

Air quality and health impact from the 2018 Saddleworth Moor Fire in Northern England

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In June 2018, large wildfires broke out on Saddleworth Moor and Winter Hill Saddleworth Moor in the northwest of England. The fires burned for roughly three weeks, 100 firefighters and the army attended and smoke

from the fires spread widely across the northwest of England.

In a new study, published in *Environmental Research Letters*, researchers led by the University of Leeds used [computer simulations](#) to calculate the effect of the fires on air quality and the resulting impact on health.

Their findings include:

- The fires caused poor air quality over a large region (including Bolton, Wigan and Southport).
- 4.5 million people were exposed to PM2.5 above the recommended level set by the World Health Organisation (24-hour guideline of 25 $\mu\text{g m}^{-3}$) on at least one day, between 23rd and 30th June.
- One of the measures of the impacts is 'deaths brought forward,' this is a measure of unfulfilled life expectancy i.e. deaths which occurred earlier than they would have without the [pollution](#) from the fires. This can be calculated because exposure to PM2.5 pollution has been shown to be associated with increases in mortality from diseases such as heart disease and stroke.
- The calculated health impact indicates that PM2.5 from the fires accounted for 9 deaths brought forward.
- The PM2.5 pollution from the fires increased the number of deaths brought forward by up to 165% (Saddleworth Moor) and 95% (Winter Hill), compared to if there were no fires.
- The authors estimate the economic impact of the fires to be £21.1 million

The authors said: "It's clear from this study that the pollution from wildfires can have a significant effect on public health. The smoke contains very high levels of toxic particulate matter aerosol, which can be transported long distances. When this smoke passes over [urban areas](#) it adds to an already polluted environment and can cause very [poor air](#)

[quality](#)."

"We should be aware that the smoke from wildfires can travel long distances, and can damage people's health, even far from the fires."

"Although people may not have been able to smell smoke, particulate matter was very high in areas far away from the fires, such as Southport and Wigan."

"Particulate pollution from the fires substantially degraded air quality over the north-west of England, leading the pollution levels much above the recommended levels."

The study used a computer model of the atmosphere to investigate the impacts of particulate matter (PM2.5) air pollution from the fires on the population in the north-west of England. In the model two scenarios were considered: 1) a scenario with no wildfires and 2) a scenario in which pollutants from the fires are included.

The scenarios allowed researchers to investigate the difference in pollution that occurred as a result of the fires. From this, they calculated the effect of the [fire](#) on [air quality](#) and then attributed how many deaths were brought forward due to PM2.5 pollution from the fires directly.

Large wildfires are relatively rare in the UK, and few have occurred close to urban populations, so there is little knowledge of the potential impacts of wildfires on public health. However, [climate change scenarios](#) predict that UK summers will become both hotter and dryer, which means wildfires are likely to become both more common and thus the impact of wildfires on health is likely to become increasingly important.

More information: Ailish Melissa Graham et al, Impact on air quality

and health due to the Saddleworth Moor Fire in Northern England,
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[10.1088/1748-9326/ab8496](https://doi.org/10.1088/1748-9326/ab8496)

Provided by University of Leeds

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