

CONTRIBUTIVE ESTIMATION OF POLYCYCLIC AROMATIC HYDROCARBONS BY EMISSION SOURCE IN SEOUL AREA

C.K. Park, J.S. Yun, M.Y. Kim

Air Quality Department, Seoul Metropolitan Institute of Public Health and Environment, Seoul, Korea

It has been concerned that the effects of environmental toxic chemicals on human beings. It has been understood that the carcinogens in environmental media has been major factor with the progress of investigation of relationships between carcinogenic effects and environmental causes. This study investigated various factors which effects on ambient PAHs concentration in Seoul. Moreover, this study investigated PAHs emission from major stationary sources to determine quantitative relationships among ambient PAHs and emission source. The results showed that effects of emissions sources on ambient PAHs in Seoul were estimated with the particle-phase PAHs by multiple linear regression models. Mobile sources were the most significant sources to PAHs in Seoul (21.6%). From the factor analysis, this study found three major factors affected to the ambient PAHs in Seoul. Chrysene, pyrene, indeno(1,2,3-cd)pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, and benzo(g,h,i)perylene were the factor 1, which was mainly emitted from gasoline and diesel fueled cars. Phenanthrene and anthracene were the factor 2, which was related with industrial combustion like LNG and BC oil combustion. Factor 3 included dibenz(a,h)anthracene and acenaphthene was emitted from open burning and municipal solid waste incineration. In conclusion, the contribution of mobile sources partly explained ambient PAHs in Seoul by 64%, that of stationary sources 17%, and that of municipal incineration and open burning 1%. Therefore, all of three factors were consisted in 82% of total variances.