



COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD, CONSUMER PRODUCTS AND THE ENVIRONMENT

COT statement on the potential risks from polybrominated diphenyl ethers (PBDEs) in the infant diet: lay summary

1. The Scientific Advisory Committee on Nutrition (SACN) is reviewing the scientific evidence that bears on the Government's dietary recommendations for infants and young children. The Committee on Toxicity (COT) was asked to review the risks of toxicity from chemicals in the infant diet. This statement focuses on possible risks from polybrominated diphenyl ethers (PBDEs) in the infant diet. There are 209 different PBDEs, known as congeners, which are distinguished by the number and position of bromine atoms in their chemical structure.
2. Technical mixtures of PBDEs have been widely used as flame retardants incorporated in polymers and textiles, construction materials, furniture, and electrical equipment. International agreements on bans and regulations on production and use of technical mixtures of PBDEs have been introduced since 2004, leading to declining levels in the environment. However some PBDE congeners are especially persistent in the environment.
3. Food is the main source of exposure to PBDEs in the general population. Infants can be exposed to such chemicals through their presence in breast milk as well as other foods, and in dust.
4. Most PBDE congeners have not been tested for their toxicological properties. For those that have, there is evidence of effects in experimental animals on the liver, thyroid hormones, and the reproductive and nervous systems. Studies in human populations have not produced consistent results, and do not allow conclusions on the levels of exposure at which adverse effects could occur.
5. The available data are insufficient to establish health-based guidance values, for PBDEs, and as an alternative, the COT considered the ratios between the highest doses that had been found not to cause adverse effects in animal studies (reference points) and the estimated exposures of infants. Such ratios are known as "margins of exposure" (MOEs), and their interpretation should take into account uncertainties in the toxicological database, in extrapolation from animals to humans, and in the estimation of exposures.
6. Suitable reference points for use in the MOE approach were available for only four congeners: BDE-47, BDE-99, BDE-153 and BDE-209. Overall the analysis indicated possible concerns regarding the exposures of infants to: BDE-99 and -209 via ingestion of dust; to BDE-47, -99 and -153 via breast milk, and BDE-99 and -153

from food. This does not necessarily imply that toxicity is occurring and the absence of clear evidence for adverse effects in epidemiological studies gives some reassurance. Nevertheless the risk assessment does not give the assurance of safety that would normally be expected.

7. No data are available on potential exposures to PDBEs in the UK from infant formula, but the presence of PBDEs in dairy products indicates that they are also likely to be present in infant formula. There are also no data on potential exposures from commercially produced infant foods in the UK.

8. Given that most uses of PBDEs have been phased out, and that the main dietary sources of exposure to residual environmental PBDEs are breast milk and dairy products, options for reducing exposure are limited. A priority for further research is continued monitoring of PBDEs in breast milk and food to check that levels are declining as expected. It would also be useful to measure levels in infant formula and commercially produced infant foods.

The full COT statement can be found at:

<https://admin.food.gov.uk/sites/default/files/PBDEstatementfinal.pdf>

Lay Summary to COT Statement 2015/01
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