Warning: Expert adds obesity to side effects of lead exposure

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Scientists know exposure to low levels of lead can result in learning disabilities, hearing loss, language impairments and vision loss, but a newly discovered side effect may be adult-onset obesity in men, according to a University of Houston professor.

Donald Fox, a UH professor of vision sciences, biology and biochemistry, and pharmacology, uncovered the link between lead exposure and obesity while studying the effects of lead on the retina in mice. Fox found this more subtle side effect was due to exposure to lead while in the womb, unlike the rash of reports of children becoming sick from ingesting lead-based toys.

To reach his conclusions, Fox and collaborator Leigh Leasure, an assistant professor of psychology with UH, undertook an 18-month case study exposing pregnant mice to varying levels of lead in their drinking water to observe the effects on the offspring. By adding obesity to the already lengthy list of lead exposure side effects, Fox hopes the Center for Disease Control and Prevention (CDC) will lower the acceptable lead exposure rate for pregnant women and children.

“The CDC states that the acceptable low-level exposure amount is equal or less than 10 micrograms per deciliter of blood for mothers or children,” Fox said. “The acceptable level used to be at 80 micrograms in 1972, but in the 1980s, it dropped to 60. There’s a push among scientists to drop it down to five, three or two micrograms per deciliter.

“For our experiment, we exposed the pregnant mice and, by extension, their babies to varying levels of lead through their drinking water,” Fox said.

What happened with the mice surprised Fox and his team. Initially, the prenatally exposed mice were developing at the same rate as their control counterparts, but at one year, some startling changes began to occur.

“These animals were slower, less coordinated and fatter at a year old,” Fox said. “Mice exposed to 10 micrograms – the CDC standard for acceptable exposure – gained about 25 percent more weight than their control counterparts.” A 1-year-old male mouse is the equivalent of a 30- to 40-year-old man, he said.

But what surprised Fox and his team even more was that the obesity side effect was strictly limited to the male mice.

“We don’t know if the weight gain was related to testosterone or other hormones, but we’re trying to figure out why females weren’t affected,” Fox said.

Humans can encounter lead exposure through the soil, dust, air, water, paint and toys, and because lead accumulates in the body, even minimal lead exposure can have long-lasting effects, according to Fox.

Fox’s results will be published in *Environmental Health Perspectives* in March, but he will continue studying the effects of lead in mothers and their offspring.

Source: University of Houston