science summary

Environment Agency

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Environmental risk evaluation report: Decabromodiphenyl ether (CAS no. 1163-19-5)

Science Summary

Decabromodiphenyl ether (decaBDE) is a flame retardant chemical. Though it can no longer be used in electrical and electronic equipment, a substantial amount remains in existing items and it still has a major use in textiles. Three environmental risk assessment reports for decaBDE have previously been produced by the Environment Agency, reviewing the main scientific literature that had been published up to October 2006. Since then a large amount of new information has become available, including investigations of the levels of decaBDE in effluents, sewage sludge and wildlife, and this new report from the Environment Agency reviews those data that are relevant to the environmental risks associated with this substance, with special consideration of the REACH (Registration, Evaluation, Authorisation and restriction of CHemicals) Regulation.

DecaBDE is very persistent and widely dispersed in the environment, including indoor and outdoor air and dust, sediment, soil and many types of animal life. Its properties therefore need careful consideration. Whilst no significant direct toxic effects have been observed in aquatic organisms, a number of recent studies have been performed on its ability to cause neurotoxic effects in mammals. These need to be fully evaluated by appropriate experts before conclusions can be drawn about any risk arising from toxicity.

DecaBDE has the potential to degrade into a number of dangerous and polluting chemicals, including some which have been added to the Stockholm Convention on persistent organic pollutants. A number of important new studies have been carried out investigating the possible degradation of decaBDE in the environment. Some of these suggest that decaBDE does degrade into a number of different hazardous substances under certain conditions. While it is not possible to reliably quantify the rate of degradation or the yield of hazardous products in the environment, it appears that they can be formed, particularly over long time frames.

Abrasion of treated objects has been shown to be an important emission source of decaBDE in indoor environments, and this is not addressed by voluntary emission reduction programmes carried out by the industry. The finding that decaBDE is mainly associated with the larger particles is also relevant in terms of its long-range transport potential. Outside, decaBDE has been found at very remote locations at low levels, which suggests that long-range transportation is possible.

The new evidence suggests that detection of hazardous degradation products in sediment, sewage sludge and biota may be linked to emissions of decaBDE. These factors should be considered in any further prioritisation of decaBDE for regulation under REACH.

This summary relates to information reported in detail in the following Science Report:

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