

Significantly higher levels of brominated flame retardants in toddlers compared to their mothers

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Toddlers are more exposed to brominated flame retardants (BFRs) at home than their mothers, shows a new doctoral thesis from Stockholm University.

BFRs like f.ex. polybrominated diphenyl ethers (PBDEs) and hexabromocyclododecanes (HBCDs) have been used in a variety of consumer products such as furniture and plastic materials to enhance their fire safety. Humans are exposed to these chemicals mainly via food and [house dust](#).

To study BFR exposure, [blood](#) from women and their toddlers (11-15 months of age), house dust from their homes and some food and breast milk samples were analysed. Intakes via diet and house dust were estimated and compared to the levels found in the [blood samples](#).

"The BFR levels in the children were higher than in their mothers. The levels are however among the lowest we know of and are not close to levels considered dangerous. House dust seems to play a big role in the exposure, especially for [small children](#), but even intake of [breast milk](#) contributes to the higher levels in children's blood. For mothers, food is more important exposure route than house dust," says Leena Sahlström at the Department of Applied Environmental Science about her results.

Blood is a sample type normally used for analysis when one wants to

determine how much of a chemical is present in a human.

"But it's not easy to get blood samples from small children and that's why we wanted to study if feces could be analysed for BFRs instead, and the levels then converted to corresponding levels in blood. We could show good associations between the [levels](#) of some BFRs in blood and feces, which suggests that this could be a good way to study these chemicals in small children," says Leena Sahlström.

Even though many BFRs were banned 10 years ago they still exist in old flame retarded products around us and also in the environment. Furthermore, other brominated chemicals, the so-called emerging BFRs have been introduced on the market as replacements for the banned chemicals.

"We could show that some of the emerging BFRs are present in house dust and in some food samples (fish), and even in blood of a few participants. Thus it is important to keep an eye on these replacement chemicals in the future," says Leena Sahlström.

Provided by Stockholm University

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