

Exposure to common flame retardants may contribute to attention problems in children

October 7 2015

Prenatal exposure to some flame retardants that have been widely-used in consumer products is associated with attention problems in children ages three through seven, according to a new study by researchers at the Columbia Center for Children's Environmental Health, within Columbia's Mailman School of Public Health. The researchers are the first to show the effects of prenatal exposure to polybrominated diphenyl ethers (PBDEs) on children's development, during both the preschool and school age periods. Results appear in the journal of *Neurotoxicology and Teratology*.

PBDEs are found in textiles, plastics, wiring, and furniture containing polyurethane foam to reduce flammability. Since PBDEs are not chemically bound to these materials, they migrate into the environment over time. Humans are commonly exposed to the chemicals through accidental ingestion of house dust and by eating meat, dairy, and fatty fish with accumulated PBDEs. While PBDEs were phased out in 2004, they remain ubiquitous in the environment.

Researchers followed 210 mother-child pairs, a subset of the Center's World Trade Center study, from birth through early childhood. This cohort was established following the September 11, 2001 attack and designed to examine the effects of exposure to dust, smoke, and fumes on child development. Beginning at [age 3](#), researchers assessed child behavior using a standardized rating scale, repeating the test ever year through age 7. Cord blood samples were analyzed for PBDEs to assess [prenatal exposure](#) to the chemicals.

At ages 3, 4, and 7 years, children with the highest exposure to certain PBDEs had approximately twice the number of maternally-reported attention problems compared to the other children in the study.

Investigators controlled for factors that have been previously associated with PBDE exposure levels or neurodevelopment in other studies including child age at testing, ethnicity, mother's IQ, child's sex, maternal age, marital status, prenatal exposure to environmental tobacco smoke, and maternal demoralization.

Results support previous peer-reviewed epidemiological studies reporting associations between prenatal PBDE exposure and symptoms of inattention, hyperactivity, and impulsivity among children.

"These findings reinforce the decision to phase-out the use of PBDEs in [consumer products](#) and support the need to develop programs for safely disposing of products containing PBDEs that are still in use," says senior author Julie Herbstman, assistant professor of Environmental Health Sciences.

Provided by Columbia University's Mailman School of Public Health

Citation: Exposure to common flame retardants may contribute to attention problems in children (2015, October 7) retrieved 15 December 2022 from <https://medicalxpress.com/news/2015-10-exposure-common-flame-retardants-contribute.html>

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