

NORTH CAROLINA DEPARTMENT OF LABOR
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
RALEIGH, NORTH CAROLINA

Field Information System
NCAC, Chapter 7, Subchapter 7F

CFR Revision 117B
CFR II

Air Contaminants/Permissible Exposure Limits
Subpart Z, 29 CFR 1910.1000, General Industry
OSHNC Specific Standard

DISCUSSION:

Federal OSHA published Table Z-1-A containing new air contaminants under 29 CFR 1910.1000 in January of 1989. In 1992, that revised standard was struck down by the Eleventh Circuit Court of Appeals pursuant to a lawsuit filed by the AFL-CIO [See CFR Revision 117]. Federal OSHA elected not to file a petition for review and ceased enforcing the 1989 PELs in March of 1993. Effective June 30, 1993, federal OSHA again began enforcing the 1971 levels that were in effect prior to January of 1989 and which are now found in Table Z-1 of 1910.1000.

In 1994, OSHNC went through public rulemaking to adopt 45 of the more protective PELs from the 1989 Table Z-1-A. The re-adopted permissible exposure limits included 33 substances under Respiratory Effects and 12 substances under Avoidance of Cancer. These PELs went into effect on May 1, 1994.

On May 18, 1995, OSHNC held a public hearing to obtain information and suggestions from the public regarding consideration of re-adoption of the remaining PELs from the 1989 Table Z-1-A. These substances were classified under the topics of Avoidance of Neuropathy, Avoidance of Narcosis, Cardiovascular Effects, Systemic Toxicity and Metabolic Effects. A second public hearing was held December 12, 1995, after the majority of the remaining PELs were published and proposed for readoption in the November 15, 1995 *North Carolina Register* (Vol. 10 Issue 16A).

Rulemaking is now complete and 643 permissible exposure limits from the 1989 Table Z-1-A will become effective on April 1, 1996. The PELs previously listed in 13 NCAC 07F.0101(a)(4) [see *Respiratory Effects and Avoidance of Cancer*] have been incorporated into the complete alphabetical list of PELs. There is also important explanatory information prior to the actual table, and explanatory footnotes at the beginning of the new **Table Z-1 Limits for Air Contaminants**.

ACTION:

This final rule at 29 CFR 1910.1000 was adopted in North Carolina by the Commissioner of Labor with an effective date of **April 1, 1996**. This is a **state-specific standard**. A copy of the regulatory text from the *NC Administrative Code* is attached.

Please file this NC CFR Revision in CFR II of your Field Information System.

Date: March 14, 1996

Charles N. Jeffress, Director
Division of Occupational Safety and Health
(Signed on original)

Filing Date: October 20, 1995
NC Effective Date: April 1, 1996
Number: 13 NCAC 7F.0101(a)(4)

SUBCHAPTER 7F - STANDARDS

SECTION .0100 - GENERAL INDUSTRY STANDARDS

.0101 GENERAL INDUSTRY

(a) The provisions for the Occupational Safety and Health Standards for General Industry, Title 29 of the Code of Federal Regulations Part 1910, are incorporated by reference except as follows:

(1) Subpart H - Hazardous Materials, 29 CFR 1910.120, Hazardous waste operations and emergency response, §1910.120(q)(6) is amended by adding a new level of training:

(vi) First responder operations plus level. First responders at operations plus level are individuals who respond to hydrocarbon fuel tank leaks where the leaking tanks contain a hydrocarbon fuel which is used to propel the vehicle on which the tank is located. Only those vehicles designed for highway use or those used for industrial, agricultural or construction purposes are covered. First responders at the operations plus level shall have received at least training equal to first responder operations level and, in addition, shall receive training or have had sufficient experience to objectively demonstrate competency in the following areas and the employer shall so certify: (A) Know how to select and use proper specialized personal protective equipment provided to the first responder at operations plus level;

(B) Understand basic hazardous materials terms as they pertain to hydrocarbon fuels;

(C) Understand hazard and risk assessment techniques that pertain to gasoline, diesel fuel, propane and other hydrocarbon fuels

(D) Be able to perform control, containment, or confinement operations for gasoline, diesel fuel, propane and other hydrocarbon fuels within the capabilities of the available resources and personal protective equipment; and

(E) Understand and know how to implement decontamination procedures for hydrocarbon fuels.

(2) Subpart I - Personal Protective Equipment - 29 CFR 1910.132, General requirements, is amended at 29 CFR 1910.132(b) to read:

(b) *Equipment.* (1) *Employer-provided equipment.* It is the responsibility of the employer to provide, at no cost to the employee, all personal protective equipment which the employee does not wear off the jobsite for use off the job.

(2) *Employee-owned equipment.* Where employees provide their own protective equipment, the employer shall be responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

(3) Subpart R - Special Industries - incorporation by reference of final rule for 29 CFR 1910.269, Electric Power Generation, Transmission, and Distribution, including Appendices A through E, published in 59 FR (January 31, 1994) pages 4437 - 4475, all typographical and grammatical corrections to 1910.269 as published in 59 FR (June 30, 1994) pages 33660 - 33664, and the amendment to 1910.269(g)(2)(i) as published in 59 FR (August 9, 1994) page 40729, except that 29 CFR 1910.269(g)(2)(v) is amended to read

(v) Fall arrest equipment, work positioning equipment, or travel restricting equipment shall be used by employees working at elevated locations more than 4 feet (1.2 m) above the ground on poles, towers or similar structures if other fall protection has not been provided. A fall protection system as defined in 29 CFR 1926, Subpart M - *Fall Protection*, is required to be used by all employees when ascending, descending or changing locations on poles, towers or similar structures. However, the use of nonlocking snap hooks with any fall protection system is prohibited as of July 1, 1995. Qualified employees may free climb wood poles if the employer can ensure (1) that the employee is able to comfortably and safely grip the pole with both hands while climbing, (2) that the pole is free from attachments or any configurations of attachments that will materially impair the ability of a qualified employee to safely free climb the pole, (3) that the pole is otherwise free from impediments, contaminants or conditions of any type, including but not limited to ice, high winds or chemical treatments which materially impair the ability of a qualified employee to safely free climb the pole, and (4) that the employee is able to climb such structures without material physical impairments including over-exertion, lack of sleep or other physical stresses.

29 CFR 1910.269 as amended above is effective January 1, 1995, except that employers have until July 1, 1995, to implement the use of locking snap hooks, and employers have until January 1, 1996, to design and implement a system of fall protection for use by employees while ascending, descending or changing locations on towers. Also, 29 CFR 1910.269(a)(2) *Training* is effective January 31, 1995, and 29 CFR 1910.269(v)(11)(xii) is effective February 1, 1996.

(4) Subpart Z - Toxic and Hazardous Substances: A. 29 CFR 1910.1000 Air Contaminants:

Revision of 1910. 1000 (a) and (f), removal of Table Z-2 and Table Z-3 and re-adoption of revised permissible exposure limits as Table Z-1 as originally published in 54 FR (January 19, 1989) pages 2923 - 2958 as follows:

§1910.1000 Air contaminants.

An employee's exposure to any substance listed in Table Z-1 of this section shall be limited in accordance with the requirements of the following paragraphs and sections.

(a) **Table Z-1.** (1) *Substances with limits designated by "C" - Ceiling Limits.* An employee's exposure to any substance in Table Z-1, the exposure limit of which is followed by a "C", shall at no time exceed the exposure limit given for that substance in Table Z-1.

(2) *Current permissible exposure limits.* An employee's exposure to any substance listed in Table Z-1 shall not exceed the Time Weighted Average (TWA), Short Term Exposure Limit (STEL) and Ceiling Limit specified for that substance in Table Z-1 under the Current PEL column.

(3) *Skin Designation.* To prevent or reduce skin absorption, an employee's skin exposure to substances listed in Table Z-1 with an "X" in the Skin Designation column following the substance name shall be prevented or reduced to the extent necessary in the circumstances through the use of gloves, coveralls, goggles, or other appropriate personal protective equipment, engineering controls or work practices.

