

**TITLE:** Ground Water Sample Filtration

**DATE EFFECTIVE:** January 2003

**HISTORY:** Update of VA30007.09.011 - Revision was necessary to reflect changes in rule citations that became effective in August 2014.

**KEYWORDS:** Filtration, ground water sampling, low flow sampling, metals

**RULE/ AUTHORITY:** OAC 3745-300-07(E)(5), 3745-300-07(F)(3), 3745-300-07(F)(4), 3745-300-07(F)(6)(d), and 3745-300-07(F)(6)(d)(viii)(b)

**QUESTION:** When sampling ground water from monitoring wells, should ground water be field filtered when sampling for metals?

**ANSWER:** In accordance with OAC 3745-300-07(F)(6)(d)(viii)(a), sampling (e.g., field filtering) should proceed using procedures and methods that are demonstrated within the Phase II Property Assessment Report to be field-validated, documented and peer-reviewed, ensure representative samples, and capable of achieving the data quality needs. Alternatively, in accordance with OAC 3745-300-07(F)(6)(d)(viii)(b), the CP/Volunteer can use sampling methods and procedures provided in Ohio EPA's Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring (referred to as Ohio EPA's TGM). The following information outlines a decision framework for ground water filtering and filtration procedures in accordance with Ohio EPA's TGM.

Ohio EPA prefers that ground water samples not be filtered when sampling for metals. Ohio EPA will accept filtering only after the following preliminary measures have been accomplished.

- Monitoring wells are properly installed and designed. Refer to Ohio EPA's TGM for appropriate well construction methods;
- Monitoring wells are properly developed. Refer to Ohio EPA's TGM for appropriate well development methods;
- The ground water has been sampled using procedures that minimize ground water disturbance. Low-flow purging and sampling procedures are recommended. Refer to Ohio EPA's TGM for information on low-flow purging and sampling methods;
- Indicator parameters (temperature, pH, and conductivity) have been measured during purging prior to sampling. The indicator

parameters have stabilized before sampling; and

- Sample turbidity is greater than 10 NTUs and, based on professional judgment, the turbidity is likely to contain larger non-mobile particles, based on the geology of the saturated zone (e.g., clay-rich glacial deposits and high natural flow rates).

The goal of this TGC document is to summarize the procedures included in Ohio EPA's TGM for the collection of ground water samples for metals that are representative of ground water with respect to its mobile contaminant load. This can be accomplished by employing sampling techniques that minimize agitation of monitoring well water columns, understanding the hydrogeological environment sufficiently to make appropriate decisions regarding the nature of particle mobility, and employing sound filtration techniques when filtration is necessary (see below). Refer to Ohio EPA's TGM for further information on turbidity and issues associated with filtration.

#### **Recommended Filtering Procedure When Filtering is Necessary**

- Use an in-line filtering technique to minimize aeration of the ground water;
- Filter the sample using a polycarbonate or cellulose acetate filter;
- Pre-wash the filter by running a small amount of the ground water to be sampled through the in-line filter prior to collecting the water sample; and
- Use of a 5 micron filter is recommended to ensure that the mobile fraction of turbidity is sampled. While a 5 micron size filter is recommended, a filter with a different pore size may be used based upon site conditions.

#### **SUMMARY:**

The Volunteer/CP may filter ground water for metals if the measures outlined in this TGC document are followed prior to filtering. Ground water filtering should not occur if these recommendations are not fulfilled. When filtering, the Volunteer/CP should use the procedures outlined in this TGC document, or provide justification (refer to OAC 3745-300-07(F)(6)(d)(viii)(a)) if other procedures are used.

#### **OHIO EPA CONTACT:**

For further information regarding this issue, please contact the VAP Staff at (614) 644-2924 or DDAGW-VAP Support Staff at (614) 644-2752.