

# Science for Environment Policy

## Living close to heavy traffic strongly linked to heart disease deaths

**A strong link** between long-term exposure to vehicle pollution and deaths from heart disease and lung cancer has been found in a study of over a million individuals. The researchers say their results are relevant to European policymaking relating to air quality.

**Fine particulate matter** (PM<sub>2.5</sub>) and nitrogen dioxide (NO<sub>2</sub>) are both [air pollutants](#) emitted by vehicles and are found in higher concentrations in areas of heavy traffic. Both are known to cause heart and respiratory disease. The European Commission is due to table a revision of the EU air pollution and air quality policy framework in 2013 and, in this context, has sought to improve the state of the art of knowledge on the impacts of PM<sub>2.5</sub> and NO<sub>2</sub> on health.

The researchers used data collected in a 2001 census that included residents of Rome. To assess the long-term effects of the pollutants, they focused on residents over 30 years of age who had lived in Rome for 5 years or more – 1,265,058 people in total. They combined information from the census with geographic data on the location of traffic hotspots in relation to residents' homes and modelled PM<sub>2.5</sub> and NO<sub>2</sub> levels. They then examined data on the health status of people included in the study to identify those who died between 2001 and 2010.

A total of 12% of those included in the study died during the nine-year study period, with 40% of the deaths being caused by cardiovascular disease. Those who lived close to traffic hotspots were more likely to have died from cardiovascular causes.

The strongest link identified was between traffic pollution and death from ischemic heart disease, which is characterised by fatty deposits and narrowing in the arteries around the heart. The analysis accounted for other factors that might lead to ill health, including age, sex, marital status, education, occupation and smoking.

Risk of death increased steadily with increasing exposure to pollutants. This suggests that, in general, someone living closer to heavy traffic for several years will be more likely to die of cardiovascular causes than someone living further away for the same amount of time. In the study, those who lived less than 50 metres from a busy road were significantly more likely to have died during the study period compared to those living more than 250 metres away.

The authors note that the pollutant exposures considered in their study are close to the current European standards. Concentrations of PM<sub>2.5</sub> in Rome were estimated at around 23 micrograms per cubic metre (µg/m<sup>3</sup>), against a European standard, to become binding in 2015, of 25 µg/m<sup>3</sup>. Concentrations of NO<sub>2</sub> were estimated at 44 µg/m<sup>3</sup> against a European standard of 40 µg/m<sup>3</sup>.

Estimated concentrations are slightly higher than for some studies carried out elsewhere in Europe, but comparable. The researchers say their results should be taken into consideration, alongside those of other scientific studies, in European policy decisions regarding environment and public health in relation to air pollution.



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1. <http://ec.europa.eu/environment/waste/framework/>