(4) *Definitions.* The following definitions are applicable to the Current PEL column of Table Z-1:

(i) Time weighted average (TWA) is the employee's average airborne exposure in any 8-hour work shift of a 40-hour work week which shall not be exceeded.

(ii) Short term exposure limit (STEL) is the employee's 15-minute time weighted average exposure which shall not be exceeded at any time during a work day unless another time limit is specified in a parenthetical notation below the limit. If another time period is specified, the time weighted average exposure over that time period shall not be exceeded at any time during the working day

(iii) Ceiling is the employee's exposure which shall not be exceeded during any part of the work day. If instantaneous monitoring is not feasible, then the ceiling shall be assessed as a 15-minute time weighted average exposure which shall not be exceeded at any time over a working day.

(5) *Additional Definitions.* The terms "substance," "air contaminant," and "material" are equivalent in meaning for 29 CFR 1910. 1000.

(b) and (c) are reserved.

(d) and (e) are not amended.

(f) Effective dates. (1) The effective date for the permissible exposure limits specified in the following Current PEL column of Table Z-1 is April 1, 1996.

LIMITS FOR AIR CONTAMINANTS NOTE:

Because of the length of the table, explanatory Footnotes applicable to all substances are given below.

Footnote (1) The PELs are 8-hour TWAs unless otherwise noted; a (C) designation denotes a ceiling limit. They are to be determined from breathing-zone air samples.

Footnote (2) Parts of vapor or gas per million parts of contaminated air by volume at 25 degrees C and 760 torr.

Footnote (3) Milligrams of substance per cubic meter of air. When entry is in this column only, the value is exact; when listed with a ppm entry, it is approximate.

Footnote (4) The CAS number is for information only. Enforcement is based on the substance name.

Footnote (5) Regarding Styrene Only: OSHNC recognizes that the permissible exposure limits for styrene may not be achievable solely through engineering and work practice controls for boat-building and operations comparable to boat building. Comparable operations are those that (1) employ the manual layup and sprayup

process, (2) the manufactured items that utilize the same equipment and technology as that found in boat building, and (3) the same considerations of large part size, configuration interfering with air-flow control techniques, and resin usage apply. Examples of operations comparable to boat building would include the manufacture of large above-ground or below-ground storage tanks, large parts for recreational vehicles, and large duct work. Because it is impossible to define in advance every manual layup and sprayup process for which compliance may not be feasible solely through engineering and work practice controls, some guidelines concerning part size and configuration issues are necessary. The primary question for manual layup and sprayup operations is whether the part's size and configuration interfere with normal air-flow techniques. For operations making parts (such as tubs and vanities) that do not meet the guidelines described, beginning April 1, 1996, the hierarchy of controls specified in 29 CFR 1910. 1000(e) will apply to reduce styrene exposures to the new 50 ppm TWA and 100 ppm STEL. In consequence, the burden of proof will be on the employer to show that engineering and work practice controls are not feasible for specific operations. However, with respect to boat-building operations the burden of proof would be on OSHNC to prove that the level could be attained solely through engineering and work practice controls.

Footnote (6) Regarding Carbon Dioxide only: no change was made to the PEL.

Footnote (7) Regarding Subtilisins only: this substance is not included in Table Z-1 below.

SUBSTANCE	CAS NUMBER	FORMER PEL	CURRENT PEL	SKIN DSG
Acetaldehyde	75-07-0	200 ppm TWA	100 ppm TWA 150 ppm STEL	
Acetic acid	64-19-7	10 ppm TWA	10 ppm TWA	
Acetic anhydride	108-24-7	5 ppm TWA	5 ppm TWA (C)	
Acetone	67-64-1	1000 ppm TWA	750 ppm TWA 1000 ppm STEL	
Acetonitrile	75-05-8	40 ppm TWA	40 ppm TWA 60 ppm STEL	
2-Acetylaminofluorene see 1910.1014	53-96-3			
Acetylene dichloride see 1,2-Dichloroethylene				
Acetylene tetrabromide	79-27-6	1 ppm TWA	1 ppm TWA	
Acetylsalicylic acid (Asprin)	50-78-2	No former PEL	5 mg/m ³	

Acrolein	107-02-8	0.1 ppm TWA	0.1 ppm TWA 0.3 ppm STEL	
Acrylamide	79-06-1	0.3 mg/m ³	0.3 mg/m ³	X
Acrylic acid	79-10-7	No former PEL	10 ppm TWA	X
Acrylonitrile; see 1910.1045.	107-13-1			
Aldrin	309-00-2	0.25 mg/m ³ TWA	0.25 mg/m ³ TWA	X
Allyl alcohol	107-18-6	2 ppm TWA	2 ppm TWA 4 ppm STEL	X
Allyl chloride	107-05-1	1 ppm TWA	1 ppm TWA 2 ppm STEL	
Allyl glycidyl ether (AGE)	106-92-3	10 ppm (C)	5 ppm TWA 10 ppm STEL	
Allyl propyl disulfide	2179-59-1	2 ppm TWA	2 ppm TWA 3 ppm STEL	
alpha-Alumina	1344-28-1			
Total Dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable Fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Aluminum (as Al)	7429-90-5			
Metal				
Total dust		15 mg/m ³	15 mg/m ³	
Respirable fraction		5 mg/m ³	5 mg/m ³	
Pyropowders			5 mg/m ³	
Welding fumes			5 mg/m ³	
Alkyls			2 mg/m ³	
Aluminum (soluble salts)	7429-90-5		2 mg/m ³	
4-Aminodiphenyl; see 1910.1011	92-67-1			
2-Aminoethanol; see Ethanolamine				
2-Aminopyridine	504-29-0	0.5 ppm TWA	0.5 ppm TWA	
Amitrol	61-82-5	No former PEL	0.2 mg/m ³	
Ammonia	7664-41-7	50 ppm TWA	35 ppm STEL	
Ammonium chloride fume	12125-02-9	No former PEL	10 mg/m ³ TWA 20 mg/m ³ STEL	
Ammonium sulfamate	7773-06-0			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
n-Amyl acetate	628-63-7	100 ppm TWA	100 ppm TWA	

<i>sec</i> -Amyl acetate	626-38-0	125 ppm TWA	125 ppm TWA	
Aniline and homologs	62-53-3	5 ppm TWA	2 ppm TWA	X
Anisidine (<i>o</i> -, <i>p</i> -isomers	29191-52-4	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	X
Antimony and compounds (as Sb)	7440-36-0	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	
ANTU (Alpha naphthylthiourea)	86-88-4	0.3 mg/m ³ TWA	0.3 mg/m ³ TWA	
Arsenic, inorganic compounds (as AS); see 1910.1018	Varies with compound			
Arsenic, organic compounds (as AS)		0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	
Arsine	7784-42-1	0.05 mg/m ³ TWA	0.05 ppm TWA	
Asbestos; see 1910.1001				
Atrazine	1912-24-9	No former PEL	5 mg/m ³ TWA	
Azinphos-methyl	86-50-0	0.2 mg/m ³ TWA	0.2 mg/m ³ TWA	X
Barium, soluble compounds (as Ba)	7440-39-3	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	
Barium sulfate	7727-43-7			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Benomyl	17804-35-2			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Benzene; See 1910.1028 See Table Z-2 for the limits applicable in the operations or sectors excluded in 1910.1028(d)	71-43-2			
Benzidine; See 1910.1010	92-87-5			
p-Benzoquinone; see Quinone.				
Benzo(a)pyrene; see Coal tar pitch, volatiles				
Benzoyl peroxide	94-36-0	5 mg/m ³ TWA	5 mg/m ³ TWA	
Benzyl chloride	100-44-7	5 mg/m ³ TWA	5 mg/m ³ TWA	
Beryllium and beryllium compounds (as Be)	7440-41-7	Table Z-2	0.002 ppm TWA 0.005 ppm	

STEL
(30 minute)
0.025 ppm (C)

Biphenyl; see Diphenyl.

