

Accumulation of polychlorinated biphenyls and brominated flame retardants in breast milk from women living in Vietnamese e-waste recycling sites

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Abstract: This study investigated the contamination status of PCBs, PBDEs and HBCDs in human and possible exposure pathways in three Vietnamese e-waste recycling sites: Trang Minh (suburb of Hai Phong city), Dong Mai and Bui Dau (Hung Yen province), and one reference site (capital city Hanoi) by analysing human breast milk samples and examining the relationships between contaminant levels and lifestyle factors. Levels of PBDEs, but not PCBs and HBCDs, were significantly higher in Trang Minh and Bui Dau than in the reference site. The recyclers from Bui Dau had the highest levels of PBDEs (20-250 ng g⁻¹ lipid wt.), higher than in the reference group by two orders of magnitude and more abundant than PCBs (28-59 ng g⁻¹ lipid wt.), and were also the only group with significant exposure to HBCDs (1.4-7.6 ng g⁻¹ lipid wt.). A specific accumulation, unrelated to diet, of low-chlorinated PCBs and high-brominated PBDEs was observed in e-waste recyclers, suggesting extensive exposure to these compounds during e-waste recycling activities, possibly through inhalation and ingestion of dust. The estimated infant intake dose of PBDEs from breast milk of some mothers occupationally involved in e-waste recycling were close to or higher than the reference doses issued by the U.S. EPA. ?? 2010 Elsevier B.V. All rights reserved.

Author Keywords: Breast milk; E-waste; Exposure pathway; HBCD; PBDE; PCB

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