Air pollution linked to impaired cognition

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Long term exposure to fine airborne particulate matter, such as engine exhaust, may alter neuronal morphology, mood, and impair cognition, according to research in mice published online this week in *Molecular Psychiatry*. These results may shed light into how air pollution exposure in major cities around the globe can alter or impair mental functions.

Prolonged exposure to air pollution has already been implicated as a risk factor for pulmonary and heart disease; recent studies show an interconnected relationship between...
particulates in air pollution, asthma risk and changes in mood. However, how particulate matter would affect the central nervous system has been unknown.

Over a period of 10 months, Laura Fonken and colleagues exposed 21 four-week-old male mice to either ambient concentrated particulate matter or filtered air. The size and concentration of particulate matter that was utilized mimicked particulate matter pollution levels of cities in developing world countries, such as China and India. Following this exposure period, mice underwent behavioral testing to assess physical abilities, sensory motor reflexes, learning and memory, and affective responses such as depressive- and anxiety-like behaviors.

The authors found that exposure to airborne fine particulate matter may result in neuroinflammation and altered morphological characteristics in hippocampal neurons, which are important in memory tasks. These changes could lead to the altered behavior in the mice. Further studies are needed to see if and how air pollution affects cognition and affective behavior in people.

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