Bismuth telluride,

Undoped

Total dust	1304-82-1	15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	

Bismuth telluride, Se-doped	1304-82-1	No former PEL	5 mg/m ³ TWA	
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Borates, tetra (anhydr)	1330-43-4	No former PEL	10 mg/m ³ TWA	
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Borates, tetra (decahyd)	1303-96-43	No former PEL	10 mg/m ³ TWA	
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Borates, tetra (pentahyd)	12179-04-3	No former PEL	10 mg/m ³ TWA	
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Boron oxide	1303-86-2			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	

Boron tribromide	10294-33-4	No former PEL	1 ppm (C)	
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Boron trifluoride	7637-07-2	1 ppm TWA (C)	1 ppm TWA (C)	
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Bromacil	314-40-9	No former PEL	1 ppm TWA	
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Bromine	7726-95-6	0.1 ppm TWA	0.1 ppm TWA 0.3 ppm STEL	
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Bromine pentafluoride	7789-30-2		0.1 ppm TWA	
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Bromoform	75-25-2	0.5 ppm TWA	0.5 ppm TWA	X
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Butadiene (1,3-Butadiene)	106-99-0	1000 ppm TWA	1000 ppm TWA	
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Butane	106-97-8	No former PEL	800 ppm TWA	
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Butanethiol;

See Butyl mercaptan

2-Butanone (Methyl ethyl ketone)	78-93-3	200 ppm TWA	200 ppm TWA 300 ppm STEL	
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2-Butoxyethanol	111-76-2	50 ppm TWA	25 ppm TWA	X
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<i>n</i> -Butyl-acetate	123-86-4	150 ppm TWA	150 ppm TWA 200 ppm STEL	
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<i>sec</i> -Butyl-acetate	105-46-4	200 ppm TWA	200 ppm TWA	
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<i>tert</i> -Butyl-acetate	540-88-5	200 ppm TWA	200 ppm TWA	
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<i>n</i> -Butyl-acrylate	141-32-2	No former PEL	10 ppm TWA	
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<i>n</i> -Butyl-alcohol	71-36-3	100 ppm TWA	50 ppm (C)	X
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<i>sec</i> -Butyl-alcohol	78-92-2	150 ppm TWA	100 ppm TWA	
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<i>tert</i> -Butyl-alcohol	75-65-0	100 ppm TWA	100 ppm TWA 150 ppm STEL	
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Butylamine	109-73-9	5 ppm (C)	5 ppm (C)	X
<i>tert</i> -Butyl-chromate (as CrO ₃)	1189-85-1	0.1 mg/m ³ (C)	0.1 mg/m ³ (C)	X
<i>n</i> -Butyl-glycidyl ether (BGE)	2426-08-6	50 ppm TWA	25 ppm TWA	
<i>n</i> -Butyl-lactate	138-22-7		5 ppm TWA	
<i>n</i> -Butyl-mercaptan	109-79-5	10 ppm TWA	0.5 ppm TWA	
Butyl mercaptan	109-79-5	10 ppm TWA	0.5 ppm TWA	
<i>o</i> -sec-Butylphenol	89-72-5	No former PEL	5 ppm TWA	X
<i>p</i> -tert-Butyltoluene	98-51-1	10 ppm TWA	10 ppm TWA 20 ppm STEL	
Cadmium (as Cd); see 1910.1027	7440-43-9			
Calcium Carbonate	1317-65-3			
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Calcim cyanamide	156-62-7	No former PEL	0.5 mg/m ³ TWA	
Calcium hydroxide	1305-62-0	No former PEL	5 mg/m ³ TWA	
Calcium oxide	1305-78-8	5 mg/m ³ TWA	5 mg/m ³ TWA	
Calcium silicate	1344-95-2			
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Calcium sulfate	7778-18-9			
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Camphor, synthetic	76-22-2	2 mg/m ³ TWA	2 mg/m ³ TWA	
Caprolactam (dust)	105-60-2	No former PEL	1 mg/m ³ TWA 3 mg/m ³ TWA	
Caprolactam (vapor)	105-60-2	No former PEL	5 ppm TWA 10 ppm STEL	
Captafol (Difolatan)	2425-06-1	No former PEL	0.1 mg/m ³ TWA	
Captan	133-06-2	No former PEL	5 mg/m ³ TWA	
Carbaryl (Sevin)	63-25-2	5 mg/m ³ TWA	5 mg/m ³ TWA	
Carbofuran	1563-66-2	No former PEL	0.1 mg/m ³ TWA	
Carbon black	1333-86-4	3.5 mg/m ³ TWA	3.5 mg/m ³ TWA	
Carbon dioxide	124-38-9	5000 ppm TWA	5000 ppm TWA	
Carbon disulfide	75-15-0	Table Z-2	4 ppm TWA 12 ppm TWA	X

Carbon monoxide	630-08-0	50 ppm TWA	35 ppm TWA 200 ppm (C)	
Carbon tetrabromide	558-13-4	No former PEL	0.1 ppm TWA 0.3 ppm STEL	
Carbon tetrachloride	56-23-5	Table Z-2	2 ppm TWA	
Carbonyl fluoride	353-50-4	No former PEL	2 ppm TWA 5 ppm STEL	
Catechol (Pyrocatechol)	120-80-9	No former PEL	5 ppm TWA	X
Cellulose	9004-34-6			
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Cesium hydroxide	21351-79-1	No former PEL	2 mg/m ³ TWA	
Chlordane	57-74-9	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	
Chlorinated camphene	8001-35-2	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA 1 mg/m ³ STEL	
Chlorinated diphenyl oxide	55720-99-5	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	
Chlorine	7782-50-5	1 ppm (C)	0.5 ppm TWA 1.0 ppm STEL	
Chlorine dioxide	10049-04-4	0.1 ppm TWA	0.1 ppm TWA 0.3 ppm STEL	
Chlorine trifluoride	7790-91-2	0.1 ppm (C)	0.1 ppm (C)	
Chloroacetaldehyde	107-20-0	1 ppm (C)	1 ppm (C)	
<i>α</i> -Chloroacetophenone (Phenacyl chloride)	532-27-4	0.05 ppm TWA	0.05 ppm TWA	
Chloroacetyl chloride	79-04-9	No former PEL	0.05 ppm TWA	
Chlorobenzene	108-90-7	75 ppm TWA	75 ppm TWA	
<i>o</i> -Chlorobenzylidene malononitrile	2698-41-1	0.05 ppm TWA	0.05 ppm (C)	X
Chlorobromomethane	74-97-5	200 ppm TWA	200 ppm TWA	
2-Chloro-1,3-butadiene; See <i>β</i> -Chloroprene				
Chlorodifluoromethane	75-45-6	No former PEL	1000 ppm TWA	
Chlorodiphenyl (42% Chlorine)(PCB)	53469-21-9	1 mg/m ³ TWA	1 mg/m ³ TWA	X
Chlorodiphenyl (54% Chlorine)(PCB)	11097-69-1	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	X
1-Chloro-2,3-epoxypropane; See Epichlorohydrin				

