



June 1, 2006

Office of Water Quality Water-Quality Information Note 2006.11

Subject: Field Methods— Discontinuance of “Universal” blank water

Beginning immediately, the Office of Water Quality (OWQ) is requiring that all field personnel discontinue the use of pesticide-grade blank water and VOC/pesticide-grade blank water (One-Stop stock numbers N1570, N1580, N1590, and N1600) as “Universal” blank water (UBW). Pesticide-grade and VOC/pesticide-grade water are no longer to be used as inorganic blank water.

This decision was made because of persistent contamination problems with the UBW that were recently brought to the attention of the OWQ and the National Water Quality Laboratory (NWQL). Analysis of blank data from many NAWQA Study Units and the California GAMA Program showed detections of several trace elements, primarily barium, strontium, and aluminum, in concentrations that appear to be increasing over time. The specific conductance and pH also increased. Recent discussions by NWQL personnel with representatives of EMD Chemicals, the manufacturer of the organic blank water, revealed that the amber bottles they use are made of recycled glass that is treated inside with fluorine gas to inhibit chemical reactions between the water and the glass. For UBW lot number 44328 (NWIS lot number 80501), the effectiveness of the fluorine gas treatment appears to have dissipated over a short time (1-2 months), resulting in the leaching of some trace elements from the glass. Because the bottles are made of recycled glass, the levels and types of contamination varied from bottle to bottle. We note that EMD Chemicals never assured the quality of the water for use as inorganic blank water; it is sold only as HPLC-grade water. The use of the water as “universal” blank water was initiated by the NAWQA Program in 2002 (Office of Water Quality Technical Memorandum 2002.14-- <http://water.usgs.gov/admin/memo/QW/qw02.14.html>). Any alternate measures that could be taken to minimize the interaction of the water with the bottle would result in a significant increase in the cost of the water; therefore, the decision has been made to stop using the UBW for inorganic applications.

Inorganic blank water (IBW) is available from the National Field Supply Service (NFSS) through One-Stop Shopping as stock numbers Q378FLD (4-L bottle -- \$12.09) and Q386FLD (case of 4 4-L bottles -- \$48.37). This water is to be used only for analyses of nutrients, major ions, and trace elements. Certificates of analysis for the IBW are available at <http://wwwnwql.cr.usgs.gov/USGS/IBW/ibw.html>. Pesticide-grade blank water (PBW) is available as stock numbers N1590 (4-L bottle -- \$31.41) and N1600 (case of 4 4-L bottles -- \$125.63) and VOC/pesticide-grade water (VPBW) is available as stock numbers N1580 (4-L bottle -- \$51.90) and N1570 (case of 4 4-L bottles -- \$182.13). The PBW is only to be used for analyses of pesticides, herbicides, phenols, BNAs, and organic carbon. The VPBW is nitrogen-purged PBW and is to be used for volatile organic compounds and can also be used for the PBW analytes. Certificates of analysis for these waters are available at <http://wwwnwql.cr.usgs.gov/USGS/OBW/obw.html>.

This change means that procedures for processing equipment and field blanks for both ground water and surface water equipment will need to be revised. The National Field Manual for the Collection of Water-Quality Data (NFM) will be updated to reflect the changes. When processing a blank for both inorganic and organic analyses, the inorganic blank must be collected first in order to avoid possible contamination from the PBW or VPBW. See NFM Chapter 4.3.1 for additional guidance (<http://water.usgs.gov/owq/FieldManual/chapter4/html/4.3.1.html>).

Inorganic blank data that has already been produced using “universal” blank water should be reviewed promptly. If the review shows detectable inorganic constituent concentrations, it is recommended that, if the UBW source is still available, a trace-element analysis be requested to help interpret the inorganic blank results.

Questions may be directed to kkfitz@usgs.gov.

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