



Contents lists available at ScienceDirect

Journal of Chromatography A

journal homepage: www.elsevier.com/locate/chroma

Review

Sorbent-based sampling methods for volatile and semi-volatile organic compounds in air. Part 2. Sorbent selection and other aspects of optimizing air monitoring methods

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ARTICLE INFO

Article history:

Available online 14 January 2010

Keywords:

Air monitoring
Sorbent tubes
Sorbent traps
VOCs
SVOCs
Volatile organic chemicals
Semi-volatile organic chemicals
Thermal desorption

ABSTRACT

Sorbent tubes/traps are widely used in combination with gas chromatographic (GC) analytical methods to monitor the vapour-phase fraction of organic compounds in air. Applications range from atmospheric research and ambient air monitoring (indoor and outdoor) to occupational hygiene (personal exposure assessment) and measuring chemical emission levels. Part 1 of this paper reviewed the main sorbent-based air sampling strategies including active (pumped) tube monitoring, diffusive (passive) sampling onto sorbent tubes/cartridges plus sorbent trapping/focusing of whole air samples that are either collected in containers (such as canisters or bags) or monitored online. Options for subsequent extraction and transfer to GC(MS) analysis were also summarised and the trend to thermal desorption (TD)-based methods and away from solvent extraction was explained. As a result of this trend, demand for TD-compatible sorbents (alternatives to traditional charcoal) is growing. Part 2 of this paper therefore continues with a summary of TD-compatible sorbents, their respective advantages and limitations and considerations for sorbent selection. Other analytical considerations for optimizing sorbent-based air monitoring methods are also discussed together with recent technical developments and sampling accessories which have extended the application range of sorbent trapping technology generally.

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