The TOMPs Network
Continuous data on UK air quality for 20 years

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The Toxic Organic Micro Pollutants (TOMPs) Network, which has operated since 1991, currently collects ambient air samples at six sites across England and Scotland (Fig. 1). Lancaster University has been operating this UK Department of Environment, Food and Rural Affairs (Defra) funded network from its inception, delivering long term ambient air trend data for a range of Persistent Organic Pollutants (POPs) at both urban and rural locations. Data from the network provides Defra with valuable information on emission/source controls and on the effectiveness of international chemicals regulations. It is also used to demonstrate UK compliance with its obligations under the 2001 Stockholm Convention on Persistent Organic Pollutants and the 1998 UN/ECE Convention Long-Range Transboundary Air Pollution (LRTAP) Protocol. Moreover, this research project provides detailed studies on atmospheric fate and behaviour processes that affect persistent chemicals.

The TOMPs sampling sites

Methodology

The TOMPs Network is funded by Defra and carries out high-volume air sampling at six sites: Auchencorth Moss, Auchentiber Moss, Lalehall Farm, High Muffles, and Auchentibber Moss.

The analytes currently quantified at Lancaster University for the TOMPs network are PCDDs/PCDFs (polychlorinated dibenzo-p-dioxins and dibenzofurans), PBDEs (polychlorinated biphenyls), PAHs (polycyclic aromatic hydrocarbons), and, since 2010, PBDEs (polybrominated diphenyl ethers). Atmospheric sampling is carried out using high-volume air samplers (Fig. 2) collecting biweekly samples at each site, which are bulked to provide samples for analysis.

The analytes are quantified using gas chromatography - mass spectrometry (GC-MS) (Fig. 3), for which a detailed GC-MS method was validated. All samples are analysed by high-resolution GC - high-resolution mass spectrometry (HRGC-HRMS) (Fig. 6).

What happens with the data?

All data are reported to Defra and published on the air quality data website http://uk-air.defra.gov.uk/.

They provide Defra with valuable information on emission/source controls and on the effectiveness of international chemicals regulations.

They are also used to demonstrate UK compliance with its obligations under the 2001 Stockholm Convention on Persistent Organic Pollutants and the 1998 UN/ECE LRTAP Protocol.

Moreover, long-term analysis of air pollutants at trace levels allows detailed studies on atmospheric fate and behaviour processes of persistent chemicals and the inevitability of their successful modelling.

Additionally, an archive is maintained, which can be used for analysing emerging chemicals, such as pesticides, alternative flame retardants, and further substances of interest as soon as they have been identified.

References:

The Target Chemicals

PCDD/Fs

Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs) are two classes of chemicals which are formed unintentionally during combustion (e.g., waste incineration, burning of coal, wood, etc.), the refining of petroleum, metal treatment processes, and during the synthesis of other chlorinated materials.

They have extensive applications. They were marketed as mixed PCBs under various trade names, depending on the country where they were produced. They have been widely used as additive flame retardants and as additive flame retardants, because they are simply blended with the product. They can be produced with different degrees of bromination of commercial PBDE formulation have been observed over the last two decades.

All these data are in good agreement with other European and worldwide long-term air monitoring programmes and emission estimates.

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References:

The Lancaster Environment Centre