

Quantifying Arsenic Metal in Drinking Water, Comments on: Highly Sensitive & Low Cost Colorimetric Method for Quantifying Arsenic Metal in Drinking Water of Malwa Punjab and Comparison With ICAP-AES by Sidhu et al.

Rathore DPS*

Atomic Minerals Directorate for Exploration and Research, Department of Atomic Energy, Jaipur, Rajasthan, India

*Corresponding author: Rathore DPS, Atomic Minerals Directorate for Exploration and Research, Department of Atomic Energy, Jaipur-302 033, Rajasthan, India, Tel: 01412793598; E-mail: dpr2002@yahoo.com

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Abstract

Comments on Highly Sensitive & Low Cost Colorimetric Method for Quantifying Arsenic Metal in Drinking Water of Malwa Punjab and Comparison with ICAP-AES, has been presented. There is no validation of this new developed method using recovery/standard addition method, optimization of variables pH, reagent concentration, λ max, nor any study of effect of foreign ions/tolerance limits and its comparison with EPA-standard method reported in the literature, instrument manufacturer/models, etc. Moreover, the procedure described in the manuscript is practically impossible. There is no update of literature survey on arsenic determination in water. The authors claims are self-contradictory, highly misleading and has no scientific basis.

Keywords: Arsenic; Colorimetric method; Drinking water; ICP-AES

Comments

I have read this paper [1] and all the cited references in this manuscript. I would like to share some of my observations on this manuscript which may be useful for future research and a meaningful publication.

The authors claim in the abstract of the paper quote "We have developed a highly sensitive & cost effective colorimetric method for quantifying Arsenic metal in drinking water of and the result of sample analysis has been compared with ICAP-AES method" unquote. On the contrary, authors have cited reference number '10' in their publication on page 106, in the Section -Determination of Arsenic. There is no update of literature survey on arsenic determination in water. There is no validation of this new developed method using recovery/standard addition method, optimization of variables (pH, reagent concentration, λ max, nor any study of effect of foreign ions/tolerance limits and its comparison with EPA-standard method reported in the literature [2], instrument manufacturer/models, etc. Moreover, the procedure described is practically impossible, as stated in their publication on page 106, in the Section -Determination of Arsenic, quote "This method involves the liberation of iodine by the reaction of arsenic with potassium iodate in acidic medium. The liberated iodine selectively oxidizes CCl_4 to form pink color which have maximum absorbance at 515 nm" unquote. This statement on the reaction 'liberated iodine selectively oxidizes CCl_4 to form pink color' is incorrect.

From Table 1, how the authors are able to determine arsenic concentration in water samples stated by them ranging from 0.001 to 0.073 mg/L. The authors claims are self-contradictory, highly misleading and has no scientific basis.

On page, 107, From section quote "Water sample detection by ICAP-AES: The details of the instrument model, manufacturer and

operating conditions are missing. From Table 1 and Figure 1, presenting comparative analysis of data, there are large differences among them [SI No. 4 Kartar Singh Wala, 0.073 ± 0.07 Arsenic ICAP-AES (mg/L) 0.044 ± 0.98 Arsenic UV-Vis. Spectro (mg/L), SI No. 2 Gehri Bhagi, 0.056 ± 0.06 Arsenic ICAP-AES (mg/L); 0.033 ± 0.89 Arsenic UV-Vis. Spectro (mg/L)]. Such comparison of analytical data has no reliability and validity. It is very clear that authors have not even read the cited reference number '10' in their publication about statistical analysis of results using paired t-test and F-test.

In another publication by the authors, Bhatt et al. [3], in their manuscript, on page 67, in the Section 2.2 biosorption studies, authors stated that quote "After the bio sorption studies, filtrate was analyzed for arsenic concentration by using UV visible spectrophotometer (Sidhu, 2014)" unquote and cited the reference number 11 in their manuscript [1]. The methodology used for arsenic determination is incorrect. The non-reproducibility of measurement results is the basis to reject rest of the conclusions and discussions in the manuscript.

In my opinion, this cited manuscript [3] also is lacking in basic fundamental studies related with sorption properties, such as, characterization of adsorbent, particle size and surface area, effect of pH, equilibrium isotherm models (KD values), biosorption kinetics, thermodynamic parameters for adsorption, adsorption of arsenic in the presence of different cations namely, sodium, potassium, cobalt, zinc, chromium, copper, nickel, barium, strontium, lead, cadmium, manganese, thorium, vanadium; adsorption in presence of different anions, FTIR and SEM analysis of loaded and unloaded bio sorbent, etc.

On searching the home page of this journal: International Journal of Pharmaceutical Research & Drug Development, on 'google.com', the following observations are here: The journal website for: International Journal of Pharmaceutical Research & Drug Development. NOTICE: This domain name expired on 14-02-2015 and is pending renewal or deletion. Welcome to: ijprdd.org. This Web page is parked for FREE,

courtesy of GoDaddy.com. The first volume, first issue of this journal was published in May 2014. The validity of this new journal is doubtful. The publisher details & ISSN number of the journal is missing. Authors are hereby requested to kindly share the link of the website of the journal: International Journal of Pharmaceutical Research & Drug Development.

The reliability/quality of measurement results depend strictly on adherence to each step of measurements of the method and not simply analyzed by any person or lab or any technique [4].

The practices of organizing manuscript, such as, citation of irrelevant publications, citation of references without verifying original publications, copying and pasting of irrelevant paragraphs, incorrect measurement procedure and non-reproducible results, lack of basic knowledge on arsenic measurement, etc., constitutes research misconduct including plagiarism, citation manipulation, research integrity and is a gross violation of publication ethics. Recent article [5] titled "Lessons from the recent publication scams" published in Current Science, Vol.106, No.5, 10 March 2014, p.649, is worth to be quoted here.

Conclusion

In my opinion, it is important to teach ethics to researchers, and to keep a check on their work through individual institutions and

departments for the growth of science. Such accountability can track individual scientific contributions, which would eventually, help one to stop or minimize scientific misconducts.

References

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