



## Indoor dust poses significant endocrine disruptor risk

**The risks from exposure** to outdoor pollution or sources like tobacco smoke are well known, but indoor dust can also pose health risks, especially to young children. New evidence shows that indoor dust is highly contaminated by persistent and endocrine-disrupting chemicals, including some chemicals such as polychlorinated biphenyls (PCBs) which have been banned since the 1970s.

**Endocrine disruptors are** substances which disrupt the body's natural hormonal system. Some endocrine-disrupting chemicals can persist for many years. These include PCBs, polybrominated diphenyl ethers (PBDEs), pyrethroids, dichlorodiphenyltrichloroethane (DDT), chlorodanes and phthalates. These chemicals and others are found in indoor dust, which can be eaten or breathed in. Endocrine disruptors may be responsible for declining sperm counts, genital malformations, cancers and impaired neural development and sexual behaviour.

Dust collected from vacuum cleaners used in apartments and a community hall was highly contaminated with endocrine disruptors, in particular phthalates and PBDEs. The levels of PCBs were high enough in some cases to be a health concern, illustrating that these chemicals continue to persist in the environment and pose risks.

Although the use of some PBDEs is being phased out in some parts of the US and they have been banned in EU Member States since 2004, this trend may apply to PBDEs as well. PBDEs are flame retardants used on soft furnishings, and so as long as items such as mattresses, carpets and sofas treated with the chemical are used then exposure will continue.

Because young children spend a lot of time indoors, often at floor level, and put objects in their mouths, they are particularly at risk from pollutants in indoor dust. This is coupled with physiological factors including smaller body size that increase their risk. Previous studies have shown levels of certain flame retardant chemicals to be two to five times higher in young children than their parents, which suggests exposure routes in addition to diet may be responsible.<sup>1</sup>

More attention should be paid to contaminated dust as an exposure source, particularly for babies and young children. More frequent vacuuming and ventilation could help to reduce the levels of contaminated dust, as could limiting the use of pesticides indoors. The public also need to be made more aware of the risks, as do workers who may face additional exposure, for instance when renovating buildings or removing old carpets containing PBDEs or phthalates.

1. Fischer, D, Hooper, K, Athanasiadou, M, Athanassiadis, I, Bergman, A. (2006). Children show highest levels of polybrominated diphenyl ethers in a California family of four: a case study. *Environmental Health Perspectives*. 114: 1581-4.

**Source:** Hwang, H-M, Park, E-K, Young, T.M. and Hammock, B.D. (2008). Occurrence of endocrine-disrupting chemicals in indoor dust. *Science of the Total Environment*. 404 (1): 26-35.

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