# **Air pollution levels have improved in Europe over 20 years, say researchers**

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Air pollution levels have improved in Europe over the past 20 years, research has found.

However, despite these improvements, most of the European population [lives in areas exceeding](https://www.theguardian.com/environment/2023/sep/20/revealed-almost-everyone-in-europe-breathing-toxic-air) the World Health Organization’s recommended levels. About 98% of Europeans live in areas the WHO says have unhealthy levels of small particles known as PM2.5, 80% for larger ones known as PM10, and 86% for nitrogen dioxide.

The study, led by the Barcelona Institute for Global [Health](https://www.theguardian.com/society/health) (ISGlobal), looked at pollution levels in more than 1,400 regions in 35 European countries, representing 543 million people.

“Targeted efforts are needed to address PM2.5and ozone levels and associated compound unclean days, especially in the context of rapidly increasing threats from climate change in [Europe](https://www.theguardian.com/world/europe-news),” said Zhao-Yue Chen, ISGlobal researcher and lead author of the study.

The results, [published in the journal Nature Communications](https://10.0.4.14/s41467-024-46103-3), show that overall suspended particulate matter (PM2.5 and PM10) and nitrogen dioxide (NO2) levels have decreased in most parts of Europe.

PM10 had annual decreases of 2.72%, PM2.5 had an annual drop of 2.45% and there was a yearly fall in NO2 of 1.72%.

The tiny particles defined as PM2.5 and PM10 are small enough to embed themselves deep into the lung and have been linked to a wide range of health problems including heart disease, cancer and premature births. They have been estimated to be linked to the early death of more than 400,000 people across Europe each year.

Experts say more than 200,000 of these could be prevented if the air in Europe met World Health Organization guidelines. Particulate pollution comes from the burning of solid and liquid fuels, mostly through power generation, domestic heating and motor traffic. It can also form in the air from chemical reactions between other pollutants.

“Our consistent estimation of population exposure to compound air pollution events provides a solid basis for future research and policy development to address air quality management and public health concerns across Europe,” said Carlos Pérez García-Pando, one of the study authors.

Many European cities have implemented low-emissions zones for vehicles, reducing particulate pollution, and some countries including Poland have reduced their reliance on coal-fired stoves. EU directives on industrial emissions have helped businesses reduce pollution.

However, hotspots remain. During the study period, PM2.5and PM10 levels were highest in northern Italy and eastern Europe. High NO2 levels were recorded in northern Italy and in some areas of western Europe, such as in the south of the UK, Belgium and the Netherlands. High nitrous oxide levels can contribute to the development of asthma and potentially increase susceptibility to respiratory infections.