PRIMEQUAL
Programme de recherche interorganisme pour une meilleure qualité de l'air

Etude de la composition isotopique moléculaire (DeltaC13) comme traceur de source qualitatif et quantitatif des Hydrocarbures Aromatiques Polycycliques particulaires dans l'atmosphère

Coordinateur : Hélène Budzinski - Laboratoire de Physico- et Toxico-Chimie des Systèmes Naturels, Université Bordeaux I

Among all the compounds released into the atmosphere, polycyclic aromatic hydrocarbons (PAHs) are important to consider as toxic compounds. The study of their source and fate in the atmosphere is therefore essential to estimate their impact on human health, but also to evaluate their involvement in atmospheric physico-chemical processes, and to contribute to a more accurate description of these processes.

In this context, the objective of this work was to develop an approach to identify and/or clarify the origin of PAHs detected in the atmospheric particulate phase and to relate their presence to their sources. This work was specifically designed to assess the potential of molecular isotopic approach (13C/12C ratio) in both qualitative and quantitative studies of PAH source apportionment in the atmosphere, in complement to purely molecular approaches.

The work was divided into three phases:

• Development of the molecular isotopic analysis methodology

• Study of the variation of the molecular isotopic composition during atmospheric oxidation and photodegradation processes

• Application of the method of molecular isotopic analysis to targeted sources of typical sites: traffic site (summer, transport), rural site (winter, wood burning), peri-urban site (winter and summer).