

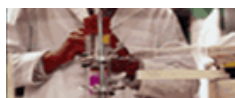


UNITED STATES DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION

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<< [Chemical Sampling Information \(CSI\)](#)

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Chemical Sampling Information Copper fume (as Cu)

General Description

Synonyms: CuO: Black copper oxide fume, Copper monoxide fume, Copper(II) oxide fume, Cupric oxide fume

OSHA IMIS Code Number: 0731

Chemical Abstracts Service (CAS) Registry Numbers: 7440-50-8 (Copper); 1317-38-0 (Copper oxide)

NIOSH, Registry of Toxic Effects (RTECS) Identification Number: [GL7900000](#) (CuO)

NIOSH Pocket Guide to Chemical Hazards, [Copper fume \(as Cu\)](#): chemical description, physical properties, potentially hazardous incompatibilities, and more

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By *CAS Number*

Exposure Limits

OSHA Permissible Exposure Limit (PEL) for General Industry: [29 CFR 1910.1000 Z-1 Table](#) -- 0.1 mg/m³ TWA

OSHA Permissible Exposure Limit (PEL) for Construction Industry: [29 CFR 1926.55 Appendix A](#) -- 0.1 mg/m³ TWA

OSHA Permissible Exposure Limit (PEL) for Maritime: [29 CFR 1915.1000 Table Z-Shipyards](#) -- 0.1 mg/m³ TWA

American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV): 0.2 mg/m³ TWA

National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL): 0.1 mg/m³ TWA

Health Factors

Environmental Protection Agency (EPA) carcinogenic classification: [Group D, Not Classified](#)

NIOSH Immediately Dangerous To Life or Health Concentration (IDLH): [100 mg Cu/m³](#)

Potential symptoms: Metal fume fever; chills, muscle aches; nausea; fever; dry throat, coughing; weakness, lassitude; eye, upper respiratory tract irritation; metallic or sweet taste; discolored skin, hair; increased risk of Wilson's disease

Health Effects: Irritation-Eye, Nose, Throat, Skin---Moderate (HE15) Respiratory Effects---Acute lung damage/edema (HE11)

Affected organs: Respiratory system, skin, eyes

Literature Basis:

- International Chemical Safety Cards (WHO/IPCS/ILO): [Copper](#)

- U.S. EPA Integrated Risk Information System: [Copper \(CASRN 7440-50-8\)](#)

Monitoring Methods used by OSHA

Laboratory Sampling/Analytical Method:

- **sampling media:** Mixed Cellulose Ester Filter (MCEF) 0.8 microns
maximum volume: 960 Liters **minimum volume:** 480 Liters **maximum flow rate:** 2.0 L/min
current analytical method: Atomic Absorption Spectroscopy; AAS
method reference: OSHA Analytical Method ([OSHA ID-121](#))
method classification: Fully Validated
alternate analytical method: Inductively Coupled Argon Plasma; ICP-AES/MS, AAS
method reference: OSHA Analytical Method ([OSHA ID-125G](#), [OSHA ID-206](#), [OSHA ID-105](#), [OSHA 1006](#))
method classification: Fully Validated
note: If the filter is not overloaded, samples may be collected up to an 8-hour period. Analytical method does not distinguish between dust and fume.

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