

Christmas Eve coke works fire followed by asthma exacerbations

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Asthma exacerbations rose following a catastrophic Christmas Eve fire two years ago that destroyed pollution controls at the Clairton Coke Works—the largest such facility in the nation, a University of Pittsburgh

Graduate School of Public Health analysis concludes.

The study, published in the *Journal of Allergy and Clinical Immunology*, was possible because of a collaboration with the University of Pittsburgh Asthma and Environmental Lung Health Institute at UPMC and the Allegheny County Health Department, with funding from The Heinz Endowments.

"In addition to verifying that people living within a 10-mile radius of the coke works had higher rates of [asthma](#) exacerbations and use of albuterol rescue medication than those living outside the radius, we learned that nearly half of the people with asthma closest to the fire were unaware of the pollution problem and, therefore, unable to take steps to avoid exposure," said lead author Brandy Byrwa-Hill, M.S., a Ph.D. student in Pitt Public Health's Department of Environmental and Occupational Health.

The Clairton Coke Works is located in a suburb south of Pittsburgh and produces highly refined coal, or "coke," which is used as fuel in the manufacture of steel. Creating coke results in several [air pollutants](#), which are minimized through the plant's pollution controls. On Dec. 24, 2018, a fire destroyed the pollution controls, and, for 102 days, the plant emitted sulfur dioxide at levels 25 times greater than typical emissions.

Byrwa-Hill and the Pitt Public Health team used the Pitt Asthma Institute Research (AIR) registry to quickly collect information from 39 asthma patients living within 10 miles of the coke works and 44 patients living beyond that radius in the six weeks after the fire.

During the pollution control breach, participants who lived closest to the plant had an 80% increased risk of worsened asthma symptoms compared with those furthest from the plant. The difference normalized after the plant was repaired.

Despite [news reports](#) and alerts from the Allegheny County Health Department urging people with certain [health](#) conditions to take precautions, 44% of the participants were unaware of the excessive pollution.

"When we asked the participants if they would want to know about an environmental disaster, of course they said they would," said senior author James Fabisiak, Ph.D., associate professor of environmental and occupational health and director of the Center of Health Environments and Communities at Pitt Public Health. "Our study reveals that there is a need for a more robust notification system that uses many modes of communication so people can make informed, timely decisions to protect their health."

In addition, the study highlighted the benefit of having a pre-existing registry of well-characterized, geographically identified asthma patients willing to participate in research, said co-senior author Sally Wenzel, M.D., chair of Pitt Public Health's Department of Environmental and Occupational Health.

"I'd encourage any city or county that is home to a significant point source of air pollution to create a similar registry," said Wenzel, who also directs Pitt's Asthma and Environmental Lung Health Institute at UPMC. "People with asthma are particularly sensitive to air [pollution](#), and their experience can be informative to all of us when it comes to maintaining healthy air quality."

More information: Brandy M. Byrwa-Hill et al, Impact of a pollution breach at a coke oven factory on asthma control in nearby vulnerable adults, *Journal of Allergy and Clinical Immunology* (2021). [DOI: 10.1016/j.jaci.2021.04.011](#)

Provided by University of Pittsburgh

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