

# Pregnant mothers at risk from air pollution

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A Californian-based study has looked in detail at air quality and the impact of traffic-related air pollution on premature birth. Published in BioMed Central's open access journal *Environmental Health*, results from this study show that traffic-related air pollution, especially polycyclic aromatic hydrocarbons (PAH), is associated with up to a 30% increase in premature births, and that seasonal changes and vicinity to the coast affected concentration of toxic pollutants in the air.

The study, based at the University of California, looked at 100,000 births, within a five mile radius of air quality monitoring stations. The study evaluated births spanning a 22 month period from June 2004, and used information provided by the California Department of Health about the births and the mothers, in addition to air pollution information from monitoring stations which measure concentrations of airborne [toxic pollutants](#).

The researchers were able to analyse and compare exposures using three different information sources: government "criteria pollutant" monitoring stations (including carbon monoxide, [nitrogen dioxide](#), ozone, and fine particulate matter), a [traffic pollution](#) model (Land Use Regression), and data about [toxic chemicals](#) collected by the South Coast Air Quality Management District. Once integrated, these data provided a new level of detail about the concentrations and location of individual pollutants. All statistical models were adjusted for maternal age, race/ethnicity, education and parity.

Some pollutants were area specific, relating to industry and urbanization.

However, overall exposure to critical pollutants such as PAH resulted in up to a 30% increase in the risk of premature birth. Other toxic substances, such as benzene and fine particulate matter from diesel fumes were associated with a 10% increase, while ammonium nitrate fine particles were associated with a 21% increase in premature birth. Concentrations of these pollutants were higher in winter and lower in coastal areas, indicating that local weather patterns played an important part in the dispersal of pollutants.

Dr Beate Ritz said, "Air pollution is known to be associated with low birth weight and premature birth. Our results show that traffic-related PAH are of special concern as pollutants, and that PAH sources besides traffic contributed to premature birth. The increase in premature birth risk due to ammonium nitrate particles suggests secondary pollutants are also negatively impacting the health of unborn babies. To reduce the effects of these pollutants on public health, it is important that accurate modeling of local and regional spatial and temporal [air pollution](#) be incorporated into pollution policies."

**More information:** Traffic-related air toxics and preterm birth: a population-based case-control study in Los Angeles County, California, Michelle Wilhelm, Jo Kay Ghosh, Jason Su, Myles Cockburn, Michael Jerrett and Beate Ritz, *Environmental Health* (in press)

Provided by BioMed Central

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