By J.R. Garbarino

Arsenic Field-Speciation Method Checklist and Worksheet
(Schedule 1729)

Site ID: _____*Date/Time:* _____
Site Name: _____ *Collector:* _____

_ Filter sample using 0.45-µm capsule filter; do not clean media with acid
_ SPE Cartridge Conditioning: 2 mL methanol and 10 mL deionized water – pH ____
or
_ SPE Cartridge Conditioning: 5 mL 1.7 M acetic acid and 10 mL deionized water – pH ____
_ Estimated anion milliequivalents in 10 ml sample:_____ meq

$C_a = [HCO_3^- \times 1.6(10^{-4})] + [Cl^- \times 2.8(10^{-4})] + [NO_3^- \times 7.1(10^{-4})] + [HPO_4^{-2} \times 2.1(10^{-4})] + [SO_4^{-2} \times 2.1(10^{-4})]$

where: C_a = anion concentration in milliequivalents in 10-mL sample
HCO_3^- = bicarbonate concentration in mg/L as HCO_3^-
Cl^- = chloride concentration in mg/L as Cl^-
NO_3^- = nitrate concentration in mg/L as N
HPO_4^{-2} = phosphate concentration in mg/L as HPO_4^{-2}
SO_4^{-2} = sulfate concentration in mg/L as SO_4^{-2}

_ Diluent (blank water) volume added to tube A to give <0.1 anion milliequivalents in 10-mL sample _____ mL
_ EDTA preservative added to tube A _____µL
(100 µL or the volume calculated below, whichever is greater)

(Note: if sample is diluted, account for dilution factor when using the following equation):

$V_{EDTA} = 4.0(10^6) \times ([Al \times 3.7(10^{-10})] + [Fe \times 1.8(10^{-10})] + [Mn \times 1.8\ (10^{-10})] + [Ca \times 2.5(10^{-7})] + [Mg \times 4.1(10^{-7})] + [Sr \times 1.1(10^{-10})])$

where: V_{EDTA} = microliters of 250-mM EDTA required per sample
Al = dissolved aluminum concentration, in µg/L as Al
Fe = dissolved iron concentration, in µg/L as Fe
Mn = dissolved manganese concentration, in µg/L as Mn
Ca = dissolved Ca concentration, in mg/L as Ca
Mg = dissolved magnesium concentration, in mg/L as Mg
Sr = dissolved strontium concentration, in µg/L as Sr

_ Sample volume added to tube A
(10.0±0.2 or 10.0 mL minus diluent volume)_____ mL
_ Spike Solution lot number_____**F**
Solution concentration_____ µg/L
Volume added_____ µL
_ Push all the sample through cartridge at 1 to 2 drops per second.
_ Collect eluate in tube B; cap tightly.
_ Write Station ID, date, and time on the cartridge, tube B, and shipping container.
_ Place tube B, cartridge (inside its shipping container), and copy of worksheet inside the kit bag. Label bag with station ID, date, and time.
_ Maintain at 4 °C. Ship chilled sample and a copy of the worksheet to the NWQL within 14 days of collection.

COMMENTS:

Figure 5-5. Worksheet for field-speciation method to determine arsenic species in water samples.

Arsenic Laboratory-Speciation Methods Checklist and Worksheet
(Schedule 1730, 1731, or 1732)

Site ID: _____Date/Time: _____
Site Name: _____ Collector: _____
Lab schedule requested: _____

Laboratory-speciation methods Schedules 1730, 1731, or 1732

_ Filter sample using 0.45-µm disposable capsule filter;
do not clean media with acid
_ EDTA preservative added to opaque bottle_____µL
(100 µL or the volume calculated below, whichever is greater)

$V_{EDTA} = 4.0(10^{-6}) \times ([Al \times 3.7(10^{-10})] + [Fe \times 1.8(10^{-10})] + [Mn \times 1.8\ (10^{-10})] + [Ca \times 2.5(10^{-7})] + [Mg \times 4.1(10^{-7})] + [Sr \times 1.1(10^{-10})])$

where: V_{EDTA} = microliters of 250-mM EDTA required per sample
Al = dissolved aluminum concentration, in µg/L as Al
Fe = dissolved iron concentration, in µg/L as Fe
Mn = dissolved manganese concentration, in µg/L as Mn
Ca = dissolved Ca concentration, in mg/L as Ca
Mg = dissolved magnesium concentration, in mg/L as Mg
Sr = dissolved strontium concentration, in µg/L as Sr

_ Spike Solution lot number_____**L or F**
(circle one)
Solution concentration_____ µg/L
Volume added _____ µL

Spiked or unspiked sample volume completely fill bottle, but do not overflow.

Note "8-mL" opaque bottle contains 11.5 ± 0.1 mL when completely full: 11.5 mL

_ Write Station ID, date, and time on bottle.
_ Maintain at 4 °C. Ship chilled sample and a copy of the worksheet to the NWQL within 14 days of collection.

COMMENTS:

Figure 5-6. Worksheet for laboratory-speciation methods to determine arsenic species in water samples.