

Table 1 Condition of GC-ECD and GC-MS analysis

GC-ECD condition

Column : Fused silica capillary column, Silicone OV-101 0.25mm x 25m
 Temperature : 150 C + 4°C /min to 290°C
 Injection : Solvent cut system
 Carrier gas : Nitrogen 2.0 ml/min

GC-MS condition

Column : Fused silica capillary column, SPB-1 0.25mm x 30m
 Temperature : 60°C for 1 min + 20°C/min to 190°C + 4°C/min to 280°C
 Injection : Splitless mode
 Carrier gas : Helium 5.5 ml/min

RESULTS AND DISCUSSION

GC-ECD chromatograms for PCB fractions are shown in Figure 3. (A) is original combustible PCB waste, and total PCB content is approximately 77% and others are organic solvents. (B) and (C) are GC-ECD patterns of the PCB fractions of the activated carbon in gas and water treatment. Main components of this fractions were penta- and hexa-chlorinated benzenes(CP), and these amounts were 100 times as much as PCB contents, and mainly found on the activated carbon in gas treatment.

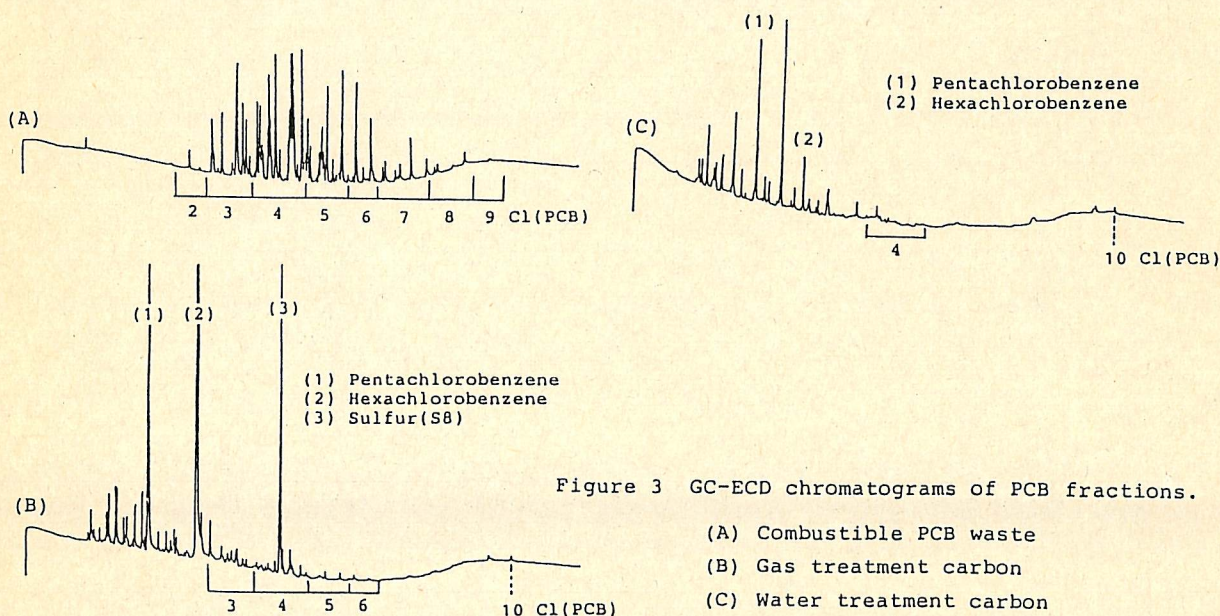


Figure 3 GC-ECD chromatograms of PCB fractions.

- (A) Combustible PCB waste
 (B) Gas treatment carbon
 (C) Water treatment carbon

Figure 4 and 5 are the GC-MS-SIM chromatograms of PCDD and PCDF : (A) and (B) show gas and water treatment, respectively. The chromatogram (C) is fly ash from municipal incinerator. The main products were octa-PCDD and PCDF and mainly found in water treatment activated carbon and the feature of the patterns of hexa- and hepta-PCDD and PCDF were quite similar to fly ash sample(7)(8).

Figure 6 is the GC-ECD chromatograms of acidic fractions : gas(A) and water(B). The main products were CP and mainly found in water treatment activated carbon. Their amounts were 1,000 to 100,000 times as much as PCB. These GC-ECD chromatograms were different from the patterns in experimental pyrolysis of PCB at low combustion temperature, 500-700°C (9).