

MO061 Occurrence of polybrominated diphenyl ethers and emerging halogenated flame retardants in food items G. Poma,

N. Symons, G. Malarvannan, University of Antwerp Toxicological Center; S. Gosciny, Scientific Institute of Public Health Belgium; S. Voorspoels, Flemish Institute for Technological Research VITO NV; S.V. Malysheva, J. Van Loco, Scientific Institute of Public Health Belgium; A. Covaci, University of Antwerp / Toxicological Center. Brominated flame retardants (BFRs) are chemicals used in a wide range of commercial and household products in order to reduce their flammability. Because most BFRs are not chemically bonded to the products which they are added to, they can easily leach into the environment. People are mainly exposed to BFRs via dust and diet. In particular, the lack of data on the occurrence of BFRs in food prevents an accurate estimation of the human intake. The main aim of this project was to follow up the European Commission Recommendation 2014/118/EU on the monitoring of BFRs in various food items on the Belgian market and to provide data on their occurrence and levels in the main food categories. The presence of polybrominated diphenyl ethers (PBDEs), novel BFRs (hexabromobenzene (HBB), bis(tribromophenoxy)ethane (BTBPE), tetrabromobenzoate (TBB), tetrabromophthalate (TBPH)), tribromoanisole (TBA), and dechlorane plus (syn-DP and anti-DP) in various food items was assessed using an analytical method developed and validated in this project. This novel method uses low sample amounts and solvent volumes, and involves a two-step clean-up, including florisil and acid silica. The determination of BFRs was performed using gas chromatography-mass spectrometry operated in electron-capture negative ionization mode (GC-ECNI/MS). The validated procedure was first used for the determination of BFRs in 20 individual food items purchased from Antwerp supermarkets (including fish, meat, chicken eggs, cow milk, grains and vegetable oil), and, in a second stage, has been used for the analysis of more than 200 food samples in the frame of the Belgian food monitoring project. A high extraction performance was obtained, which, in combination with an efficient two-step clean-up procedure, enabled the accurate determination and quantification of the target compounds in a wide variety of food matrices, with different characteristics and lipid content. In all food categories, PBDEs were the most frequently detected and were predominant in fish/seafood samples. Among other FRs, TBA was detected only in fish/seafood, indicating its primary natural origin from the marine environment. For the other compounds, the results showed a generally low contamination of all analyzed food samples, with values generally below the quantitation limit (LOQ).