2-Chloroethanol; See Ethylene
chlorohydrin

Chloroethylene; see Vinyl
chloride

Chloroform; (Trichloromethane)	67-66-3	50 ppm (C)	2 ppm TWA	
bis-Chloromethyl ether; see 1910.1008	542-88-1			
Chloromethyl methyl ether; see 1910.1006	107-30-2			
1-Chloro-1-nitropropane	600-25-9	20 ppm TWA	2 ppm TWA	
Chloropentafluoroethane	76-15-3	No former PEL	1000 ppm TWA	
Chloropicrin	76-06-2	0.1 ppm TWA	0.1 ppm TWA	
beta-Chloroprene	126-99-8	25 ppm TWA	10 ppm TWA	X
<i>o</i> -Chlorostyrene	2039-87-4	No former PEL	50 ppm TWA 75 ppm STEL	
<i>o</i> -Chlorotoluene	95-49-8	No former PEL	50 ppm TWA	
2-Chloro-6 (trichloromethyl) pyridine	1929-82-4	15 mg/m ³ TWA	15 mg/m ³ TWA	
Total dust		5 mg/m ³ TWA	5 mg/m ³ TWA	
Respirable fraction				
Chlorpyrifos	2921-88-2	No former PEL	0.2 mg/m ³ TWA	X
Chromic acid and chromates (as CrO ₃)	Varies with compound	Table Z-2	0.1 ppm (C)	
Chromium (II) compounds (as Cr)	7440-47-3	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	
Chromium (III) compounds (as Cr)	7440-47-3	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	
Chromium metal and insol. salts (as Cr)	7440-47-3	1 mg/m ³ TWA	1 mg/m ³ TWA	
Chrysene; see Coal tar pitch volatiles				
Clopidol	2971-90-6			
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Coal dust (less than 5% SiO ₂), respirable fraction		Table Z-3	2 mg/m ³ TWA	
Coal dust (greater than or equal to 5% SiO ₂), respirable fraction		Table Z-3	0.1 mg/m ³ TWA	

Coal tar pitch volatiles (benzene soluble fraction), anthracene, BaP, phenanthrene, acridine, chrysene, pyrene	65966-93-2	0.2 mg/m ³ TWA	0.2 mg/m ³ TWA	
Cobalt, metal; dust and fume (as Co)	7440-48-4	0.1 mg/m ³ TWA	0.05 mg/m ³ TWA	
Cobalt carbonyl (as Co)	10210-68-1	No former PEL	0.1 mg/m ³ TWA	
Cobalt hydrocarbonyl (as Co)	16842-03-8	No former PEL	0.1 mg/m ³ TWA	
Coke oven emissions; see 1910.1029				
Copper fume (as Cu)	7440-50-8	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	
Dusts and mists (as Cu)		1 mg/m ³ TWA	1 mg/m ³ TWA	
Cotton dust, reaw, (e); See 1910.1043		The time-weighted average applies to the cotton waste processing operation of waste recycling (blending, sorting, cleaning and willowing) and garnetting.	The time-weighted average applies to the cotton waste processing operation of waste recycling (blending, sorting, cleaning and willowing) and garnetting.	
Crag herbicide (Sesone)	136-78-7			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Cresol, all isomers	Varies with compound	5 ppm TWA	5 ppm TWA	X
Crotonaldehyde	123-73-9 4170-30-3	2 ppm TWA	2 ppm TWA	
Crufomate	299-86-5	No former PEL	5 mg/m ³ TWA	
Cumene	98-82-8	50 ppm TWA	50 ppm TWA	X
Cyanamide	420-04-2		2 mg/m ³ TWA	
Cyanides (as Cn)	Varies with compound	5 mg/m ³ TWA	5 mg/m ³ TWA	
Cyanogen	460-19-5	No former PEL	10 ppm TWA	
Cyanogen chloride	506-77-4	No former PEL	0.3 ppm (C)	
Cyclohexane	110-82-7	300 ppm TWA	300 ppm TWA	X
Cyclohexanol	108-93-0	50 ppm TWA	50 ppm TWA	X

Cyclohexanone	108-94-1	50 ppm TWA	25 ppm TWA	
Cyclohexene	110-83-8	300 ppm TWA	300 ppm TWA	
Cyclohexylamine	108-91-8	No former PEL	10 ppm TWA	
Cyclonite	121-82-4	No former PEL	1.5 mg/m ³ TWA	X
Cyclopentadiene	542-92-7	75 ppm TWA	75 ppm TWA	
Cyclopentane	287-92-3	No former PEL	600 ppm TWA	
Cyhexatin	13121-70-5	No former PEL	5 mg/m ³ TWA	
2,4-D (Dichlorophenoxyacetic acid)	94-75-7	10 mg/m ³ TWA	10 mg/m ³ TWA	
Decaborane	17702-41-9	0.05 ppm TWA	0.05 ppm TWA 0.15 ppm STEL	X
Demeton (Systox)	8065-48-3	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	X
Diacetone alcohol (4-Hydroxy-4-methyl-2-pentanone)	123-42-2	50 ppm TWA	50 ppm TWA	
1,2-Diaminoethane; see Ethylenediamine				
Diazinon	333-41-5	No former PEL	0.1 mg/m ³ TWA	X
Diazomethane	334-88-3	0.2 ppm TWA	0.2 ppm TWA	
Diborane	19287-45-7	0.1 ppm TWA	0.1 ppm TWA	
1,2-Dibromo-3-chloropropane (DBCP) see 1910.1044	96-12-8			
1,2-Dibromomethane see Ethylene dibromide				
2-N-Dibutylaminoethanol	102-81-8	No former PEL	2 ppm TWA	
Dibutyl phosphate	107-66-4	1 ppm TWA	1 ppm TWA 2 ppm STEL	
Dibutyl phthalate	84-74-2	5 mg/m ³ TWA	5 mg/m ³ TWA	
Dichloroacetylene	7572-29-4	No former PEL	0.1 ppm (C)	
<i>o</i> -Dichlorobenzene	95-50-1	50 ppm (C)	50 ppm (C)	
<i>p</i> -Dichlorobenzene	106-46-7	75 ppm TWA	75 ppm TWA 110 ppm STEL	
3,3'-Dichlorobenzidine; see 1910.1007	91-94-1			
Dichlorodifluoromethane	75-71-8	1000 ppm TWA	1000 ppm TWA	

1,3-Dichloro-5,5-dimethyl hydantoin	118-52-5	0.2 mg/m ³ TWA	0.2 mg/m ³ TWA 0.4 mg/m ³ STEL	
Dichlorodiphenyltrichloroethane (DDT)	50-29-3	1 mg/m ³ TWA	1 mg/m ³ TWA	X
1,1-Dichloroethane	75-34-3	100 ppm TWA	100 ppm TWA	
1,2-Dichloroethane; see Ethylene dichloride				
1,2-Dichloroethylene	540-59-0	200 ppm TWA	200 ppm TWA	
Dichloroethyl ether	111-44-4	15 ppm (C)	5 ppm TWA 10 ppm STEL	
Dichloromethane; see Methylene chloride				
Dichloromonofluoro-methane	75-43-4	1000 ppm TWA	10 ppm TWA	
1,1-Dichloro-1-nitroethane	594-72-9	10 ppm (C)	2 ppm TWA	
1,2-Dichloropropane; see Propylene dichloride				
1,3-Dichloropropene	542-75-6	No former PEL	1 ppm TWA	
2,2-Dichloropropionic acid	75-99-0	No former PEL	1 ppm TWA	
Dichlorotetrafluoroethane	76-14-2	1000 ppm TWA	1000 ppm TWA	
Dichlorvos (DDVP)	62-73-7	1 mg/m ³ TWA	1 mg/m ³ TWA	
Dicrotophos	141-66-2	No former PEL	0.25 mg/m ³ TWA	
Dicyclopentadiene	77-73-6	No former PEL	5 ppm TWA	
Dicyclopentadienyl iron	102-54-5			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Dieldrin	60-57-1	0.25 mg/m ³ TWA	0.25 mg/m ³ TWA	X
Diethanolamine	111-42-2	No former PEL	3 ppm TWA	
Diethylamine	109-89-7	25 ppm TWA	10 ppm TWA 25 ppm STEL	
2-Diethylaminoethanol	100-37-8	10 ppm TWA	10 ppm TWA	X
Diethyl ether; see Ethyl ether				
Diethyl ketone	96-22-0	No former PEL	200 ppm TWA	
Diethyl phthalate	84-66-2	No former PEL	5 mg/m ³ TWA	
Diethylene triamine	111-40-0	No former PEL	1 ppm TWA	
Difluorodibromomethane	75-61-6	100 ppm TWA	100 ppm TWA	

