

Session III-A

ENVIRONMENTAL FATE OF POLYCYCLIC AROMATIC HYDROCARBONS IN SEOUL METROPOLITAN AREA AS ASSESSED BY CONCURRENT MULTI-MEDIA MEASUREMENT DATA

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This work attempted to provide an integrated picture of environmental fate of polycyclic aromatic hydrocarbons (PAHs) by assessing measured multi-media data. Concurrent sampling was conducted bimonthly for a year for the multi-media (air, soil, water, sediment, and leaves) at urban and suburban sites. The atmospheric levels of PAHs were correlated with those in other media except water. Both atmospheric level of PAHs and variation of particle size distribution appeared to significantly influence the deposition flux of PAHs to soil. The abundance of heavy PAHs (over 4 rings, HPAHs) was different among solid media. Low fractions of HPAHs in suspended solids (SS) were attributable to light PAH enriched atmospheric deposition and kinetically limited sorption of HPAHs onto algae particles. Chemical equilibrium was likely only among vapor, air particles, and leaves for some PAHs and between vapor and the dissolved phase for a limited period. Multi-media fate models adopting the equilibrium assumption between the dissolved phase and SS could produce significant prediction errors on PAH distribution among the dissolved phase, SS, and sediment. Simple descriptions of vertical SS settling and re-suspension of sediment particles appeared to be an additional source of prediction error in the river system.

Key word; multi-media, fate, transport, polycyclic aromatic hydrocarbons, assessment