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NEW EUROPEAN STUDY REPORTS HEALTH EFFECTS AT AIR POLLUTION LEVELS BELOW CURRENT STANDARDS

Key air pollutants linked to cardiovascular and respiratory mortality.

BOSTON, MASSACHUSETTS, September 16, 2021 – A comprehensive new study examining potential effects of low levels of ambient air pollution was published today by the [Health Effects Institute](https://www.healtheffects.org) (HEI), reporting significant associations between key air pollutants and cardiovascular and respiratory health. The study, conducted across 11 European countries based on data from 28 million people over many years, adds new scientific evidence for the effects of air pollution on health at concentrations below current European Union air quality limit values.

Report author Bert Brunekreef at the Institute for Risk Assessment Sciences, Utrecht University, the Netherlands, and his colleagues reported that exposure to particulate matter, (PM_{2.5}), black carbon, (BC), and nitrogen dioxide, (NO₂) was significantly associated with natural-cause, cardiovascular, respiratory, and lung cancer mortality. Even at its lowest levels, air pollution had measurable health effects across all age ranges. The study found a 5% to 13% increase in risk of all causes of death for every 5 µg/m³ of

PM_{2.5}, depending on the cohort. Risks of all causes of death from PM_{2.5} exposure more than doubled – from 13% to 29% per 5 µg/m³ when assessing only those participants living at PM levels below 12 µg/m³. The study also found a 4 to 9% increase in risk of all causes of death for every 10 µg/m³ of NO₂, including increased risks below 20 µg/m³, considered very low levels.

The ELAPSE Study is one of the largest of its kind, using data from 11 European countries that analyzed 22 cohorts: a pooled group of 15 smaller cohorts representing 325,000 people and seven very large administrative groups representing about 28 million people. The team developed new exposure models for all of Europe at a higher spatial resolution than previous models; (100m x 100m) for the pollutants examined, based on monitoring data, land use data, satellite observations, and dispersion models. This integrated approach used by the investigators provided an important ability to accurately measure exposures and low-level health effects across Europe at a scale not previously possible.

The study was subjected to intense independent peer review by the HEI Low-Exposure Epidemiology Studies Review Panel, who concluded that this report provided very good evidence of associations between long-term exposures to relatively low concentrations of ambient air pollution and several important health endpoints, at concentrations below the current levels of the current EU limit values. It is the first in a set of three studies funded by HEI to explore health effects from air pollution exposure at levels below government recommended standards. The other two reports were conducted in the United States and Canada, with final results expected later this year. All three studies were funded through HEI's program to investigate the health effects of long-term exposures to low levels of air pollution in very large populations across the United States, Canada, and Europe.

[Read the full report, as well as a Commentary by the HEI Low-Exposure Epidemiology Studies Review](#)

[Panel here.](#)

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ABOUT HEI

The Health Effects Institute (HEI) is an independent, non-profit research institute funded jointly by the U.S. Environmental Protection Agency, industry, foundations, and development banks to provide credible, high-quality science on air pollution and health for air quality decisions. HEI's research is selected, overseen, and peer reviewed by leading subject matter experts on environment and health without involvement of HEI's public or private sponsors.