

## **Emissions of semi-volatile organic compounds (phthalates, PAHs, PBDEs, PCBs) from the urban environment and waste treatment activities**

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### **Résumé:**

The permanent contamination of atmospheric compartment by many semi-volatile organic compounds (SVOC) arouses new societal questions about the extent of exposure of Humans to mixtures at low doses and health risks that result. Air emissions are regulated and controlled for classified industries, however all emissions in the gaseous state by passive volatilization are still poorly documented today.

The aim of our study was to characterize indirect emissions of some SVOC (phthalates, PAHs, PBDEs and PCBs,) on underground railway zone, on motorway and on waste treatment sites (sewage, treatment of hazardous waste, destruction of vehicles); and determine the climatic factors controlling their emissions. The objective is to evaluate the impact of these sites on the air quality and to better know the potential health risk resulting for local communities.

This study is based on the implementation of active and passive air samplers. To characterize the contamination of air by passive volatilization, air sampling campaigns are made in cold and warm period, and compared to reference sites (intra- or extra-urban). To evaluate the contribution of volatilization to eliminate SVOCs in wastewater treatment plant sites, sampling of wastewater, effluent and sludge were also carried.

Results show a ubiquity of all molecules, phthalates being the first contaminants from the ambient air, with concentrations ranging from 5 to more than 150 ng/m<sup>3</sup>. The concentrations of phthalates are higher in cold period in confined areas (135 ng/m<sup>3</sup>) and higher in open areas in warm period (158 ng/m<sup>3</sup>). This can be explained by the increased volatilization under gaseous state in high temperatures.

Comparison with reference sites shows that sites such as sewage systems, waste treatment sites and transport may be vectors of contamination of the surrounding air.