Diglycidyl ether (DGE)	2238-07-5	0.5 ppm (C)	0.1 ppm TWA	
Dihydroxybenzene; see Hydroquinone				
Diisobutyl ketone	108-83-8	50 ppm TWA	25 ppm TWA	
Diisopropylamine	108-18-9	5 ppm TWA	5 ppm TWA	X
4-Dimethylaminoazo-benzene see 1910.1015	60-11-7			
Dimethoxymethane; see Methylal				
Dimethyl acetamide	127-19-5	10 ppm TWA	10 ppm TWA	X
Dimethylamine	124-40-3	10 ppm TWA	10 ppm TWA	
Dimethylaminobenzene; see Xylidine				
Dimethylaniline (N,N-Dimethylaniline)	121-69-7	5 ppm TWA	5 ppm TWA 10 ppm STEL	X X
Dimethylbenzene see Xylene				
Dimethyl-1,2-dibromo-2,2- dichloroethyl phosphate	300-76-5	3 mg/m ³ TWA	3 mg/m ³ TWA	X
Dimethylformamide	68-12-2	10 ppm TWA	10 ppm TWA	X
2,6-Dimethyl-4-heptanone; see Diisobutyl ketone				
1,1-Dimethylhydrazine	57-14-7	0.5 ppm TWA	0.5 ppm TWA	X
Dimethylphthalate	131-11-3	5 mg/m ³ TWA	5 mg/m ³ TWA	
Dimethyl sulfate	77-78-1	1 ppm TWA	0.1 ppm TWA	X
Dinitolmide (3,5-dinitro- <i>o</i> -toluamide)	148-01-6	No former PEL	5 mg/m ³ TWA	
Dinitrobenzene (all isomers)				X
(ortho)	528-29-0	1 mg/m ³ TWA	1 mg/m ³ TWA	
(meta)	99-65-0			
(para)	100-25-4			
Dinitro- <i>o</i> -cresol	534-52-1	0.2 mg/m ³ TWA	0.2 mg/m ³ TWA	X
Dinitrotoluene	25321-14-6	1.5 mg/m ³ TWA	1.5 mg/m ³ TWA	X
Dioxane (Diethylene dioxide)	123-91-1	100 ppm TWA	25 ppm TWA	X
Dioxathion	78-34-2	No former PEL	0.2 mg/m ³ TWA	X
Diphenyl (Biphenyl)	92-52-4	0.2 ppm TWA	0.2 ppm TWA	

Diphenylamine	122-39-4	No former PEL	10 mg/m ³ TWA	
Diphenylmethane diisocyanate; see Methylene bisphenyl isocyanate				
Dipropyl ketone	123-19-3	No former PEL	50 ppm TWA	
Dipropylene glycol methyl ether	34590-94-8	100 ppm TWA	100 ppm TWA 150 ppm STEL	X
Diquat	85-00-7	No former PEL	0.5 mg/m ³ TWA	
Di- <i>sec</i> octyl phthalate (di-(2-ethylhexyl) phthalate)	117-81-7	5 mg/m ³ TWA	5 mg/m ³ TWA 10 mg/m ³ TWA	
Disulfiram (Antabuse)	97-77-8	No former PEL	2 mg/m ³ TWA	
Disulfoton	298-04-4	No former PEL	0.1 mg/m ³ TWA	X
2,6-Di- <i>tert</i> -butyl- <i>p</i> -cresol	128-37-0	No former PEL	10 mg/m ³ TWA	
Diuron	330-54-1	No former PEL	10 mg/m ³ TWA	
Divinyl benzene	108-57-6	No former PEL	10 ppm TWA	
Emery	12415-34-8	15 mg/m ³ TWA	10 mg/m ³ TWA	
Total dust		5 mg/m ³ TWA	5 mg/m ³ TWA	
Respirable fraction				
Endosulfan	115-29-7	No former PEL	0.1 mg/m ³ TWA	X
Endrin	72-20-8	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	X
Epichlorohydrin	106-89-8	5 ppm TWA	2 ppm TWA	X
EPN	2104-64-5	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	X
1,2-Epoxypropane; see Propylene oxide				
2,3-Epoxy-1-propanol; see Glycidol				
Ethanethiol; see Ethyl mercaptan				
Ethanolamine	141-43-5	3 ppm TWA	3 ppm TWA 6 ppm STEL	
Ethion	563-12-2	No former PEL	0.4 mg/m ³ TWA	X
2-Ethoxyethanol (Cellosolve)	110-80-5	200 ppm TWA	200 ppm TWA	X
2-Ethoxyethyl acetate (Cellosolve acetate)	111-15-9	100 ppm TWA	100 ppm TWA	X
Ethyl acetate	141-78-6	400 ppm TWA	400 ppm TWA	
Ethyl acrylate	140-88-5	25 ppm TWA	5 ppm TWA 25 ppm STEL	X

Ethyl alcohol (Ethanol)	64-17-5	1000 ppm TWA	1000 ppm TWA	
Ethylamine	75-04-7	10 ppm TWA	10 ppm TWA	
Ethyl amyl ketone (5-Methyl-3-heptanone)	106-68-3	25 ppm TWA	25 ppm TWA	
Ethyl benzene	100-41-4	100 ppm TWA	100 ppm TWA 125 ppm STEL	
Ethyl bromide	74-96-4	200 ppm TWA	200 ppm TWA 250 ppm STEL	
Ethyl butyl ketone (3-Heptanone)	106-35-4	50 ppm TWA	50 ppm TWA	
Ethyl chloride	75-00-3	1000 ppm TWA	1000 ppm TWA	
Ethyl ether	60-29-7	400 ppm TWA	400 ppm TWA 500 ppm STEL	
Ethyl formate	109-94-4	100 ppm TWA	100 ppm TWA	
Ethyl mercaptan	75-08-1	10 ppm (C)	0.5 ppm TWA	
Ethyl silicate	78-10-4	100 ppm TWA	10 ppm TWA	
Ethylene chlorohydrin	107-07-3	5 ppm TWA	1 ppm (C)	X
Ethylenediamine	107-15-3	10 ppm TWA	10 ppm TWA	
Ethylene dibromide	106-93-4	20 ppm TWA	20 ppm TWA	
Ethylene dichloride (1,2-Dichloroethane)	107-06-2	Table Z-2	1 ppm TWA 2 ppm STEL	
Ethylene glycol	107-21-1	No former PEL	50 ppm (C)	
Ethylene glycol dinitrate	628-96-6	1 mg/m ³ (C)	0.1 mg/m ³ STEL	X
Ethylene glycol methyl acetate; see Methyl cellosolve acetate				
Ethyleneimine; see 1910.1012	151-56-4			
Ethylene oxide; see 1910.1047	75-21-8			
Ethylidene chloride; see 1,1-Dichloroethane				
N-Ethylmorpholine	100-74-3	20 ppm TWA	5 ppm TWA	X
Fenamiphos	22224-92-6	No former PEL	0.1 mg/m ³ TWA	X
Fensulfothion	115-90-2	No former PEL	0.1 mg/m ³ TWA	
Fenthion	55-38-9	No former PEL	0.2 mg/m ³ TWA	X

