

Spike in dermatology visits for skin problems seen during summer of wildfires

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New research suggests that air pollution may contribute to the development or worsening of skin conditions.

The work, which is published in *Dermatology and Therapy* and led by scientists at Massachusetts General Hospital (MGH), points to the need to improve [air quality](#) to lower the burden of skin disease, especially for vulnerable communities.

"We were inspired to investigate the relationship between air pollution and [skin inflammation](#) after listening to patients who kept telling us that their skin conditions like eczema were particularly bad, and in some cases 'worse than ever before,' this summer," says senior author Arianne Shadi Kourosch, MD, MPH, director of Community Health in the Department of Dermatology at MGH.

"This was strange because typically patients with eczema are more likely to experience worsening symptoms or flares in winter months due to cold dry weather, but we were seeing the opposite: an unusual surge in the summer."

Kourosch and her colleagues examined Environmental Protection Agency measurements of carbon monoxide levels in the Boston region in the months following the Canadian wildfires of 2023.

They also assessed dermatology clinic visits for dermatitis and eczema at the Mass General Brigham (MGB) hospital system, 300 miles from the wildfires, and compared this information with data from the corresponding months in 2019–2022.

The team observed a notable rise and an atypical summer peak in carbon monoxide levels in the Boston region during 2023. Carbon monoxide concentrations that were an average of 0.22 ppm in the months of May–September in 2019–2022 rose to 0.6 ppm in July of 2023.

This peak correlated with a spike in visits for [atopic dermatitis](#) and eczema at dermatology clinics within the MGB hospital system

compared with the prior four years.

Exposure to pollutants from wildfires and chronic air pollution can cause cumulative damage to the skin by triggering a [stress response](#) that impacts collagen metabolism, promoting premature skin aging and weakening the skin barrier, which leads to more inflammation and damage, Kourosch and colleagues explain.

The researchers noted that airborne particulate matter (a mixture of microscopic pollutants) is more commonly assessed in studies of air pollution, and while it was also higher in Boston during the spike of these dermatitis-related clinic visits (41 ug/m³ in July 2023 versus 6.6 ug/m³ during the year prior), they chose to highlight carbon monoxide due to its atmospheric longevity and usefulness for tracking downstream air pollution during wildfires.

The authors note that their study is retrospective and that correlation does not prove causation. More research will be needed to explore the connections between air pollution and [skin](#) problems.

"As wildfire events in North America have been increasing, we must become equipped not only to prevent and extinguish fires, but to also clean or purify our air in order to minimize the negative impacts of these air pollution events on the health of our communities," says lead author and medical student Kathyana P. Santiago Mangual, BA.

"Such efforts will have the greatest impact on populations that are most vulnerable to the negative effects of [air pollution](#)—including low-income communities, older individuals, and children."

Additional authors include Sarah Ferree, MD, and Jenny E. Murase, MD.

More information: Kathyana P. Santiago Mangual et al, The Burden of Air Pollution on Skin Health: a Brief Report and Call to Action, *Dermatology and Therapy* (2023). [DOI: 10.1007/s13555-023-01080-1](https://doi.org/10.1007/s13555-023-01080-1)

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