

Biotage[®] Horizon 5000

Automated Extraction System



Mature SPE for Routine Use

Compliant with most US EPA, ISO, EN and other regulatory methods around the world

Solid phase extraction (SPE) is a modern alternative to older techniques, such as liquid-liquid extraction and continuous liquid-liquid extraction.

Over the course of SPE history, different adsorbents and chemistries have become well characterized and understood. As a result, SPE is used routinely in a variety of industries to separate semivolatile and nonvolatile compounds from liquid matrices. Regulatory programs, such as US EPA, ISO and European EN, include this technology in methods for drinking water, groundwater, surface water, wastewater and whole water. It is also used in field sampling with both passive and dynamic samplers.

Benefits

- » Uses less solvent
 - » Creates less waste, controlling costs
 - » Reduces exposure to solvent, increasing safety
 - » Less chance of emulsions, providing more predictable and increased productivity
- Additionally, SPE is readily automated providing additional benefits.
- » Better reproducibility between technicians
 - » Handles all samples reliably
 - » Less attention required for good results

The Biotage® Horizon 5000 Automated Extraction System is a programmable, multipurpose SPE system, capable of processing aqueous samples directly from their original containers. Once the process is initiated, each Horizon 5000 module delivers all the necessary solvents to precondition the sorbent material within the SPE disk, passes the water sample through the disk and, after a preset air-dry time, extracts the sorbed analytes from the disk into a collection vessel using the required amounts of solvents.

Examples of the kinds of recoveries that can be obtained from spiked drinking water samples and spiked wastewater samples can be seen in Tables 1 and 2 for selected compounds.

| Compound | Spike (µg/L) | %Recovery | %RSD |
|---------------------------|--------------|-----------|------|
| 2,6-Dinitrotoluene | 5 | 101 | 2.85 |
| Acenaphthylene | 5 | 90.9 | 4.03 |
| Acenaphthene | 5 | 98.2 | 3.07 |
| Chloroneb | 5 | 104 | 2.94 |
| Tebuthiuron | 5 | 111 | 4.84 |

Table 1. Recoveries of Selected SVOCs from Six Drinking Water Sample Replicate Spikes. Extraction of a full Suite of Semivolatile Compounds from Drinking Water Using Automated Solid Phase Extraction and Atlantic C18 Disks, App Note AN114-HOR.

| Compound | Spike (µg/L) | %Recovery | %RSD |
|----------------------|--------------|-----------|------|
| Dieldrin | 5 | 92.0 | 1.12 |
| Endrin | 5 | 95.7 | 1.13 |
| 4,4'-DDD | 5 | 89.5 | 0.62 |
| Endosulfan II | 5 | 99.7 | 2.12 |
| 4,4'-DDT | 5 | 90.6 | 0.91 |

Table 2. Recoveries of Selected Pesticide Compounds from Wastewater Duplicate Samples. Analysis of Pesticides in Wastewater Samples Using SPE and GC-ECD, App Note AN115-HOR.



Workflow for the Biotage® Horizon 5000 Extractor, used with Atlantic® solid phase extraction disks, the DryVap® In-line drying and concentration system and the Biotage® SolventRecovery SVOC for a full sample preparation system.

Features

The Biotage® Horizon 5000 can also be applied to the extraction of Dioxins, 1, 4 dioxane, BPA, and other important environmental contaminants.

Sample Handling

- » Use the bottle of your choice for easier implementation
- » Rinses the bottle for best analyte recoveries
- » Accommodates 40–2000 mL samples for all sensitivity needs



Solvent Handling

- » Handles up to seven solvents for conditioning, washing and elution
- » Solvents can be positioned on the top of the instrument (similar to HPLC) to use space efficiently
- » A variety of solvents can be used, including dichloromethane, methanol and hexane
- » Collects organic and water waste separately for proper and economical disposal

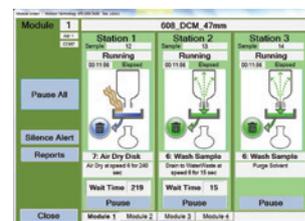
Productivity

- » Use up to four modules with one software instance allowing 1–12 samples to be run at once
- » Easily connected with a USB hub
- » System can be operated in a hood or on the bench with exhaust system
- » All valves and pumps are internal to the system, requiring less bench space



Simple & Flexible Software Control

- » Sample IDs can be entered through a bar-code reader
- » Methods can be modified or new methods developed
- » Transfer developed methods to other systems
- » Vacuum can be varied to adjust sample loading speed
- » Choice of report formats for Client delivery or transfer to LIMS
- » Optional password protection for limited access during routine operation
- » Resident methods for a quick start-up
- » Pause with message feature delivers additional instructions to user
- » Quick status review through icons
- » Alerts warn operator of an unsatisfactory situation



Samples with Particulates

- » The Fast Flow disk holder is designed to collect particulates before the SPE disk, maintaining flow and characterizing the whole sample
- » Includes method steps to clean the system between samples
- » Never lose a sample with detection systems to pause the run for user intervention when an unsatisfactory situation is detected
- » Run even complex samples without emulsions forming; the power of SPE at work!



Your Complete Partner for Effective Chemistry

Biotage is a worldwide supplier of instruments and accessories designed to facilitate the work of laboratory and process chemists. With our deep knowledge of the industry, academic contacts and in-house R&D teams, we can deliver the best solutions to your challenges. We take great pride in our flexibility and ability to meet our customer's individual needs. With strong foundations in both analytical, organic and process chemistry, we can offer the widest range of solutions available on the market.

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