Ferbam	14484-64-1			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5mg/m ³ TWA	5mg/m ³ TWA	
Ferrovanadium dust	12604-58-9	1 mg/m ³ TWA	1mg/m ³ TWA 3 mg/m ³ TWA	
Fluorides (as F)	Varies with compounds	2.5 mg/m ³ TWA	2.5 mg/m ³ TWA	
Fluorine	7782-41-4	0.1 ppm TWA	0.1 ppm TWA	
Fluorotrichloromethane (Trichlorofluoromethane)	75-69-4	1000 ppm TWA	1000 ppm TWA (C)	
Fonofos	944-22-9	No former PEL	0.1 mg/m ³ TWA	X
Formaldehyde; see 1910.1048	50-00-0			
Formamide	75-12-7	No former PEL	20 ppm TWA 30 ppm STEL	
Formic acid	64-18-6	5 ppm TWA	5 ppm TWA	
Furfural	98-01-1	5 ppm TWA	2 ppm TWA	X
Furfuryl alcohol	98-00-0	50 ppm TWA	10 ppm TWA 15 ppm STEL	X
Gasoline	80006-61-9	No former PEL	300 ppm TWA 500 ppm STEL	
Germanium tetrahydride	7782-65-2	No former PEL	0.2 ppm TWA	
Glycerin (mist)	56-81-5	15 mg/m ³ TWA		
Total dust			10 mg/m ³ TWA	
Respirable fraction			5 mg/m ³ TWA	
Glycidol	556-52-5	50 ppm TWA	25 ppm TWA	
Glycol monoethyl ether; see 2-Ethoxyethanol				
Grain dust (oat, wheat, barley)		No former PEL	10 mg/m ³ TWA	
Graphite, natural respirable dust	7782-42-5	Table Z-3	2.5 mg/m ³ TWA	
Graphite, synthetic	none			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Guthion; see Azinphos methyl				
Gypsum	13397-214-	15 mg/m ³ TWA	15 mg/m ³ TWA	
Total dust	5	5 mg/m ³ TWA	5 mg/m ³ TWA	
Respirable fraction				
Hafnium	7440-58-6	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	

Heptachlor	76-44-8	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	X
Heptane(n-Heptane)	142-82-5	500 ppm TWA	400 ppm TWA 500 ppm STEL	
Hexachlorobutadiene	87-68-3	No former PEL	0.02 ppm TWA	
Hexachloroethane	67-72-1	1 ppm TWA	1 ppm TWA	X
Hexachloronaphthalene	1335-87-1	0.2 mg/m ³ TWA	0.2 mg/m ³ TWA	X
Hexafluoroacetone	684-16-2	No former PEL	0.1 ppm TWA	X
n-Hexane	110-54-3	500 ppm TWA	50 ppm TWA	
Hexane isomers	Varies	No former PEL	500 ppm TWA 1000 ppm STEL	
2-Hexanone (Methyl n-butyl ketone)	591-78-6	100 ppm TWA	5 ppm TWA	
Hexone (Methyl isobutyl ketone)	108-10-1	100 ppm TWA	50 ppm TWA 75 ppm STEL	
sec-Hexyl acetate	108-84-9	50 ppm TWA	50 ppm TWA	
Hexylene glycol	107-41-5	No former PEL	25 ppm (C)	
Hydrazine	302-01-2	1 ppm TWA	0.1 ppm TWA	X
Hydrogen bromide	10035-10-6	3 ppm TWA	3 ppm (C)	
Hydrogen chloride	7647-01-0	5 ppm (C)	5 ppm (C)	
Hydrogen cyanide	74-90-8	10 ppm TWA	4.7 ppm STEL	
Hydrogen fluoride (as F)	7664-39-3	No former PEL	3 ppm TWA 6 ppm STEL	
Hydrogen peroxide	7722-84-1	1 ppm TWA	1 ppm TWA	
Hydrogen selenide (as Se)	7783-07-5	0.05 ppm TWA	0.05 ppm TWA	
Hydrogen sulfide	7783-06-4	Table Z-2	10 ppm TWA 15 ppm STEL	
Hydrogenated terphenyls	61788-32-7	No former PEL	0.5 ppm TWA	
Hydroquinone	123-31-9	2 mg/m ³ TWA	2 mg/m ³ TWA	
2-Hydroxypropyl acrylate	999-61-1	No former PEL	0.5 ppm TWA	X
Indene	95-13-6	No former PEL	10 ppm TWA	
Indium and compounds (as In)	7440-74-6	No former PEL	0.1 mg/m ³ TWA	
Iodine	7553-56-2	0.1 mg/m ³ (C)	0.1 ppm (C)	
Iodoform	75-47-8	No former PEL	0.6 ppm TWA	
Iron oxide, dust and fume				
Total particulate	1309-37-1	10 mg/m ³ TWA	10 mg/m ³ TWA	

Iron pentacarbonyl	13463-40-6	No former PEL	0.1 ppm TWA 0.2 ppm STEL	
Iron salts (soluble) (as Fe)	Varies with compound	No former PEL	1 mg/m ³ TWA	
Isoamyl acetate	123-92-2	100 ppm TWA	100 ppm TWA	
Isoamyl alcohol (primary and secondary)	123-51-3	100 ppm TWA	100 ppm TWA 125 ppm STEL	
Isobutyl acetate	110-19-0	150 ppm TWA	150 ppm TWA	
Isobutyl alcohol	78-83-1	100 ppm TWA	50 ppm TWA	
Isooctyl alcohol	26952-21-6	No former PEL	50 ppm TWA	X
Isophorone	78-59-1	25 ppm TWA	4 ppm TWA	
Isophorone diisocyanate	4098-71-9	No former PEL	0.005 ppm TWA 0.02 ppm STEL	X X
2-Isopropoxyethanol	109-59-1	No former PEL	25 ppm TWA	
Isopropyl acetate	108-21-4	250 ppm TWA	250 ppm TWA 310 ppm STEL	
Isopropyl alcohol	67-63-0	400 ppm TWA	400 ppm TWA 500 ppm STEL	
Isopropylamine	75-31-0	5 ppm TWA	5 ppm TWA 10 ppm STEL	
N-Isopropylaniline	768-52-5	No former PEL	2 ppm TWA	
Isopropyl ether	108-20-3	500 ppm TWA	500 ppm TWA	
Isopropyl glycidyl ether (IGE)	4016-14-2	50 ppm TWA	50 ppm TWA 75 ppm STEL	
Kaolin	1332-58-7			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Ketene	463-51-4	0.5 ppm TWA	0.5 ppm TWA 1.5 ppm STEL	
Lead inorganic (as Pb); see 1910.1025	7439-92-1			
Limestone	1317-65-3	15 mg/m ³ TWA	15 mg/m ³ TWA	
Total dust		5 mg/m ³ TWA	5 mg/m ³ TWA	
Respirable fraction				
Lindane	58-89-9	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	X
Lithium hydride	7580-67-8	0.025 mg/m ³ TWA	0.025 mg/m ³ TWA	

L.P.G. (Liquified petroleum gas)	68476-85-7	1000 ppm TWA	1000 ppm TWA	
Magnesite	546-93-0			
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Magnesium oxide fume	1309-48-4			
Total particulate		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Malathion	121-75-5			X
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Maleic anhydride	108-31-6	0.25 ppm TWA	0.25 ppm TWA	
Manganese compounds (as Mn)	7439-96-5	5 mg/m ³ (C)	5 mg/m ³ TWA (C)	
Manganese fume (as Mn)	7439-96-5	5 mg/m ³ (C)	1 mg/m ³ TWA 3 mg/m ³ STEL	
Manganese cyclopentadienyl tricaronyl (as Mn)	12079-65-1	No former PEL	0.1 mg/m ³ TWA	X
Manganese tetroxide (Mn)	1317-35-7	No former PEL	1 mg/m ³ TWA	
Marble	1317-65-3			
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Mercury (aryl and inorganic) (as Hg)	7439-97-6	0.1 mg/m ³ TWA	0.1 mg/m ³ (C)	X
Mercury (organo) alkyl compounds (as Hg)	7439-97-6	0.01 mg/m ³ TWA 0.04 mg/m ³ (C)	0.01 mg/m ³ TWA 0.03 mg/m ³ STEL	X
Mercury (vapor) (as Hg)	7439-97-6	0.1 mg/m ³ TWA	0.05 mg/m ³ TWA	X
Mesityl oxide	141-79-7	25 ppm TWA	15 ppm TWA 25 ppm STEL	
Methacrylic acid	79-14-4	No former PEL	20 ppm TWA	X
Methanethiol; see Methyl mercaptan.				
Methomyl	16752-77-15	No former PEL	2.5 mg/m ³ TWA	
Methoxychlor	72-43-5			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	

