



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
 through safety and health research



Immediately Dangerous to Life or Health Concentrations (IDLH)

May 1994

CAS number 7440-38-2 (Metal)

NIOSH REL 0.002 mg As/m³ 15-minute CEILING; NIOSH considers inorganic arsenic compounds to be potential occupational carcinogens as defined by the OSHA carcinogen policy [29 CFR 1990].

Current OSHA PEL: 0.010 mg As/m³ TWA

1989 OSHA PEL: Same as current PEL

1993-1994 ACGIH TLV: 0.01 mg As/m³ TWA, A1

Description of substance: Varies

Original (SCP) IDLH: 100 mg As/m³

Basis for original (SCP) IDLH: The chosen IDLH is based on the cat 1-hour LCLO of 100 mg/m³ for arsenic trichloride [Flury 1921 cited by NIOSH 1976].

Short-term exposure guidelines: None developed

ACUTE TOXICITY DATA

Lethal concentration data:

Species	Reference	LC50	LCLO	0.5-hr Time	Adjusted LC (CF)	Derived Value
AsCl ₃						
Cat	Flury 1921	---	100 mg/m ³	1 hr	52 mg As/m ³ (1.25)	5.2 mg As/m ³
Cat	Spector 1955	---	200 mg/m ³	20 min	79 mg As/m ³ (0.96)	7.9 mg As/m ³
Mouse	Spector 1955	---	338 ppm	10 min	726 mg As/m ³ (0.69) 73	mg As/m ³

Lethal dose data:

Species	Reference	Route	LD50(mg/kg)	LDLo(mg/kg)	Adjusted LD	Derived Value
Rat	Davydova et al. 1987	oral	763	---	5,341 mg As/m ³	534 mg As/m ³
Mouse	Davydova et al. 1987	oral	145	---	1,015 mg As/m ³	102 mg As/m ³
Ca³(AsO₄)²						
Rat	Lehman 1951	oral	20	---	53 mg As/m ³	5.3 mg As/m ³
Mouse	MacEwen and Vernot 1972	oral	794	---	2,090 mg As/m ³	209 mg As/m ³
Rabbit	Muehlberger 1930	oral	50	---	132 mg As/m ³	13 mg As/m ³
Dog	Perkow 1971/1976	oral	38	---	100 mg As/m ³	10 mg As/m ³
Pb³(AsO₄)²						
Rabbit	Muehlberger 1930	oral	75	---	88 mg As/m ³	8.8 mg As/m ³

Human data: None relevant for use in determining the revised IDLH.

Revised IDLH: 5 mg As/m³

Basis for revised IDLH: The revised IDLH for inorganic arsenic compounds is 5 mg As/m³ based on acute inhalation toxicity data in animals [Flury 1921; Spector 1955]. This may be a conservative value due to the lack of relevant acute toxicity data for workers. [Note: NIOSH recommends as part of its carcinogen policy that the “most protective” respirators be worn for inorganic arsenic compounds at concentrations above 0.002 mg As/m³. OSHA currently requires in 29 CFR 1919.1018 that workers be provided with and required to wear and use the “most protective” respirators in concentrations exceeding 20 mg As/m³ (i.e., 2,000 x the PEL).]

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