

# Long-term air pollution exposure tied to higher depression, anxiety risk

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Long-term exposure to multiple air pollutants is associated with an

increased risk for depression and anxiety, according to a study published online Feb. 1 in *JAMA Psychiatry*.

Teng Yang, from Peking University in Beijing, and colleagues examined the association of long-term exposure to multiple [air pollutants](#) with incident depression and anxiety. The analysis included data from 389,185 participants in the U.K. Biobank followed for a median 10.9 years.

The researchers found that long-term estimated exposure to multiple air pollutants was associated with an increased risk for depression and anxiety, and the exposure-response curves were nonlinear, with steeper slopes at lower concentrations and plateauing trends at higher exposure.

For depression and anxiety, the hazard ratios (HRs) were 1.16 and 1.11 in the highest quartile versus the lowest quartile of air pollution score, respectively. For [fine particulate matter](#) (PM<sub>2.5</sub>), [nitrogen dioxide](#), and [nitric oxide](#), findings were similar. The association between PM<sub>2.5</sub> and anxiety tended to be higher in male individuals versus female individuals (quartile 4, male individuals: HR, 1.18; female individuals: HR, 1.07).

"Increased associated risk for both depression and anxiety was observed even at concentration levels below the annual values in UK air quality standards," the authors write. "Thus, the findings suggest that stricter standards or regulations for air pollution control are essential, and reductions in exposure to multiple air pollutants may alleviate the disease burden of depression and anxiety."

**More information:** Teng Yang et al, Long-term Exposure to Multiple Ambient Air Pollutants and Association With Incident Depression and Anxiety, *JAMA Psychiatry* (2023). [DOI: 10.1001/jamapsychiatry.2022.4812](https://doi.org/10.1001/jamapsychiatry.2022.4812)

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