

Science for Environment Policy

Fourteen days of poor air quality caused 4 000 extra healthcare visits in UK

Real time monitoring of public health during two periods of high air pollution in the UK showed that there were an estimated 3 500 extra healthcare visits for acute respiratory symptoms and approximately 500 for severe asthma during these spells in 2014. The results of this research are presented in a new study which demonstrates the value of such 'syndromic surveillance' systems for exploring air quality's effects on human health.

Air pollution is a known and significant risk factor for a number of [health](#) conditions including respiratory disease, heart disease, stroke and lung cancer. Even short-term exposure to [air pollution](#) can cause a number of acute respiratory effects including breathlessness and wheezing.

This study examined the effects of two periods of high air pollution on the healthcare-seeking behaviour of the British public. The UK experienced two widespread periods of poor air quality between 12–14 March and 29 March–3 April in 2014. These were caused by a combination of atmospheric conditions which came together at the same time: a period of light winds and clear skies, local emissions of air pollution, atmospheric transport of dust from the Sahara and pollution from continental Europe.

A number of areas reached the highest possible classification for air pollution in the UK (10 – 'very high') on the government's [Daily Air Quality Index](#). The classification is determined by the highest concentrations of five pollutants: nitrogen dioxide, sulphur dioxide, ozone, particles smaller than 10 micrometres (μm) (PM_{10}) and particles smaller than 2.5 μm ($\text{PM}_{2.5}$). During these periods, poor air quality was driven by high levels of PM (PM_{10} and $\text{PM}_{2.5}$).

The researchers used air quality data and data from real-time 'syndromic surveillance' systems to look for trends that indicated higher than expected levels of health symptoms (compared with the same period in the previous year) at times of poor air quality. Syndromic surveillance systems monitor public health by collecting and analysing daily health-related data from sources including GP surgeries, emergency departments and a medical advice telephone service run by the National Health Service.

This study focused on data for respiratory symptoms affected by air pollution, including breathlessness, wheeze and severe asthma.

For the seven days spanning the first period of poor air quality, the researchers estimated that there were approximately 1 200 more consultations than would normally be expected for wheeze or breathlessness. For the seven days spanning the second period, around 2 300 more consultations for these conditions than expected were estimated.

For severe asthma, an estimated excess of 100 cases was recorded for the first event compared with the same period in the previous year, and 400 for the second event.

The study's authors note that during the second period, there was a higher level of media interest in air quality. This may have triggered more people to seek help and explain some of the difference between the two periods.

They conclude that the majority of the observed health effects are most likely due to the elevated levels of particulate matter, since no other air quality indicator rose above 'moderate' levels. They do not comment on or estimate the number of people who may also have been affected by the symptoms but did not seek healthcare advice.

Additionally, the GP surgery syndromic surveillance scheme only covers around 55% of the country. GP consultation rates were therefore scaled up nationwide, and may contain some inaccuracies. Nonetheless, the research demonstrates the usefulness of syndromic surveillance for monitoring air pollution's effects on the health of populations and communities.



5 March 2015

Issue 406

[Subscribe](#) to free weekly News Alert

Source: Smith, G. E., Bawa, Z., Macklin, Y. *et al.* (2015). Using real-time syndromic surveillance systems to help explore the acute impact of the air pollution incident of March / April 2014 in England. *Environmental Research* 136: 500–504.
DOI:10.1016/j.envres.2014.09.028.

Contact:
sotiris.vardoulakis@phe.gov.uk
v.uk
gillian.smith@phe.gov.uk

Read more about:

[Air pollution](#),
[Environment and health](#), [Environmental information services](#)

The contents and views included in Science for Environment Policy are based on independent, peer-reviewed research and do not necessarily reflect the position of the European Commission.

To cite this article/service: "[Science for Environment Policy](#)": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.