

National Endocrine Disrupters Soil Monitoring in Korea

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The Ministry of Environment in Korea has designed and established a mid- and long term research plan on Endocrine Disrupters (EDs). According to this plan, National EDs soil monitoring has been conducted to measure the contamination level of EDs.

The investigation was performed for 35 soil sites that were the same sites in consecutive years and were selected throughout the nation based on the different uses of land. The sampling periods were April to June and September to November of 2000. The target chemicals increased from 68(1999) to 81 chemicals, including alkylphenols, benzo(a)pyrene, 17- β -estradiol, o.p'-DDT and its metabolites o.p'-DDD and o.p'-DDE. Most samples were analyzed using a GC-HRMS.

Compared with the 1999 results, 16 chemicals are detected. Including benzo(a)pyrene and nonylphenol which were not analyzed in 1999, 7 chemicals (carbaryl, alachlor, 2,4-D, 2,4,5-T, DBCP) are detected as new chemicals. The contamination levels of dioxin and benomyl increased as to be compared with the result of the previous investigation. While the contamination levels of bisphenol A and amitrole decreased, benzophenone is not detected any more in this study.

The 35 soil sampling sites are classified into 11 areas by the use of land, including the paddy fields, plot of grounds, orchard, factory sites, playgrounds and others. The contamination levels of detected 16 chemicals were compared according to the use of land. All chemicals are detected in paddy fields, 9 chemicals in plot of grounds, 7 chemicals in orchard, 4 chemicals in meadow, 4 chemicals in forest, 10 chemicals in factory sites, 3 chemicals in the grounds, 6 chemicals in sideway of the road, 3 chemicals in park, 6 chemicals in playgrounds, 7 chemicals in school. Bisphenol A and nonylphenol are detected in all samples and dioxin are detected in 10 areas except for park.

The detection ratio of dioxin was 94% in the range between 0 and 40.478 pg-TEQ/ dry \cdot g. The detection ratio of benomyl was 80% in the range between ND(<0.5) and 96.1 ng/g. The detection ratio of benzo(a)pyrene was 49% in the range between ND(<1) and 9 ng/g. The detection ratio of nonylphenol was 91% in a detection range from ND(<0.5) to 13.0 ng/g. The detection ratio of carbaryl was 11 % in the range between ND(<1) and 2 ng/g. The detection ratio of alachlor was 6% in the range between ND(<0.01) and 0.08 ng/g. The detection ratio of 2,4-D was 6% in the range between ND(<0.2) and 1.0 ng/g. The detection ratio of 2,4,5-T was 6% in the range between ND(<0.2) and 1.0 ng/g. The detection ratio of 1,2-dibromo-3 -chloropropane (DBCP) was 11 % in the range between ND(<1) and 5 ng/g. The detection ratio of bisphenol A was 83% in the range between ND(<0.5) and 6.9 ng/g. The detection ratio of PCBs was 14% in the range between ND and 1.2 ng/g.