Box 11: Sorbents used for extraction of pollutants from air or water

Many of the methods discussed herein (e.g., solid phase extraction (SPE) and solid phase microextraction (SPME), extraction of air, passive sampling) use an organic sorbent to extract pollutants from water or air. Following this extraction, an organic solvent or high temperatures are used to elute the trapped analytes from the sorbent into a small volume of liquid or air that is then injected into a GC or HPLC. Development of the respective methods is often still a matter of trial-and-error and intuition (i.e. experience). A rationale decision for a certain type and amount of sorbent and the consecutive analyte elution would require knowledge of all relevant partition constants. Typically, these are not available. This unsatisfying situation would change if the interaction descriptors for the targeted compounds would be known (note: this information is desirable also because it allows estimating partition constants between environmental phases) and if the system descriptors for the air/sorbent and/or water/sorbent partitioning at various temperatures are known.

For convenience we have collected all available pp-LFER equations for the various sorbents and SPME fibers in an excel sheet (Sorbent_ppLFERs.xls).

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