

Tiny levels of carbon monoxide damage fetal brain

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A UCLA study has discovered that chronic exposure during pregnancy to miniscule levels of carbon monoxide damages the cells of the fetal brain, resulting in permanent impairment. The journal *BMC (BioMed Central) Neuroscience* published the findings June 22 in its online edition.

"We expected the placenta to protect fetuses from the mother's exposure to tiny amounts of [carbon monoxide](#)," said John Edmond, professor emeritus of biological chemistry at the David Geffen School of Medicine at UCLA. "But we found that not to be the case."

The researchers exposed pregnant rats to 25 parts per million carbon monoxide in the air, an exposure level established as safe by Cal/OSHA, California's division of occupational health and safety.

Dr. Ivan Lopez, UCLA associate professor of head and neck surgery, tested the rats' litters 20 days after birth. [Rats](#) born to animals who had inhaled the gas suffered chronic oxidative stress, a harmful condition caused by an excess of harmful free radicals or insufficient antioxidants.

"Oxidative stress damaged the baby rats' [brain cells](#), leading to a drop in proteins essential for proper function," said Lopez. "Oxidative stress is a risk factor linked to many disorders, including autism, cancer, Alzheimer's, Parkinson's, Lou Gehrig's disease, multiple sclerosis and cardiovascular disease. We know that it exacerbates disease."

"We believe that the minute levels of carbon monoxide in the mother rats' environment made their offspring more vulnerable to illness," added Edmond. "Our findings highlight the need for policy makers to re-examine the regulation of carbon monoxide."

Tobacco smoke, gas heaters, stoves and ovens all emit carbon monoxide, which can rise to high concentrations in well-insulated homes. Infants and children are particularly vulnerable to carbon monoxide exposure because they spend a great deal of time in the home.

No policies exist to regulate the gas in the home. Most commercial home monitors sound an alarm only hours after concentrations reaches 70 parts per million--nearly three times the 25 parts per million limit set by Cal/OSHA.

Source: University of California - Los Angeles

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