

Table G-2

Material	8-hour time-weighted average	Acceptable ceiling concentration	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift	
			Concentration	Maximum duration
Asbestos (237.1-1971)	10 p.p.m.	25 p.p.m.	50 p.p.m.	10 minutes
Beryllium and beryllium compounds (237.2-1971)	2 p.p.m.	5 p.p.m.	25 p.p.m.	30 minutes
Cadmium (237.3-1971)	0.1 mg./M ¹	1 mg./M ¹	2 mg./M ¹	15 minutes
Cadmium dust (237.3-1971)	0.1 mg./M ¹	0.6 mg./M ¹	1.2 mg./M ¹	15 minutes
Cadmium fume (237.3-1971)	0.1 mg./M ¹	0.6 mg./M ¹	1.2 mg./M ¹	15 minutes
Carbon disulfide (237.3-1971)	20 p.p.m.	30 p.p.m.	100 p.p.m.	Do.
Carbon tetrachloride (237.3-1971)	10 p.p.m.	25 p.p.m.	200 p.p.m.	15 minutes in any 4 hours
Ethylene dibromide (237.3-1971)	20 p.p.m.	30 p.p.m.	60 p.p.m.	15 minutes in any 4 hours
Ethylene dichloride (237.3-1971)	20 p.p.m.	100 p.p.m.	200 p.p.m.	15 minutes in any 4 hours
Formaldehyde (237.3-1971)	3 p.p.m.	6 p.p.m.	10 p.p.m.	30 minutes
Hydrogen fluoride (237.3-1971)	Do.	Do.	Do.	Do.
Lead and its inorganic compounds (237.3-1971)	0.1 mg./M ¹	0.5 mg./M ¹	1 mg./M ¹	15 minutes
Methyl chloride (237.3-1971)	100 p.p.m.	300 p.p.m.	800 p.p.m.	15 minutes in any 4 hours
Methylene chloride (237.3-1971)	400 p.p.m.	1,000 p.p.m.	2,000 p.p.m.	15 minutes in any 4 hours
Organic (alkyl) mercury (237.3-1971)	0.01 mg./M ¹	0.04 mg./M ¹	0.08 mg./M ¹	15 minutes in any 4 hours
Organic (aryl) mercury (237.3-1971)	100 p.p.m.	300 p.p.m.	600 p.p.m.	15 minutes in any 4 hours
Trichloroethylene (237.3-1971)	Do.	Do.	300 p.p.m.	15 minutes in any 4 hours
Tetrachloroethylene (237.3-1971)	Do.	Do.	Do.	15 minutes in any 4 hours
Toluene (237.3-1971)	300 p.p.m.	800 p.p.m.	600 p.p.m.	10 minutes
Hydrogen sulfide (237.3-1971)	20 p.p.m.	20 p.p.m.	50 p.p.m.	15 minutes once only if no other measurable exposure occurs
Mercury (237.3-1971)	Do.	1 mg./M ¹	Do.	Do.
Chromic acid and chromates (237.3-1971)	Do.	Do.	Do.	Do.

Table G-3—MINERAL DUSTS

Substance	Mppd ¹	Mg/M ¹
Silica:		
Crystalline:		
Quartz (respirable)	250 ¹	10mg/M ¹ =
	%SiO ₂ +3	%SiO ₂ +3
Quartz (total dust)		30mg/M ¹
		%SiO ₂ +3
Crystalline: Use 1/2 the value calculated from the count or mass formulae for quartz		
Talc: Use 1/2 the value calculated from the formulae for quartz		
Amorphous, including natural diatomaceous earth	20	10mg/M ¹
		%SiO ₂
Fibers less than 5 μm long:		
Wool	20	
Rayon	20	
Talc (non-asbestos form)	20	
Talc (fibrous): Use asbestos limit		
Tremolite (see talc, fibrous)		
Portland cement	80	
Onion (natural)	15	
Coal dust (respirable fraction less than 5 μm)		3.4mg/M ¹
		10mg/M ¹
For more than 5 μm SiO ₂		%SiO ₂ +3
Iron or Manganese Dust:		
Respirable fraction	15	4mg/M ¹
Total dust	25	10mg/M ¹

Notes: Conversion factors—
 1. 100,000,000 particles per cubic meter = 1 million particles per cubic foot of air, based on impinger samples counted by light-field techniques.
 2. The percentage of crystalline silica in the formulae is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable.
 3. As determined by the gravimetric filter method at 100°C after acid digestion.
 4. Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a sieve with the following characteristics:
 5. Containing < 1% quartz; if > 1% quartz, use quartz limit.

(c) Methods of compliance—(1) Engineering methods. (i) Engineering controls. Engineering controls, such as, but not limited to, isolation, enclosure, exhaust ventilation, and dust collection, shall be used to meet the exposure limits prescribed in paragraph (b) of this section.

(ii) Local exhaust ventilation. (a) Local exhaust ventilation and dust collection systems shall be designed, constructed, installed, and maintained in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2-1971, which is incorporated by reference herein.

(b) See 1910.6 concerning the availability of ANSI Z9.2-1971, and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in 1910.100.

(iii) Particular tools. All hand-operated and power-operated tools which may produce or release asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, such as, but not limited to, saws, scrapers, abrasive wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with subdivision (ii) of this subparagraph.

(2) Work practices—(i) Wet methods. Insofar as practicable, asbestos shall be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state sufficient to prevent the emission of airborne fibers in excess of the exposure limits prescribed in paragraph (b) of this section, unless the usefulness of the product would be diminished thereby.

(ii) Particular products and operations. No asbestos cement, mortar, coating, grout, plaster, or similar material containing asbestos shall be removed from bags, cartons, or other containers in which they are shipped, without being either wetted, or enclosed, or ventilated so as to prevent effectively the release of airborne asbestos fibers in excess of the limits prescribed in paragraph (b) of this section.

(iii) Spraying, demolition, or removal. Employees engaged in the spraying of asbestos, the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos, and in the removal or demolition of asbestos insulation or coverings shall be provided with respiratory equipment in accordance with paragraph (a)(2)(iii) of this section and with special clothing in accordance with paragraph (d)(3) of this section.

(d) Personal protective equipment—(1) Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the use of respirators or shift rotation of employees, except:

(i) During the time period necessary to install the engineering controls and to institute the work practices required by paragraph (c) of this section;

(ii) In work situations in which the methods prescribed in paragraph (c) of

(1) Definitions. For the purpose of this section, (1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(3) Permissible exposure to airborne concentrations of asbestos fibers—(1) Standard effective July 7, 1972. The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed five fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(2) Standard effective July 1, 1976. The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(3) Ceiling concentration. No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.