-free toxic gasses that include carbon monoxide, according to G. K. Surya Prakash, a USC Dornsife professor and holder of the George A. and Judith A. Olah Nobel Laureate Chair in Hydrocarbon Chemistry at the Department of Chemistry.

"The particles in the 2.5 micron range are the most damaging to the respiratory system, affecting the lungs and the heart as well. They are also major irritants to the eyes," said Prakash, director of the Loker Hydrocarbon Research Institute.

Ed Avol, a lifelong runner and air pollution expert who heads the Division of Environmental Health at the Keck School of Medicine of USC, said when the air outside is horrible, it's best to exercise indoors.

"You can improve indoor air quality by closing all doors and windows and placing a damp towel on the windowsill or door crack where air leaks blow into the house. Think about how to slow down your inhalation rate—less intense running or cycling, more relaxed walking or yoga. Try to find alternatives to get some exercise without overexposing your lungs and body to the smoke and pollution."

He also notes that your COVID-19 face mask could serve double duty: "Your COVID mask should provide some protection. An actual N95 or dust nuisance mask can do a pretty good job of protecting you from inhaling small particles and ash. Bandanas are not especially effective at stopping smoke, and single-layer cloth masks may only stop a small percentage of incoming smoke."

Even after the fires end, danger looms in hillside communities

With the winter rainy season coming, we should get a break from

tinderbox conditions fueling the fires and filling the sky with smoke. But it comes with a tradeoff.

"We will only have a brief moment to catch our breath before winter rains begin to fall on the charred hillsides, producing the kinds of debris flows that devastated Montecito in January 2018," said Josh West, an associate professor of geology at USC Dornsife and an expert in post-fire landslides, floods and debris flows that can occur during winter storms.

"With vegetation gone and the soil properties changed by the fires, rainwater no longer sinks into the ground as easily," he added. "Instead, it builds up in the soil, eventually making a muddy mess that slides downhill. As the resulting debris flows travel downhill, they get bigger and bigger, with enough power to pick up large boulders and send them cascading into our hillside communities. It's hard to predict just how bad it will be, but with more steep terrain burning this year, there's a greater chance that we will see damaging landslides in some areas."

Provided by University of Southern California

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