DISTRIBUTION OF CHLORINATED ORGANIC COMPOUNDS IN THE ATMOSPHERE

T. Nakano, M. Tsuji and T. Okuno

The Environmental Science Institute of Hyogo Prefecture

3-1-27, Yukihira-cho, Suma-ku, Kobe 654, Japan

ABSTRACT

Polychlorinated dibenzo-p-dioxins(PCDDs), polychlorinated dibenzofurans(PCDFs), polychlorinated biphenyls(PCBs), chlordanes and DDE were measured in both the vapor and particle-bound phases. The daily variation of these compounds in urban air was discussed with meteorological factors in summer and winter. The vapor-to-particle(V/P) ratios for these compounds were depended on the vapor pressure of each compounds and the meteorological condition. The behavior and transport of these compounds in the atmosphere were closely related to wet and dry deposition.

INTRODUCTION

PCDDs, PCDFs, PCBs and chlordanes have been observed in various environmental samples. Few data are available on the levels of these compounds in urban air [1]. Although there has been many interesting information in recent studies [2-5], none of these studies reported the daily variability. As to the number of sampling for these compounds, few times a month is not enough to grasp the variability with various conditions. We felt that it was important to study the daily variability in concentrations of each congeners in both the vapor and particle-bound phases.

The preliminary study [6] showed that the atmospheric levels of these compounds have a tendency to increase on stagnaht and cloudy day. In order to eliminate the effect of regional and seasonal variability, we investigated the levels of these compounds at a single location in the same season [1].

Daily variability in atmospheric levels of these compounds from June 1988 to July 1988 (summer) and from December 1988 to January 1989 (winter) were discussed with meteorological factors; temperature, cloud amount, wind speed, rainfall, visibility, humidity and total suspended particulate.