



Enviro Solid Phase Extraction FAQs

What is Solid Phase Extraction?

Solid Phase Extraction, often referred to as SPE, is a sample preparation technique wherein analytes are concentrated by adsorption on a solid-phase substrate such as C18. This is followed by elution with a suitable solvent to yield a purified extract of the compounds of analytical interest. SPE is used in place of liquid-liquid extraction (LLE).

What types of phases are used in SPE?

Solid phases are available as small silica particles with various carbon functional groups such as C18 or C8 bonded to the silica surface. They may also be composed of polymeric gels such as styrene divinylbenzene (SDB). These solid-phases are in the form of micron sized particles.

How is SPE conducted?

A polypropylene cartridge, packed with the appropriate solid phase, is placed in a vacuum apparatus and a water sample containing the analyte(s) of interest is drawn through the cartridge. The solid phase in the cartridge captures the analyte(s). A small quantity of solvent is then used to release the analytes (elution) from the solid phase. The extraction solvent may then be evaluated by an appropriate analytical instrument such as GC or HPLC.

What types of analytes are extracted using SPE?

Almost any compound can be extracted using SPE and include hexane extractable compounds, herbicides, pesticide, PCB's, phthalates, dioxins, halothanes, chlorinated acids, and many others.

What are the benefits of using SPE?

There are many benefits to using solid-phase extraction:

- Reduced solvent usage saves money
- No phase separation problems (emulsions)
- Analytes are concentrated in a small solvent volume for increased analytical sensitivity
- Extracted solutions are free of interferences that could plug injectors
- Multiple extractions can be conducted simultaneously
- Extractions can be automated

Is SPE approved for use in the analysis of water pollutants in drinking water?

Yes. Many EPA methods for water analysis suggest the use of solid phase extraction. These methods include: 525.2, 515.2, 549, 550.1, 552.1 and many others. SPE is especially effective for use with EPA method 1664, hexane extractable materials.

What type of equipment is required?

For manual extraction of water samples, a vacuum manifold and glassware as shown in the photograph below are needed. SPE can also be conducted using automated equipment.



ENVIRO-CLEAN® 6-Station Vacuum Manifold shown with glass cartridge adaptors, universal cartridges and bottle holders.

Can the cartridge be reused?

No. The cartridges can capture several analytes in one extraction, but once analytes are eluted, the cartridge should be discarded.

How do I dispose of the SPE cartridge when the extraction is complete?

Used cartridges can be disposed of as specified by state and local regulations.

Where can I find more information and purchase SPE products?

Please contact us by any of the means listed below:

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