

79-14 (2004)	Arsenic and compounds, except arsine (as As)
CAS N°: 7440-38-2	EINECS N°: 231-148-6
EC-LV (8 h): - Lowest European LV (8 h): 0,01 mg/m ³ Highest European LV (8 h): 0,20 mg/m ³	EC-STLV: - Lowest European STLV: 0,4 mg/m ³ Highest European STLV: 0,4 mg/m ³

SUMMARY OF THE METHOD

Language: English	Reference: Inorganic arsenic in workplace atmospheres: OSHA, ID-105, Sampling and Analytical Methods, Salt Lake City (1991).
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Summary: Air is drawn through a MCE filter and a back-up pad mounted in a filter cassette. The pad is impregnated with Na₂CO₃ if volatile arsenic species are suspected. The arsenic compounds and the filters are dissolved with HNO₃ and stabilised with nickel. The solution is analysed by ETAAS.

SAMPLING

Sampler type	37 mm filter cassette
Sampling substrate	MCE filter and Na ₂ CO ₃ impregnated back-up pad
Recommended flow rate	2 l/min
Recommended sampling time	4 – 8 h
Recommended volume	960 l

TRANSPORT AND STORAGE

Description/conditions of transport and storage incl. specific issues	The filter is transported and stored in the cassette, sealed with plastic end caps.
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ANALYSIS

Sample preparation	The MCE filter and sodium carbonate-impregnated back-up pad are digested with HNO ₃ (3 – 5 ml) in separate 125 ml beakers, stabilised with 1000 µg/ml nickel solution (2 – 5 ml) and heated on a hot plate until the solution volume is reduced to 0,5 – 1 ml. A few drops of HCl are then added and the sample solutions are quantitatively transferred to volumetric flasks (10 ml or 25 ml) and made to volume with deionised water.
Analytical technique	Analysis by ETAAS.

METHOD EVALUATION DATA

Range studied	Not applicable – see limit of quantification
Sampling bias	Overall uncertainty calculation: < 5 % (according to EN 13890) Expanded uncertainty calculation: included in sampling precision
Analytical bias	+ 0,4 %
Method bias	-
Sampling precision	Overall uncertainty calculation: < 5,3 % (according to EN 13890) Expanded uncertainty calculation: 9,0 % (incorporates bias uncertainty)
Analytical precision	10 %
Method precision	-
Limit of quantification	0,25 µg

METHOD EVALUATION DATA (continued)	
Overall uncertainty (EN 482)	28 – 32 %
Expanded uncertainty (prEN 482)	28 – 31 %
INFORMATION IN RELATION TO THE VALIDATION	
Is the sample dissolution procedure described widely applicable?	yes
Does the sample dissolution method include wall deposits, where applicable?	no
Was a test gas atmosphere used, where applicable?	not applicable
How was the recovery determined?	From a set of spiked filters.
Was the sampler capacity or breakthrough volume determined?	no
Was temperature and RH considered, where appropriate?	not applicable
EVALUATION	
Rating category	B
Rationale for rating	<p>Up to date methodology, detailed method description, overall uncertainty requirements met, expanded uncertainty requirements met.</p> <p>The overall uncertainty data above have been determined from the analytical bias and precision data given in the method using the calculation method and sampling bias and precision estimates given in EN 13890. The expanded uncertainty data are calculated using the method described in the EU mandated report <i>Analytical methods for chemical agents</i>.</p> <p>The method specifies the use of a filter cassette that is not an inhalable sampler. The overall and expanded uncertainty data above has been calculated assuming that an inhalable sampler will be used for sampling rather than a filter cassette.</p>
Observations	Calculations done for a flow rate of 2 l/min, and not for 0,5 l/min as specified for the case when arsine is present (use of a sampling train including a charcoal tube).
Similar methods	MétoPol Fiche 023, BIA 6195-2, NIOSH 7901