2-Methoxyethanol (Methyl cellosolve)	109-86-4	25 ppm TWA	25 ppm TWA	X
2-Methoxyethyl acetate (Methyl cellosolve acetate)	110-49-6	25 ppm TWA	25 ppm TWA	X
4-Methoxyphenol	150-76-5	No former PEL	5 mg/m ³ TWA	
Methyl acetate	79-20-9	200 ppm TWA	200 ppm TWA 250 ppm STEL	
Methyl acetylene (Propyne)	74-99-7	1000 ppm TWA	1000 ppm TWA	
Methyl acetylene propadiene mixture (MAPP)		1000 ppm TWA	1000 ppm TWA 1250 ppm STEL	
Methyl acrylate	96-33-3	10 ppm TWA	10 ppm TWA	X
Methylacrylonitrile	126-98-7	No former PEL	1 ppm TWA	X
Methylal (Dimethoxymethane)	109-87-5	1000 ppm TWA	1000 ppm TWA	
Methyl alcohol	67-56-1	200 ppm TWA	200 ppm TWA 250 ppm STEL	X X
Methylamine	74-89-5	10 ppm TWA	10 ppm TWA	
Methyl amyl alcohol; see Methyl Isobutyl carbinol				
Methyl <i>n</i> -amyl ketone	110-43-0	100 ppm TWA	100 ppm TWA	
Methyl bromide	74-83-9	20 ppm (C)	5 ppm TWA	X
Methyl butyl ketone; see 2-Hexanone				
Methyl cellosolve; see 2-Methoxyethanol				
Methyl cellosolve acetate; see 2-Methoxyethyl acetate				
Methyl chloride	74-87-3	100 ppm TWA 200 ppm (C)	50 ppm TWA 100 ppm STEL	
Methyl chloroform (1,1,1-Trichloroethane)	71-55-6	350 ppm TWA	350 ppm TWA 450 ppm STEL	
Methyl 2-cyanoacrylate	137-05-3	No former PEL	2 ppm TWA 4 ppm STEL	
Methylcyclohexane	108-87-2	500 ppm TWA	400 ppm TWA	
Methylcyclohexanol	25639-42-3	100 ppm TWA	50 ppm TWA	
<i>o</i> -Methylcyclohexanone	583-60-8	100 ppm TWA	50 ppm TWA 75 ppm STEL	X
Methylcyclopentadienyl manganese tricarbonyl (as Mn)	12108-13-3	No former PEL	0.2 mg/m ³ TWA	X

Methyl demeton	8022-00-2	No former PEL	0.5 mg/m ³ TWA	X
4,4'-Methylene bis (2-chloroaniline) (MBOCA)	101-14-4	No former PEL	0.02 ppm TWA	X
Methylene chloride	75-09-2	Table Z-2	In federal rulemaking	
Methyl ethyl ketone (MEK); see 2-Butanone				
Methyl ethyl ketone peroxide	1338-23-4	No former PEL	0.7 ppm (C)	
Methyl formate	107-31-3	100 ppm TWA	100 ppm TWA 150 ppm STEL	
Methyl hydrazine (Monomethyl hydrazine)	60-34-4	0.2 ppm (C)	0.2 ppm (C)	X
Methyl iodide	74-88-4	5 ppm TWA	2 ppm TWA	X
Methyl isoamyl ketone	110-12-3	No former PEL	50 ppm TWA	
Methyl isobutyl carbinol	108-11-2	25 ppm TWA	25 ppm TWA 40 ppm STEL	X X
Methyl isobutyl ketone; see Hexone				
Methyl isocyanate	624-83-9	0.02 ppm TWA	0.02 ppm TWA	X
Methyl isopropyl ketone	563-80-4	No former PEL	200 ppm TWA	
Methyl mercaptan	74-93-1	10 ppm (C)	0.5 ppm TWA	
Methyl methacrylate	80-62-6	100 ppm TWA	100 ppm TWA	
Methyl parathion	298-00-0	No former PEL	0.2 mg/m ³ TWA	X
Methyl propyl ketone; see 2-Pentanone				
Methyl silicate	681-84-5	No former PEL	1 ppm TWA	
<i>alpha</i> -Methyl styrene	98-83-9	100 ppm (C)	50 ppm TWA 100 ppm STEL	
Methylene bis (4-cyclohexylisocyanate)	5124-30-1	No former PEL	0.01 ppm (C)	X
Methylene bisphenyl isocyanate (MDI)	101-68-8	0.02 ppm (C)	0.02 ppm (C)	
Metribuzin	21087-64-9	No former PEL	5 mg/m ³ TWA	
Mica; see Silicates				
Molybdenum (as Mo)	7439-98-7			
Soluble compounds		5 mg/m ³ TWA	5 mg/m ³ TWA	
Insoluble compounds				
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	

Monocrotophos	6923-22-4	No former PEL	0.25 mg/m ³ TWA	
Nitrotoluene (all isomers)				
<i>o</i> -isomer	88-72-2	5 ppm TWA	2 ppm TWA	X
<i>m</i> -isomer	99-08-1	5 ppm TWA	2 ppm TWA	X
<i>p</i> -isomer	99-99-0	5 ppm TWA	2 ppm TWA	X
Nitrotrichloromethane; see Chloropicrin				
Nonane	111-84-2	No former PEL	200 ppm TWA	
Octachloronaphthalene	2234-13-1	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA 0.3 mg/m ³ STEL	
Octane	111-65-9	500 ppm TWA	300 ppm TWA 375 ppm STEL	
Oil mist, mineral	8012-95-1	5 mg/m ³ TWA	5 mg/m ³ TWA	
Osmium tetroxide (as Os)	20816-12-0	0.002 mg/m ³ TWA	0.002 mg/m ³ TWA 0.006 mg/m ³ STEL	
Oxalic acid	144-62-7	1 mg/m ³ TWA	1 mg/m ³ TWA 2 mg/m ³ STEL	
Oxygen difluoride	7783-41-7	0.05 ppm TWA	0.05 ppm (C)	
Ozone	10028-15-6	0.1 ppm TWA	0.1 ppm TWA 0.3 ppm STEL	
Paraffin wax fume	8002-74-2	No former PEL	2 mg/m ³ TWA	
Paraquat, respirable dust	4685-14-7 1910-42-5 2074-50-2	0.5 mg/m ³ TWA	0.1 mg/m ³ TWA	X
Parathion	56-38-2	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	X
Particulates not otherwise regulated (PNOR) (f)		15 mg/m ³ TWA	15 mg/m ³ TWA	
Total dust		5 mg/m ³ TWA	5 mg/m ³ TWA	
Respirable fraction				
PCB; see Chlorodiphenyl (42% nad 54% chlorine)				
Pentaborane	19624-22-7	0.005 ppm TWA	0.005 ppm TWA	

