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Exposure Assessment of Temporal Trend of Polybrominated Diphenyl Ethers (PBDEs) According to Breast Milk in Seoul, Korea

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Polybrominated diphenyl ethers (PBDEs) are flame retardants added to a multitude of products to reduce flammability. However data concerning the levels of these compounds in the Korea population and environment remain limited. Accordingly, The objectives of this study were to determine PBDEs Exposure Assessment in Korea human milk of 2006 and 2007. Our study were analysed by isotope dilution method and HRGC/HRMS (EI-SIM mode) for 7 PBDE congeners. And Breast milk samples from 44 women from the 2006 and 2007 of living Seoul were analyzed for PBDEs. PBDEs level of 2006 and 2007 were 3.56±3.10 ng/g lipid (mean±standard deviation) and 4.46±3.27 ng/g lipid, respectively. Also, residue level range were 0.84~13.13 ng/g lipid and 1.51~17.13 ng/g lipid, respectively. From the result of the exposure assessment of infants for PBDEs by breast milk intake, we could find out that the average exposure amount of 2006 and 2007 were 15.56 ng/kg/day and 19.49 ng/kg/day each other when nursing for 6 months after infants born.

Key words: PBDEs, Breast milk, Exposure assessment

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Level of PCDDs/DFs, Dioxin-like PCBs in Human Milk and Assessment of Infant Body Burden in Seoul, Korea

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PCDD/DFs was be known to more than 95% into the body through the food and exposure to substantial levels of endocrine disruptors can cause neurological, immunological, reproductive, and carcinogenic effects in humans. Specially, infant was exposed to PCDD/DFs and PCBs endocrine disruptors prenatally and via breast milk. In this study, PCDD/DFs and dioxon-like PCBs compounds were measured in colostrum, 30th and 60th breast milk collected in 2007 from 22 mothers who were selected from Seoul, Korea and we determined level of breast milk samples and assessment of infant body burden. PCDD/DFs concentrations in breast milk ranged between 0.01~16.81 pg-TEQ/g (4.99±2.71 pg-TEQ/g), and dioxin-like PCBs level ranged between 0.97~5.64 pg-TEQ/g (2.88±1.14 pg-TEQ/g). The total PCDD/DFs and dioxin-like PCBs concentrations in the breast milk of primipara mothers was 4.56~22.19 pg-TEQ/g (8.86±3.60 pg-TEQ/g) and multipara mothers 3.41~14.89 pg-TEQ/g (6.88±2.43 pg-TEQ/g), which the total TEQ concentration of multipara were 1.5 times higher compared with primipara. According to breast feeding phase, the ranged from PCDDs/DFs, dioxin-like PCBs level were 4.55~22.19 pg-TEQ/g (9.42±4.05 pg-TEQ/g) for colostrum, 3.41~11.70 pg-TEQ/g (7.55±2.44 pg-TEQ/g) for 30th, and 3.75~14.69 pg-TEQ/g (6.64±2.30 pg-TEQ/g) for 60th and total TEQs level were decreased 30th 19.8%, 60th 29.5% ratio in breast milk. In this study, the assessment of infant body burden was performed based on the demographic characteristics of participants and it was 74.07 TEQ pg/kg/day on average.

Key words: PCDD/DFs, Dioxin-like PCBs, Breast milk, Infant body burden