



The study of azaarene behavior over atmosphere of subtropical city(Keelung)

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In this study, we collected the Total Suspended Particulates (TSP) from July 2014 to February 2016 in the subtropical city (Keelung), and researched azaarene behavior over atmosphere. Polycyclic Aromatic Compounds (PAHs) are ubiquitous pollutants in the environment; they have known carcinogens and/or mutagens, mainly produce from incomplete combustion. Azaarenes are polycyclic aromatic hydrocarbon derivative compounds in which a carbon atom in one of the aromatic rings is substituted by a nitrogen atom. Organism exposure to azaarenes occurs through inhalation of polluted air and by ingestion of food and/or water containing combustion products and accumulate in the body. Total azaarene concentration (16 individual compound concentration of the aggregate) is between 0.92 to 3.76 $\mu\text{g}/\text{m}^3$, results showed that the concentration of azaarenes have significant seasonal variation, they have higher concentration in the cold month. In molecular weight, the highest proportion is the molecular weight equal to 143(ΣMQ) and then the molecular weight equal to 179(BAP), ΣMQ would rise from 30%~40% to 40%~50% during the cold month and warm months. Compared to ring number, 2-rings are biggest part, the smallest is 4-rings, its ratio has slight variation, but primary species is 2-rings. Emissions from transportation, local housing heating, factories burning fossil fuels and dust from Mainland south air mass are pollutant, their sources and climate conditions can affect concentration and composition of compound. There are highly significant correlation between 3-rings and 4-rings, which suggests that there are similar source strengths and transport mechanisms for these compounds. Correlation between concentration of azaarenes and ambient temperature is negative moderation, with concentration of atmospheric suspended particles is positive moderate correlation. Finally, we establish the relationship between the three parameters to predict concentration of azaarenes over atmosphere of subtropical regions.

Key words: azaarenes, atmospheric suspended particles, subtropical city, multiple regression analysis.