

P41. PBDES: THEY ARE TOXIC AND THEY'RE EVERYWHERE

Nesrin İÇLİ^{1*}

¹Ministry of Customs and Trade, Ankara Laboratory Directorate, Kazan, Ankara, TÜRKİYE

Polybrominated diphenyl ethers (PBDEs) have been used as flame retardants for many years in such products as plastics, textiles, polyurethane foam and electrical equipment. PBDEs are environmental concern because of their high lipophilicity, and high resistance to degradation processes. Therefore, they are expected to readily bioaccumulation. It can be transported by air and water; have been found in invertebrates, fish, birds, marine mammals and humans. PBDEs elicit toxicity in mammals by binding to the transport proteins for thyroid hormones and thus altering thyroid homeostasis. Some hydroxylated polybrominated diphenyl ethers (HOPBDEs) have been identified as potential transformation products of polybrominated diphenyl ethers (PBDEs) and have been detected in human bodies which showed a more potent receptor activity compared to those of the parent PBDEs. PBDEs can be transformed by thermal recycling process into highly toxic compounds such as polybrominated dibenzofurans and dioxins (PBDD/Fs).

The European Union decided to ban the use of two classes of flame retardants, in particular, polybrominated diphenyl ethers (PBDEs) and polybrominated biphenyls (PBBs) in electric and electronic devices. This ban was formalised in the RoHS Directive, and an upper limit of 1 g/kg for the sum of PBBs and PBDEs was set. In the EU also the contents of decabromodiphenyl ether (DecaBDE) might not exceed 0.1% in EEE as set by the RoHS directive. At an international level, in May 2009 the Parties of the Stockholm Convention for Persistent Organic Pollutants (POPs) took the decision to list commercial penta-BDE and octa-BDE as POP substances.