

# Air pollution kills well below European Union air quality limits

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The study, published in *The Lancet*, estimates that for every increase of 5 microgrammes per cubic metre (5  $\mu\text{g}/\text{m}^3$ ) in annual exposure to fine-particle air pollution (PM<sub>2.5</sub>), the risk of dying from natural causes rises by 7%.

"A difference of 5  $\mu\text{g}/\text{m}^3$  can be found between a location at a busy urban road and at a location not influenced by traffic", explains study leader Dr Rob Beelen from Utrecht University in the Netherlands. "Our findings support health impact assessments of fine particles in Europe which were previously based almost entirely on North American studies."

Using data from the European Study of Cohorts for Air Pollution Effects (ESCAPE), the investigators pooled data from 22 cohort studies including 367 251 people. Annual average [air pollution](#) concentrations of nitrogen oxides and particulate matter were linked to home addresses using land-regression models to estimate exposures. Traffic density on the nearest road and total traffic load on all major roads within 100m of the residence were also recorded.

Among the participants, 29 076 died from natural causes during the average 13.9 years of follow up.

The results showed that long-term exposure to fine particles with a diameter of less than 2.5 micrometres (PM<sub>2.5</sub>) posed the greatest threat to health even within concentration ranges well below the limits in

current European legislation.

The association between prolonged exposure to PM<sub>2.5</sub> and premature death remained significant even after adjusting for a wide range of confounding factors such as smoking status, socioeconomic status, physical activity, education level, and body-mass index.

The researchers also noted an effect of gender—with PM<sub>2.5</sub> associated with excess mortality in men but not in women.

According to Beelen, "Our findings suggest that significant adverse health effects occur even at PM<sub>2.5</sub> concentrations well below the EU annual average air-quality limit value of 25 µg/m<sup>3</sup>. The WHO air-quality guideline is 10 µg/m<sup>3</sup> and our findings support the idea that significant health benefits can be achieved by moving towards this target."

Writing in a Comment, Jeremy P Langrish and Nicholas L Mills from the University of Edinburgh in the UK point out that, "Despite major improvements in air quality in the past 50 years, the data from Beelen and colleagues' report draw attention to the continuing effects of air pollution on health. These data, along with the findings from other large cohort studies, suggest that further public and environmental [health](#) policy interventions are necessary and have the potential to reduce morbidity and mortality across Europe. Movement towards more stringent guidelines, as recommended by WHO, should be an urgent priority."

**More information:** [www.thelancet.com/journals/lan...](http://www.thelancet.com/journals/lan...)  
[/13/62158-3/abstract](http://www.thelancet.com/journals/lan...)

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