Slash Extraction Time & Cost for Paraquat & Diquat Analysis with Resprep"-C8 SPE Disks

- **Faster Extraction Times**
- **Higher Recoveries**
- **Lower cast**
- **Superior to PTF membrane disks**

Paraquat and Diquat are contact herbicides that aid in the defoliation of unwanted vegetation. EPA Method 549.1 is used to determine Paraquat and Diquat contamination in drinking water sources and in finished drinking water.' The method recommends a solid phase extraction disk bonded with C8 material or a C8 adsorbent cartridge to extract these herbicides from water. The most common extraction disk used for this method is the Empore" C8 disk. This disk is a tightly woven PTFE membrane that is prone to slow extraction times and clogging from particulates. The use of Filter Aid 400 is recommended to alleviate some of these problems but adds both time and cost to the procedure. Restek's new glass fiber technology has produced a far superior extraction disk.

Faster Extractions

Restek's new Resprep"-C8 glass-fiber SPE disks offer faster flow rates that result in quicker extractions. Unlike the PTFE extraction disks that rely primarily on surface filtration, the glass fiber disk has a thicker, more open design that allows extractions to take place deep in the filter. This results in less clogging and faster flow rates, even for samples with high particulate matter. Because of the larger pore size, Resprep"-C8 disks run at extraction flow rates of 125-150ml per minute, which is twice the flow rate of PTFE disks. Figure 1 shows a comparison of the extraction times for several different sample types on both the PTFE and Resprep" C8 glass fiber disks. The samples represent a range of different particulate concentrations that are commonly encountered by analytical laboratories.

The glass fiber disk processed air samples much faster than the PTFE disk, but for samples containing particulates, the extraction rate was much more pronounced. For example, the Lake #2 sample extraction time with the disk was 80 minutes, compared to only 30 minutes with the glass fiber disk.

Higher Recovery of Extracted Compounds

Another benefit of the Resprep"-C8 disk is higher recoveries for the large, high molecular weight compounds found in herbicides. The open pore design of the glass fiber disk makes it easier to rinse these compounds off the disk once they have been trapped. Four replicates each of Paraquat and Diquat were analyzed in DI water under the strict guidelines established in Method 549.1. The results in Table I show excellent recovery and standard deviations of Paraquat and Diquat on the Resprep"-C8 disks that are well within the limits specified in the method. With the C8 extraction disk demonstrating method equivalency, laboratories will see improved efficiency and productivity with faster

Figure 1: Glass fiber disks extract samples with particulate matter more than 5 times faster than PTFE membrane disks.