



# Mining and Metallurgical Society of America

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October 31, 2001

W-99-16-V1 Arsenic Comment Clerk  
Water Docket [MC-4101]  
U.S. EPA  
1200 Pennsylvania Avenue, NW  
Washington, D.C. 20460

**VIA E-MAIL & US MAIL**  
**[ow-arsenic-docket@epa.gov](mailto:ow-arsenic-docket@epa.gov)**

**Re: Comments on Arsenic Standard – 40CFR141 & 142**

Ladies and Gentlemen:

The *Mining and Metallurgical Society of America* (herein “MMSA”) is concerned that the Environmental Protection Agency (herein “EPA”) may establish an arsenic standard for public drinking water sources that cannot be enforced because of technical aspects related to the rule. We believe the rule you propose to establish – that of establishing a 3 or 5 microgram per liter maximum arsenic content – may not be enforceable because of the lack of a technical ability to accurately measure such arsenic levels in drinking water on a commercial basis.

Current commercial laboratory practice is capable of measuring arsenic levels in water, in a reproducible manner, to about 10 micrograms per liter. Accurate measurement below that level is not attainable in commercial practice – as opposed to research practice – in a statistically reproducible manner. Variation in the results of analysis on a given sample at or below 10 microgram per liter is excessively high.

A summary of analytical limitations are shown in Table 1 below using American Society for Testing and Materials (ASTM) procedures for analysis of arsenic in drinking water. The testing methods identified exemplify “Best Available Technology” in commercial analytical practice today.

The indicated precision limitations in the table are for the commonly used standard analytical methods for the analysis of drinking water that were established by cooperative inter-laboratory testing through the voluntary consensus procedures of the American Society for Testing and Materials (ASTM). In the “inductively coupled plasma emission” (ICP) method total precision was measured on a surface water sample and in the “inductively coupled plasma mass spectrometry” (ICPMS) method precision was measured on a drinking water sample

Table 1. Summary of Analytical Method Limitations for Arsenic

Method	ASTM Standard	As, ppb	Precision	Reproducibility	Method Scope Limit
ICP	D1976	10	12	32	65
ICPMS	D5373	10	3	8	15

The reproducibility of the method shows the maximum concentration difference that is allowable at the 10-ppb concentration between two laboratories measuring the same sample using the method at 95% confidence. The lower scope limit of the method is normally set to twice the reproducibility for trace concentrations (ASTM Practice E1601) and in this case both methods would not be quantitative at the proposed 10 micrograms per liter (ppb) concentration.

In layman's language, using today's "Best Available Technology" the results of an analysis by two separate laboratories of a water sample having 10 parts per billion (10 ppb) arsenic could result in a variation between laboratories of  $\pm 65$  ppb arsenic using the inductively coupled plasma emission (ICP) method or  $\pm 15$  ppb using the inductively coupled plasma mass spectrometry (ICPMS) method of analysis. Individual laboratory precision limits could vary between  $\pm 12$  ppb and  $\pm 3$  ppb respectively and laboratory reproducibility from  $\pm 32$  and  $\pm 8$  ppb respectively. All of these values represent an excessive degree of variability for establishing a maximum 10 ppb arsenic limit - much less a maximum 3 ppb or 5 ppb arsenic limit.

Any standard established should be capable of verifiable, reproducible measurement within acceptable limits by commercial laboratory methods that currently exist. Establishment of a standard that, from the onset, would be subject to such excessive analytical variation using "Best Available Technology" will guarantee legitimate challenges to the EPA by the entity being held in violation. The establishment of such limits is not acceptable regulatory policy.

The *MMSA* strongly urges the EPA not to establish an enforceable standard, or maximum limit for arsenic and related metals in public drinking water, which can not be accurately and efficiently monitored by the use of existing analytical methods commonly in commercial use.

The *Mining and Metallurgical Society of America* is a unique organization formed in 1908 and dedicated to heightening public awareness and understanding of the minerals industry. Our membership includes executives, leaders, and decision-makers in engineering, law, education, and scientific disciplines related to mining and mineral processing needs in the United States. If our expert members can be of service to the U.S. EPA in providing guidance and testimony throughout this process, please do not hesitate to contact us and we will be pleased to arrange for the needed assistance.

Respectfully submitted,

/ss/

Paul C. Jones, Chair – Governmental Affairs Committee  
*The Mining and Metallurgical Society of America*

/ss/

K. Marc LeVier, President  
*The Mining and Metallurgical Society of America*

cc: Members of Congress  
EPA Administrator - Christie Todd Whitman