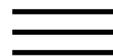


of gas and particle semi-volatile organic compounds: use of an oxidant denuder to minimize polycyclic aromatic hydrocarbons degradation during high-volume air.

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Collection of gas and particle semi-volatile organic compounds: use of an oxidant denuder to minimize polycyclic aromatic hydrocarbons degradation during high-volume air sampling

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Abstract

The decomposition of polycyclic aromatic hydrocarbons (PAHs) by ozone in gas and particles, under high-volume sampling, was studied by using in parallel a conventional device and a device protected with an oxidant denuder. Three different sampling regimes—short and long sampling under high-ozone concentration and long sampling under low-ozone concentration—were selected at three representative sampling sites—a boreal forest, an urban site and a background marine station. The results of our study suggest that most PAHs are susceptible to ozone degradation under high ozone concentrations (>50 ppbv) and long sampling times (>24 h). The highest

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concentration ratio of total PAHs between the two sampling systems was observed under collection conditions of long sampling and high ozone concentration, especially for the gaseous PAHs (up to 2.10). Conversely, long sampling time under low ozone concentration did not affect the concentration of collected PAHs in the gas or particle phase. The most reactive PAHs collected on filters and polyurethane foam were cyclopentane[*cd*]pyrene and pyrene, respectively. The use of an oxidant denuder did not affect the PAH gas-particle distribution study. The slopes m_r and the intercepts b_r of the regression between the $\log K_p$ and $\log P_L^0$ did not substantially deviate between the two sampling devices.



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Keywords

Polycyclic aromatic hydrocarbons degradation; High-volume sampling; Sampling artifacts ; Ozone denuder; Reactivity classification

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