

# Air pollution may be 'key contributor' to Covid-19 deaths – study

*Damian Carrington*

High levels of air pollution may be “one of the most important contributors” to deaths from Covid-19, according to research.

The analysis shows that of the coronavirus deaths across 66 administrative regions in Italy, Spain, France and [Germany](#), 78% of them occurred in just five regions, and these were the most polluted.

The research examined levels of nitrogen dioxide, a pollutant produced mostly by diesel vehicles, and weather conditions that can prevent dirty air from dispersing away from a city. Many studies have linked [NO<sub>2</sub> exposure](#) to health damage, and particularly lung disease, which could make people more likely to die if they contract Covid-19.

“The results indicate that long-term exposure to this pollutant may be one of the most important contributors to fatality caused by the Covid-19 virus in these regions and maybe across the whole world,” said Yaron Ogen, at Martin Luther University Halle-Wittenberg in Germany, who conducted the research. “Poisoning our environment means poisoning our own body, and when it experiences chronic respiratory stress its ability to defend itself from infections is limited.”

The analysis is only able to show a strong correlation, not a causal link. “It is now necessary to examine whether the presence of an initial inflammatory condition is related to the response of the immune system to the coronavirus,” Ogen said.

A separate study published on 7 April looked at fine particle pollution in the US and found that even small increases in levels in the years before the pandemic were associated with [far higher Covid-19 death rates](#). Another recent paper noted that the high death rates seen in the north of Italy [correlated with the highest levels of air pollution](#).

The new research, [published in the journal Science of the Total Environment](#), compared NO<sub>2</sub> levels in January and February in 66 administrative regions with Covid-19 deaths recorded up to 19 March. Ogen also assessed the atmospheric conditions to see where pollution was being trapped over the regions.

He found that 78% of the 4,443 deaths were in four regions in northern [Italy](#) and one around Madrid in Spain. These five regions had the worst combination of NO<sub>2</sub> levels and airflow conditions that prevented dispersal of air pollution.

Ogen noted that the Po Valley in Italy and Madrid were surrounded by mountains, which helps trap pollution, as is Hubei province in China, where the pandemic began. “However, my research is only an initial indication that there might be a correlation between the level of air pollution, air movement and the severity of the course of the corona outbreaks,” he said.

Prof Jonathan Grigg, from Queen Mary University of London, said the study showed an association between Covid-19 deaths and NO<sub>2</sub> levels. “This association could reflect a causal link between exposure to air pollution and increased vulnerability to fatal Covid infection, but other factors cannot be ruled out at this stage. For example, the study does not adjust for differences in age distribution in different areas.”

Widespread lockdowns around the world have led to reduced vehicle traffic and [air pollution](#). However, long-term exposure to dirty air before the pandemic may be more important than current levels of pollution.

In the UK, NO<sub>2</sub> has been at illegal levels in most urban areas for the last decade. A key policy to reduce NO<sub>2</sub> levels is the introduction of clean air zones, where charges are imposed to deter the most polluting vehicles from city centres. But the introduction of some CAZs has been [postponed because of the coronavirus crisis](#).

► Details

Jenny Bates, an air pollution campaigner at Friends of the Earth, said: “This new study is worrying. We know NO<sub>2</sub> is a toxic gas that inflames the lining of the lungs and reduces immunity to lung infections, so it may not be surprising that people who have suffered in areas with high levels of NO<sub>2</sub> could be more susceptible to coronavirus.

“This is all the more reason to keep traffic and pollution levels down as much as possible now and get out of this terrible situation with a view to fewer but cleaner vehicles on the road.”

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