



# EPA Method 608: Application of Automated SPE of Chlorinated Pesticides and PCBs in Wastewater Using Certified for Automation Atlantic C18 SPE Disks

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**D**ue to the persistent nature of chlorinated compounds in the environment there is still a critical need for monitoring these compounds. Method 608 is typically used for most work with chlorinated compounds. The updated EPA ruling earlier in 2007 to the wastewater and drinking water regulations provided increased flexibility to the selection of analytical methods, and alternative SPE Disks selection.

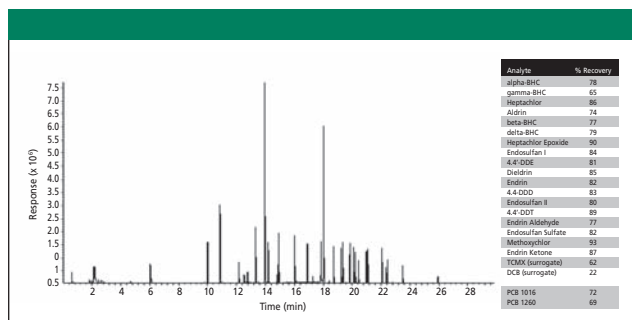
In this study 608ATP3M0222 is used as the approved SPE technique for wastewater extraction. This testing procedure uses methylene chloride as the primary extraction solvent, and the use of Horizon Technology Certified for Automation Atlantic C18 SPE Disks, followed by a hexane solvent exchange. The extracts were then analyzed by GC/ECD using a pressure pulse injection technique. Utilizing SPE provides many benefits over conventional LLE techniques.

## Instrumentation

- Horizon Technology SPE-DEX® 4790 Automated Extractor System.
- Horizon Technology Envision® Platform.
- Horizon Technology DryVap® Concentrator System with DryDisk™ Separation Membranes.
- Horizon Technology Certified for Automation Atlantic C18 SPE Disks.

## Method Summary

1. A 100 mL aliquot of sample is used.
2. Samples previously adjusted to pH 5–9 (UP water at pH 7 used for comparison study).
3. Spike surrogate compounds into samples.
4. Spike analyte standards into UP water for QC samples.
5. Start extraction method; collect extract (approx 20 mL)
6. Add the extract to the DryDisk™ holder and start the concentration process on the DryVap® system, then concentrate the extract to less than 1 mL.
7. Rinse the extraction container with 40 mL of hexane and process through the concentration procedure a second time to perform the solvent exchange.
8. Concentrate the extract to less than 1 mL and quantitatively bring the extract Volume to 1.0 mL (DryVap® concentration vessels are graduated to 0.5 mL and 1.0 mL).
9. Transfer a portion of the extract to a GC vial with insert.
10. Analyze by GC/ECD.



**Figure 1:** Chromatograms and percentage of EPA Method 608 analyte recovery rates obtained using the conditions described.

## Results

Laboratory Fortified Blanks (LFBs) were extracted as described in the method summary section above, and diagramed in Figure 1. Ultra-Pure (UP) water was spiked with organochlorine pesticide standard at a theoretical concentration of 1.00 ppb. The representative PCBs (1016 and 1260) were used for this comparison study. UP water was spiked with PCB standard at a theoretical concentration of 5.00 ppb. An LFB set was extracted using the Horizon Technology Atlantic C18 SPE disks, then analysis of the organochlorine pesticides and the representative PCBs was performed.

## Conclusion

This study demonstrated higher performance by the Atlantic C18 SPE Disks than SPE Disks currently used for this method. Pesticides were efficiently concentrated for GC/ECD analysis, with high percentage recovery rates.

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