

polycyclic aromatic hydrocarbons in total suspended particulates

I-fu Hung¹, Ling-Yen Hsu¹, Ching-Huei Chen¹, Su-Huei Hung², Eric C.L. Chu³

¹National Tsing Hua University

²Taoyuan County Environmental Protection Bureau,

³Taoyuan County Government,

Polycyclic aromatic hydrocarbon (PAH) compounds are known environmental pollutants. Some of them are carcinogen or mutagen. The total suspended particles (TSP) were collected from three sampling stations in Hsinchu city and seven sampling stations around Taoyuan county using high volume air samplers. Samples were treated by ultrasonic extraction using solvent. The extracted solution was then analyzed for 16 PAH compounds by HPLC-fluorescence detection method.

Fifteen PAH compounds were detected in collected samples. In Hsinchu city, the highest average concentration was found in Lung-san school station (2.31 ng/m³), and the lowest was found in Shiang-san station (1.86 ng/m³). In Taoyuan county, the highest average concentration was found in Taoyuan school station (3.89 ng/m³), and the lowest was found in Quei-san industrial park (3.12 ng/m³). In general, Taoyuan area has higher PAH concentrations than in Hsinchu area. Analyses by characteristic ratio and factor analysis showed that the major source was from traffic pollutions. PAH compounds detected in Hsinchu area are mainly from gasoline engine vehicles and Taoyuan area are mainly from diesel engine vehicles. In Hsinchu area, the concentration was higher in the winter (3.72 ng/m³) and the concentration was lower in the autumn (0.75 ng/m³). In Taoyuan area, the concentration was higher in the spring (4.99 ng/m³) and the concentration was lower in summer (1.56 ng/m³). These results agreed with other studies conducted elsewhere.