



April 10, 2009

## **Office of Water Quality Water-Quality Information Note 2009.06**

### **Subject: Field Methods—Capsule-Filter Supply Plans and Revision of Use and Rinse Procedures for Whatman Lot No. S523 Capsule Filters**

The Office of Water Quality and the National Water Quality Laboratory (NWQL) have been exploring how to ensure adequate supplies and reduce costs of capsule filters, while continuing to meet the quality-assurance needs of USGS water-quality data-collection activities. This Water-Quality Information (WaQI) Note summarizes changes that are pending in the type of capsule filter that will be supplied from the laboratory's National Field Supply Service (One Stop), and provides information and updated instructions for the capsule filters that currently are available through One Stop.

#### **Future Supply of Capsule Filters**

As reflected in WaQI Notes 2009.03, 2009.02, and 2009.01, both the quality and the availability of the Whatman Supor<sup>®</sup> capsule filters have been problematical since before the start of FY 2009. Although the last lot of Whatman filters passed the NWQL quality-assurance screening, the cost is increasing to \$44.96 per filter unit with production of the filters being moved overseas. These factors led to an evaluation of alternative types and sources of capsule filters and filter media. After comprehensive testing, the laboratory's quality-assurance team has concluded that Versapor<sup>®</sup> medium is clean and can serve as an appropriate substitute for the Supor medium.

The Versapor filters also differ from the Supor filters as follows:

- (a) The capsule housing does not contain an air vent. However, use of the capsule-filter filtration procedures described in the National Field Manual (NFM) has been demonstrated to be effective in preventing or eliminating a vapor-lock situation.
- (b) The inflow and outflow nozzles are not barbed. However, reusable barbed adapters are available that fit the capsule nozzles.
- (c) The effective filtration area of the Versapor filter (at 700 cm<sup>2</sup>) exceeds that of the Supor filter (at 600 cm<sup>2</sup>) by 100 cm<sup>2</sup>. The 1-L volume of rinse water prescribed in the NFM to pre-clean and condition the filter remains the same.

After canvassing WSC water-quality specialists about the trade-off of cost for the convenience of the vent and barbed nozzle, the overwhelming response was in favor of lowering the cost of the filters. The cost to the field for Versapor filters is estimated at \$21.53 each plus \$0.89 per hose-barb adapter, or approximately fifty percent that of the Supor filters. A purchase order for a supply of Pall-manufactured Versapor capsule filters has been concluded and the vendor selected. These filters should become available to purchase through One Stop within a June-July timeframe. Field personnel should always check the certificate of analysis provided by NWQL for each lot of capsule filters that

they use in order to alert them to any discrepancies with their data-quality objectives ([http://www.nwql.cr.usgs.gov/USGS/QAS/NFSSQA/nfssqa\\_certificates.html](http://www.nwql.cr.usgs.gov/USGS/QAS/NFSSQA/nfssqa_certificates.html)).

### **Current Supply of Whatman Capsule Filters and Availability and Use of Whatman Lot S523 Capsule Filters**

The current lot of Whatman Supor capsule filters is being depleted rapidly and will soon run out, whereas availability of the new Pall Versapor filters is not expected until late June or early July. In the interim, **the Office of Water Quality has decided to allow distribution to the field of the NWQL's supply of previously rejected Whatman capsule filters, lot number S523, conditional upon explicit caveats for their use and purchase.** This lot of filters originally was rejected for distribution because it failed quality-assurance tests for nutrients (specifically, the Kjeldahl and persulfate nitrogen analysis) and for dissolved organic carbon (DOC). Additional testing indicates that by increasing the volume of rinse water as described below, this lot of filters can be used to collect samples for analysis of nutrients and DOC as well as for trace and major ions.

#### ***Caveats for the purchase of Whatman Lot S523 capsule filters:***

1. The number of Whatman Lot S523 filters to be provided to a given user will be restricted based on the user's past orders and usage of filters, to ensure that these filters are not stockpiled and are available to all who need them within the next 2 to 3 months.
2. In consideration of the additional preparation effort and water required to use these filters (described below), the filters will be made available to the user at only the cost of shipping.
3. As soon as the new lot of Pall Versapor filters becomes available for distribution, distribution of the Whatman Lot S523 filters will end. In addition, any filters that were backordered before the purchase of the S523 filters will be cancelled, with the purchaser notified of the cancellation. Therefore, a new order for the Pall Versapor filters will need to be placed if additional filters are needed.

#### ***Caveats for the use of Whatman Lot S523 capsule filters:***

The following updated capsule-filter rinse procedures are based on a review of NWQL quality-assurance test results for lot number S523 of Whatman capsule filters; these instructions supersede those provided in previous WaQI Notes on the topic (WaQI Notes 2009.03, 2009.02, and 2009.01).

1. **Field personnel must ensure that, before the environmental or blank sample is collected for either nutrients or DOC analysis, the capsule filter has been pre-rinsed with a total of 3 L of water.**
  - **For blank samples**, pre-rinse the filter with a minimum of 3 L of IBW or 2 L of DIW plus 1 L of IBW. If collecting a blank sample for DOC, however, it is recommended that the last liter of rinse water be PBW or VPBW before using either PBW or VPBW for the blank sample.<sup>1</sup>

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<sup>1</sup> L = liter; IBW = NWQL-obtained inorganic-grade blank water; DIW = deionized water of ASTM Type 1 quality; PBW = pesticide-grade blank water; VPBW = volatile- / pesticide-grade blank water.

- **For environmental samples**, pre-rinse the filter with 1 L to 2 L of IBW plus 1 L to 2 L of sample water to make up a minimum total of 3 L of water that passes through the filter before the sample is collected.
2. Field personnel need to take into consideration the actual types and numbers of filtered samples that will be collected for their specific field effort when planning for and calculating the volume of DIW, blank water, and sample water that will pass through the filter before collecting each sample. Although the NFM recommends the sequence for collecting samples shown in the table below, the data planned for collection often does not require the full suite of samples and may require only nutrients or nutrients and DOC.
- **Plan the field effort to ensure that at least 3 L of water have rinsed through the Whatman lot #S523 filter before collecting nutrient and DOC samples.**
  - Remember not to rinse DOC sample bottles and that only 25 mL of environmental water should pass through the filter before collecting the environmental sample for trace-element analysis.

Order of sample collection	Filtered Analyte(s)	Bottle designation
1	ICP trace elements and major cations	FA
2	Other trace elements, such as: Mercury Arsenic	FAM SAS
3	Nutrients	FCC or FCA
4	Anions and alkalinity	FU
5	Other filtered inorganics, such as: radiochemicals	FAR
6	Dissolved organic carbon	DOC
<i>From NFM, Chapters A4 and A5</i>		

If you have questions about this or related WaQI Notes, please contact [fwilde@usgs.gov](mailto:fwilde@usgs.gov). If you have questions related to the distribution of the Whatman lot # S523 filters, please contact Milton Marshall at [memarsha@usgs.gov](mailto:memarsha@usgs.gov) or Will Lanier at [wdlanier@usgs.gov](mailto:wdlanier@usgs.gov).

This WaQI Note supersedes instructions provided in WaQI Notes 2009-01, 2009-02, and 2009-03.

Signed,

The Office of Water Quality  
04/10/2009

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