

THE LEVELS OF POLYBROMINATED DIPHENYL ETHERS IN FOODSTUFFS AND HUMAN EXPOSURE

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Background and Aims: Polybrominated diphenyl ethers (PBDEs) have been widely used as brominated flame retardants (BFRs) for various electronics, manufactures, plastics, textiles and construction material. The structure of PBDEs are similar to thyroxin, could disrupt thyroid gland function, and the other adverse effects include neurotoxicity, developmental toxicity, reproductive toxicity and carcinogen. They could be detected in various environmental matrices, such as sediment, air, food and various organisms. The aim of the study is to determine PBDEs contaminate food stuff and to calculate daily intake in human.

Methods: This study determined 9 kinds of commonly foodstuffs in Taiwan by GC/ mass spectrometry, include milkfish, salmon, chicken, beef, pork, butter, egg, rice and milk. Analyses included BDE-28, BDE-47, BDE-99, BDE-100, BDE-153, BDE-154, BDE-183 and BDE-209, and daily food intake questionnaires were applied for 150 adults randomly.

Results: For dry weight, the pork samples has the highest \bar{X} PBDEs levels (1.950 ± 0.645 ng/g dry weight), and then are salmon and egg samples (1.300 ± 0.184 ng/g dry weight and 1.100 ± 0.369 ng/g dry weight); for lipid, the chicken samples has the highest \bar{X} PBDEs levels (12.989 ± 4.072 ng/g lipid), and then are pork and egg samples (11.130 ± 3.775 ng/g lipid and 8.524 ± 2.894 ng/g lipid); for wet weight, the butter samples has the highest \bar{X} PBDEs levels (0.886 ± 0.309 ng/g wet weight), and then are egg and pork samples (0.546 ± 0.185 ng/g wet weight and 0.541 ± 0.181 ng/g wet weight). Rice which levels of \bullet PBDEs were all n.d. in our study.

Conclusions: The average daily dietary intake estimate of PBDEs was calculated. the \bullet PBDEs daily intake levels is 71.803 ± 7.843 ng/day for Taiwanese, and the pork samples are the highest (22.186 ± 12.470 ng/day), and then are egg and milk samples (16.342 ± 6.902 ng/day and 15.983 ± 18.100 ng/day).