

## Exposure of incinerator and home electric appliances recycling workers to dioxins and brominated diphenyl ethers

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### Introduction:

We intended to assess exposures to PCDDs, PCDFs, coplanar PCBs, and PBDEs among workers engaged in incinerator works and recycling works of home electric appliances. This study project was approved by ethical committee of NIIH.

### Subjects:

Subjects consist of 69 male and 3 female workers at 3 municipal solid waste incinerators (MSWI), 23 male workers at an industrial waste incinerator (IWI), and 11 male workers at a factory recycling home electric appliances (RHEA).

### Methods:

Written informed consents were obtained from all subjects. In the morning of examination day 70-90 ml of blood was collected from fastened subjects and then they were interviewed by occupational specialist about their job histories. Blood was used for measurements of 7 PCDDs, 10 PCDFs, and 10 coplanar PCBs, of those TEF was determined by WHO. Twenty nine PBDEs were also measured.

### Results:

Blood PCDDs and PCDFs by TEQ were high among IWI group compared with the others. Looking from each congener, 12378PeCDD, 123678HxCDD, 123789HxCDD, 23478HxCDF, 123478HxCDF, 123678HxCDF, 234678HxCDF, and 1234678HepCDF were highest among IWI group, the means were 5.4, 30.7, 3.2, 10.9, 4.4, 7.0, 1.8, and 9.2 pg/g lipid, respectively. Comparing coplanar PCBs, 33'44'TeCB and 233'44'PeCB were highest among RHEA group, the means were 3.2 and 2733 pg/g lipid, respectively. Comparing PBDEs, 22'4TrBDE and 33'4TrBDE were highest among MSWI group, the means were 6.6 and 2.3 pg/g lipid, respectively, and 23'44'TeBDE and 33'44'TeBDE were highest among RHEA group, the means were 31.8 and 2.9 pg/g lipid, respectively. Further more 23'44'5PeBDE were lowest among IWI group, and 22'44'55'HxBDE was highest among IWI group and the mean was 945 pg/g lipid.

### Conclusion:

Comparing PCDD, PCDF, coplanar PCB, and PBDE exposures among three worker groups, MSWI group was lowest in either exposure. IWI group was highest in PCDD and PCDF exposures. RHEA group was highest in coplanar PCB and PBDE exposures.