

Flame retardants linked to lower-birth-weight babies

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Exposure during pregnancy to flame retardant chemicals commonly found in the home is linked to lower birthweight babies, according to a new study led by researchers at the University of California, Berkeley's School of Public Health.

In the study, to appear Tuesday, Aug. 30, in the peer-reviewed publication *American Journal of Epidemiology*, researchers found that every tenfold increase in levels of PBDEs, or polybrominated diphenyl ethers, in a mother's blood during pregnancy corresponded to a 115 gram (4.1 ounce) drop in her baby's birthweight.

"This is the first, large population-based study to link PBDEs with babies' birth outcomes," said study lead author Kim Harley, adjunct assistant professor of [maternal and child health](#) and associate director of the Center for Environmental Research and Children's Health (CERCH) at UC Berkeley. "A 115-gram decrease in weight is a fairly significant finding. By way of comparison, consider that [smoking during pregnancy](#) is associated with about a 150- to 250-gram decrease in birthweight."

The researchers are careful to point out that, while the study found a decrease in birthweight overall, very few [babies](#) in the study were born weighing less than 2,500 grams (5.5 pounds), the clinical definition of low birthweight. Low birthweight babies are more likely to experience social and cognitive delays in development.

"This was a very healthy population, and we didn't see many low

birthweight babies. What we saw was a shift toward lighter babies among women with higher PBDE exposure rather than a dramatic increase in the number of low birthweight babies," said Harley. However, she points out that a 115-gram shift could make a big difference for babies already at risk of being low birthweight, including low-income populations with poor access to [prenatal care](#).

This is the latest finding from the Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS) [longitudinal study](#) led by Brenda Eskenazi, UC Berkeley professor of epidemiology and of maternal and child health at the School of Public Health. Previous findings from the CHAMACOS study, which examines environmental exposures and reproductive health in an agricultural community, have associated PBDE exposure to reduced fertility and altered thyroid function in women.

The current study examined PBDEs found in the PentaBDE flame retardant mixture. These chemicals are commonly found in foam furniture, baby products and carpet padding. The use of PentaBDE began increasing in the 1970s in response to fire safety standards implemented in California at that time.

Although these PDBEs were phased out in 2004, the chemicals persist in older furniture and household items and are known to leach out into the environment and accumulate in human fat cells. In California, because of its unique furniture flammability standards, levels of [flame retardants](#) found in household dust can be up to eight times higher than in other parts of the country. Recent biomonitoring studies estimate that detectable levels of PBDEs can be found in up to 97 percent of Americans.

"There is a growing body of evidence that PBDE exposure impacts human health, and not a lot of evidence that these chemicals are making

our homes safer from fires," said Eskenazi. "Other chemical flame retardants are replacing the old PBDEs, but more information is needed about exposure to the newer chemicals. More attention should also be given to finding non-chemical approaches to achieving fire safety."

The researchers measured PBDE levels in the blood samples of 286 women – almost all Latina – enrolled in the CHAMACOS study during pregnancy. They accounted for factors that could influence a baby's weight, including a mother's use of tobacco, alcohol or drugs, as well as maternal body mass index.

Most of the mothers in the study were recent immigrants from Mexico and had PBDE concentrations comparable to the general U.S. population. However, recent findings published by the CHAMACOS researchers found that the children born into the study had blood concentrations of PBDEs that were among the highest reported in the world.

"It remains to be seen what the reproductive health implications will be for the current generation of California children, given their high blood concentrations to these flame retardants," said Eskenazi.

Because PBDEs are so prevalent in household dust, Harley advises precautionary measures such as wet mopping when dusting and frequent hand washing, particularly before eating, to reduce exposure.

Provided by University of California - Berkeley

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