

Interactive comment on “Method development for arsenic analysis by modification in spectrophotometric technique” by M. A. Tahir et al.

K. Banerjee (Referee)

kashi.banerjee@veoliawater.com

Received and published: 4 November 2008

Kashi Banerjee Ph.D.; P.E.; DEE
Senior Technical Director
Veolia Water Solution & Technologies
250 Airside Drive
Moon Township, Pa 15108

General Comments

This paper describes development of a reliable and cost effective analytical method that can potentially be used in the field to measure total arsenic to less than the regulatory limit of $10\mu\text{g/L}$. The sophisticated and high tech analytical instruments such as,

[Full Screen / Esc](#)

[Printer-friendly Version](#)

[Interactive Discussion](#)

[Discussion Paper](#)



Inductive Coupled Plasma – Mass Spectrometry (ICP MS), Inductive Coupled Plasma – Atomic Emission Spectroscopy (ICP – AES), etc. are capable to achieving very low level arsenic ($<1\mu\text{g/L}$). However, the authors concluded that these instruments are expensive and not so easily available. Keeping that objective in mind, the authors made an attempt to develop a low level arsenic measurement process by modification in spectrophotometric technique.

This is an interesting paper. At present, research is being conducted pertaining to measurement of arsenic in the field. If this research concept can be applied to the real world, this would be a real contribution of this work. From the perspective of global arsenic problem, this paper will potentially contribute to the Environmental and Sanitary Engineering Society. The authors have presented the information in a simple and common language such that any engineering practitioners, water suppliers, and operators can understand the method. However, there are some specific points of criticism.

Specific Comments

- The interferences due to phosphate, and chloride on arsenate were not discussed at all. Because of the similar chemistry between arsenate and phosphate, I would assume significant interference due to phosphate. Based on my past experience, I had faced this problem. I'll appreciate, if the authors clarify this important point
- Page 136 line 23 to 25: Please note that under strongly reduced condition (Negative ORP) arsenic exists as AsH_3 ; under moderately reduced environment ($E_h = 0.1\text{ V}$ to 0.55 V) arsenic exists as Arsenic (III); under oxidizing environment ($E_h = 0.60\text{ V}$ and up) arsenic exists as Arsenic (V) [**Ref. Arsenic Chemistry: E_h – pH Diagram; Ferguson and Garvis, 1972**]
- In Table 3, 10 out of the 15 data point obtained from the spectrometer analyses are slightly higher than those obtained from the AAS. Is there any scientific

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)

reasons?

In conclusion, I wish to complement the authors on a properly presented appropriated topic.

Interactive comment on Drink. Water Eng. Sci. Discuss., 1, 135, 2008.

DWESD

1, S74–S76, 2008

Interactive
Comment

[Full Screen / Esc](#)

[Printer-friendly Version](#)

[Interactive Discussion](#)

[Discussion Paper](#)

