

Temporal Trend of PCDD/DFs in Environmental Media in Rep. of Korea

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The goal of this study was to measure the contamination level of PCDD/DFs in a variety of environmental media, such as water, sediment, soil, and air. Monitoring sites were selected at representative sites through the nation. The investigated sites are 43 for water, 11 for sediment, 24 for air, and 35 for soil and they are the same as were the first year, 1999. Each environmental material was sampled and analyzed following the standard methods established by National Institute Environmental Research (NIER).

The average concentrations of PCDD/DFs in water and soil were 0.094pg-TEQ/L and 1.734 pg- TEQ/dry g, respectively. The results for water and soil showed the average levels of PCDD/DFs increased about twice compared with the '99 results in which PCDD/DFs were detected the levels with 0.056 pg-TEQ/L in water and 0.935 pg-TEQ/dry g in soil.

However, the average concentration of PCDD/DFs in sediment decreased from 0.148 pg-TEQ/dry g of '99 to 0.048 pg-TEQ/dry g as was the case for ambient air in which the levels of PCDD/DFs in 1999 and 2000 were 0.425 pg-TEQ/Nm³ and 0.324 pg-TEQ/Nm³, respectively.

The trend of detected range of PCDD/DFs in each environmental media was similar to that of the average concentration of PCDD/DFs. In water the detected range of PCDD/DFs increased from 0- 0.502 pg-TEQ/L to <0.001-1.061 pg-TEQ/L considering the result of 1999. PCDD/DFs were detected in soil with the range 0-40.478pg-TEQ/dry g and it was corresponded around twice to the result of 1999, 0-22.439 pg-TEQ/dry g. While the detected range of PCDD/DFs increased in water and soil compared to the previous year, the ranges of PCDD/DFs in ambient air and sediment decreased 0-4.448 pg-TEQ/Nm³ to 0.012-1.496pg-TEQ/Nm³ and 0-0.984 pg-TEQ/dry g to 0-0.244 pg-TEQ/dry g, respectively.

The result of PCDD/DFs between a medium/small city and a big city in ambient air showed the difference of the concentrations of PCDD/DFs. While the concentrations of PCDD/DFs in 8 medium and small cities constituted with an industrial complex were 0.129-1.149 pg-TEQ/Nm³, in 15 big cities PCDD/DFs were detected with the range 0.061 -1.496 pg-TEQ/Nm³. However, the average concentrations of PCDD/DFs were higher in a medium and small city than in a big city. The average concentrations of PCDD/DFs were 0.501 pg-TEQ/Nm³ in a medium and small city and 0.288 pg-TEQ/Nm³ in a big city.

To provide a basis for the sound management of dioxins and policy-making for the control of PCDD/DFs in Korea, the monitoring for PCDD/DFs in environmental media should be continued.