RESULTS AND DISCUSSION

The seasonal difference of meteorological conditions shown in Table 1. The comparison of atmospheric levels of these compounds are shown in Table 2. We reported that the correlation coefficient between PCDD and PCDF is higher than the correlation coefficients between PCDD and the other compounds. These compounds were divided into two groups according to the behavior of the chemicals in environment. One was PCDD/PCDF group, and another was clordanes/PCB/DDE group.[1] Temporal variations in atmospheric concentrations of these compounds in the urban air showed that the meteorological factors such as rain have played important roles on the behavior and transport of these compounds.

As a result of continuous measurement in winter, the similar tendency was observed as for the correlation coefficient and meteorological effect. Correlation matrix of concentrations of these compounds in winter are shown in Table 3. The correlation coefficients between the congener/isomer having similar vapor pressure is relatively higher than those having different value.

Fig. 1 shows the daily variability in atmospheric levels of these compounds with meteorological condition. The chlordane/PCB/DDE which exist primarily in the vapor phase resembles each other in the behavior.

Bidleman pointed out that the V/P ratio was controlled by semivolatile organic compound vapor pressure and the total suspended particle concentration [7]. Despite artifact problems in high-volume sampling (overestimation or underestimation of V/P ratio), it is true that we can get important information from the apparent V/P ratio. The extent of migration from QMF to PUF was negligible for our study.

Fig. 2 shows the vapor-to-particle ratios in winter. Atmospheric temperatures ranged 20.2 - 27.8°C(av. 24.2°C) in summer, 3.6 - 12.7°C (av. 7.8°C) in winter. V/P ratio in winter is lower than in summer. These ratios in summer and winter are as follows;PCB :24, 7.2; PCDD :0.33, <0.001 ; PCDF :0.18, <0.001; t-CHL : 49, 19 ; DDE : 19, 2.5 respectively.

V/P ratio depended on temperature of sampling date and vapor pressure of these compounds, V/P ratio decrease as temperature and vapor pressure decrease.

REFERENCES

1) T.Nakano, M.Tsuji and T.Okuno, Atmospheric Environm. 24,1681-1688(1990)
2) B.D.Eitzer and R.A.Hites, Environ. Sci. Technol. 23,1389-1395(1989)
3) B.D.Eitzer and R.A.Hites, Environ. Sci. Technol. 23,1396-1401(1989)
4) M.H.Hermanson and R.A.Hites, Environ. Sci. Technol. 23,1253-1258(1989)
5) J.B.Manchester-Neesvig and A.W.Andren, Environ. Sci. Technol. 23, 1138-1148(1989)
6) T.Nakano, M.Tsuji and T.Okuno, Chemosphere 16(8/9),1781-1786(1987)
7) T.F.Bidleman, Environ. Sci. Technol., 22, 361-367(1988)