

# Most significant changes in UK air quality during lockdown have been in urban areas, review confirms

July 2 2020

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The report shows significant falls in  $\text{NO}_2$  in urban areas as people worked from home during the lockdown, reducing the number of vehicles on the streets.

The lockdown led to a significant drop in some pollutants in the UK's towns and cities, mainly as a result of less traffic, a new report reveals.

Some urban areas saw a 30 to 40 percent drop on average in nitrogen

oxides (NO<sub>x</sub>) according to a comprehensive analysis of UK air quality data up to 30 April.

The [evidence review](#), from the Government's Air Quality Expert Group (AQEG), was led by a University of York academic and informed by research ongoing at the University.

Initial conclusions include:

- Significant falls in NO<sub>2</sub> in [urban areas](#) with working from home reducing travel and exposure more generally in cities. In London, a reduction in exposure to [particulate matter](#) (PM<sub>5</sub>) was predicted, compared to normal, but this depended on factors such as types of commute.
- Unusual meteorological conditions bringing [pollution](#) from mainland Europe have led to higher PM<sub>5</sub> during [lockdown](#) than the average experienced in equivalent calendar periods from previous years.
- Very small amounts of RNA from SARS-CoV-2 have been observed in outdoor particulate matter but it is not yet known whether breathing air outdoors provides a significant route for transmission of live virus or infection.
- Little is known about the impact of lockdown on [indoor air quality](#), since homes are not routinely monitored in the UK. During lockdown increased time spent on household activities such as cooking and cleaning may have increased emissions and concentrations of pollutants such as PM<sub>5</sub>

Chair of the UK Government's independent science advisory group on air pollution (AQEG), Professor Alastair Lewis said that long-term exposure to air pollution is associated with health conditions such as respiratory and cardiovascular disease, and these are known to be factors that can increase the risk of severe COVID-19 symptoms.

## Infection

Professor Lewis who is from the Department of Chemistry and the National Centre for Atmospheric Science (NCAS) added: "Given this, it would not be surprising if there was a link between exposure to air pollution—past or present—and the occurrence or severity of COVID-19 infection.

"Whilst several unpublished studies have examined this effect, and have reported associations with past exposure to both PM<sub>2.5</sub> and NO<sub>2</sub>, there is currently no consensus on the pollutant responsible or the magnitude of any effect. Such studies require very careful control for confounding influences, and further work is needed before there can be confidence in their findings."

Research from several scientists from the University of York's Wolfson Atmospheric Chemistry Laboratories was included in the report including from Professor James Lee and Ph.D. student Will Drysdale who estimated changes to urban concentrations of pollution compared to previous years. Dr. David Carslaw examined the effects of weather on pollution and COVID-19 and Professor Mat Evans and Ph.D. student Luke Fakes used computer models to test how PM<sub>2.5</sub> and ozone had changed during lockdown. Dr. Nicola Carslaw from Environment and Geography led the assessment of possible changes to indoor pollution as people were confined to their homes.

## Lockdown

The Air Quality Expert Group (AQEG) in conjunction with Defra issued a call for [scientific evidence](#) as the UK went into lockdown in a bid to help to address seven areas of current scientific uncertainty related to the potential interactions between COVID-19 and UK air pollution. The call

for evidence received more than 50 technical responses from universities, research institutes, local authorities, trade bodies and private businesses.

Provided by University of York

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