			0.015 ppm STEL	
Pentachloronaphthalene	1321-64-8	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	X
Pentachlorophenol	87-86-5	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	X
Pentaerythritol	115-77-5			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Pentane	109-66-0	1000 ppm TWA	600 ppm TWA 750 ppm STEL	
2-Pentanone (Methyl propyl ketone)	107-87-9	200 ppm TWA	200 ppm TWA 250 ppm STEL	
Perchloroethylene (Tetrachloroethylene)	127-18-4	Table Z-2	25 ppm TWA	
Perchloromethyl mercaptan	594-42-3	0.1 ppm TWA	0.1 ppm TWA	
Perchloryl fluoride	7616-94-6	3 ppm TWA	3 ppm TWA 6 ppm STEL	
Perlite	93763-70-3			
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Petroleum distillates (Naphtha) (Rubber solvent)	8002-05-9	500 ppm TWA	400 ppm TWA	
Phenol	108-95-2	5 ppm TWA	5 ppm TWA	X
Phenothiazine	92-84-2	No former PEL	5 mg/m ³ TWA	X
<i>p</i> -Phenylene diamine	106-50-3	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	X
Phenyl ether, vapor	101-84-8	1 ppm TWA	1 ppm TWA	
Phenyl ether-biphenyl mixture, vapor		1 ppm TWA	1 ppm TWA	
Phenylethylene; see Styrene				
Phenyl glycidyl ether (PGE)	122-60-1	10 ppm TWA	1 ppm TWA	
Phenylhydrazine	100-63-0	5 ppm TWA	5 ppm TWA 10 ppm STEL	
Phenyl mercaptan	108-98-5	No former PEL	0.5 ppm TWA	
Phenylphosphine	638-21-1	No former PEL	0.05 ppm TWA	
Phorate (Thimet)	298-02-2	No former PEL	0.05 mg/m ³ TWA 0.2 mg/m ³ TWA STEL	X

Phosdrin (Mevinphos)	7786-34-7	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA 0.3 mg/m ³ TWA	
Phosgene (Carbonyl chloride)	75-44-5	0.1 ppm TWA	0.1 ppm TWA	
Phosphine	7803-51-2	0.3 ppm TWA	0.3 ppm TWA 1 ppm STEL	
Phosphoric acid	7664-38-2	1 mg/m ³ TWA	1 mg/m ³ TWA 3 mg/m ³ TWA	
Phosphorus (yellow)	7723-14-0	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	
Phosphorus oxychloride	10025-87-3	No former PEL	0.1 ppm TWA	
Phosphorus pentachloride	10026-13-8	1 mg/m ³ TWA	1 mg/m ³ TWA	
Phosphorus pentasulfide	1314-80-3	1 mg/m ³ TWA	1 mg/m ³ TWA 3 mg/m ³ TWA	
Phosphorus trichloride	7719-12-2	0.5 ppm TWA	0.2 ppm TWA 0.5 ppm STEL	
Phthalic anhydride	85-44-9	2 ppm TWA	1 ppm TWA	
<i>m</i> -Phthalodinitrile	626-17-5	No former PEL	5 mg/m ³ TWA	
Picloram	1918-02-1			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Picric acid	88-89-1	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	X
Pindone (2-Pivalyl-1,3-indandione)	83-26-1	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	
Piperazine dihydrochloride	142-64-3	No former PEL	5 mg/m ³ TWA	
Plaster of paris	26499-65-0			
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Platinum (as Pt)	7440-06-4			
Metal			1 mg/m ³ TWA	
Soluble salts		0.002 mg/m ³ TWA	0.002 mg/m ³ TWA	
Portland cement	65997-15-1			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Propane	74-98-6	1000 ppm TWA	1000 ppm TWA	
Propargyl alcohol	107-19-7	No former PEL	1 ppm TWA	X
Propionic acid	79-09-4	No former PEL	10 ppm TWA	
Propoxur	114-26-1	No former PEL	0.5 mg/m ³ TWA	
<i>beta</i> -Propiolactone; see 1910.1013	57-57-8			

<i>n</i> -Propyl acetate	109-60-4	200 ppm TWA	200 ppm TWA 250 ppm STEL	
<i>n</i> -Propyl alcohol	71-23-8	200 ppm TWA	200 ppm TWA 250 ppm STEL	
<i>n</i> -Propyl nitrate	627-13-4	25 ppm TWA	25 ppm TWA 40 ppm STEL	
Propylene dichloride	78-87-5	75 ppm TWA	75 ppm TWA 110 ppm STEL	
Propylene glycol dinitrate	6423-43-4	No former PEL	0.05 ppm TWA	
Propylene glycol monomethyl ether	107-98-2	No former PEL	100 ppm TWA 150 ppm STEL	
Propylene imine	75-55-8	2 ppm TWA	2 ppm TWA	X
Propylene oxide	75-56-9	100 ppm TWA	20 ppm TWA	
Propyne; see Methyl acetylene				
Pyrethrum	80003-34-7	5 mg/m ³ TWA	5 mg/m ³ TWA	
Pyridine	110-86-1	5 ppm TWA	5 ppm TWA	
Quinone	106-51-4	0.1 ppm TWA	0.1 ppm TWA	
RDX; see Cyclonite				
Resorcinol	108-46-3	No former PEL	10 ppm TWA 20 ppm STEL	
Rhodium (as Rh), metal fume and insoluble compounds	7440-16-6	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	
Rhodium (as Rh), soluble compounds	7440-16-6	0.001 mg/m ³ TWA	0.001 mg/m ³ TWA	
Ronnel	299-84-3	15 mg/m ³ TWA	10 mg/m ³ TWA	
Rotenone	83-79-4	5 mg/m ³ TWA	5 mg/m ³ TWA	
Rouge				
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Selenium compounds (as Se)	7782-49-2	0.2 mg/m ³ TWA	0.2 mg/m ³ TWA	
Selenium hexafluoride (as Se)	7783-79-1	0.05 ppm TWA	0.05 ppm TWA	
Silica, amorphous, precipitated and gel	112926-00-8	Table Z-3	6 mg/m ³ TWA	
Silica, amorphous, diatomaceous earth, containing less than 1 % crystalline silica		Table Z-3	6 mg/m ³ TWA	
Silica, crystalline cristobalite, respirable dust	14464-46-1	Table Z-3	0.05 mg/m ³ TWA	

Silica, crystalline quartz, respirable dust	14808-60-7	Table Z-3	0.1 mg/m ³ TWA	
Silica, crystalline tripoli (as quartz), respirable dust	1317-95-9	Table Z-3	0.1 mg/m ³ TWA	
Silica, crystalline tridymite, respirable dust	15468-32-3	Table Z-3	0.05 mg/m ³ TWA	
Silica, fused, respirable dust	60676-86-0	Table Z-3	0.1 mg/m ³ TWA	
Silicates (less than 1% crystalline silica)	12001-26-2	Table Z-3	3 mg/m ³ TWA	
Mica (respirable dust)		Table Z-3	6 mg/m ³ TWA	
Soapstone, total dust		Table Z-3	3 mg/m ³ TWA	
Soapstone, respirable dust				
Talc (containing asbestos); use asbestos limit see 29 CFR 1910.1001				
Talc (containing no asbestos), respirable dust	14807-96-6	Table Z-3	2 mg/m ³ TWA	
Tremolite, asbestiform; see 1910.1001				
Silicon	7440-21-3			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Silicon carbide	409-21-2			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Silicon tetrahydride	7803-62-5		5 ppm TWA	
Silver, metal dust and fume (as Ag)	7440-22-4	0.01 mg/m ³ TWA	0.01 mg/m ³ TWA	
Soapstone; see Silicates				
Sodium azide (as HN ₃) (as NaN ₃)	26628-22-8	No former PEL	0.1 ppm (C) 0.3 mg/m ³ TWA	X X
Sodium bisulfite	7631-90-5	No former PEL	5 mg/m ³ TWA	
Sodium fluoroacetate	62-74-8	0.05 mg/m ³ TWA	0.05 mg/m ³ TWA 0.15 mg/m ³ TWA	
Sodium hydroxide	1310-73-2	2 mg/m ³ TWA	2 mg/m ³ (C)	
Starch	9005-25-8			
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	

Stibine	7803-52-3	0.1 ppm TWA	0.1 ppm TWA
Stoddard solvent	8052-41-3	500 ppm TWA	100 ppm TWA
Strychnine	57-24-9	0.15 mg/m ³ TWA	0.15 mg/m ³ TWA
Styrene	100-42-5	Table Z-2	50 ppm TWA 100 ppm STEL
Sucrose	57-50-1		
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA
Sulfur dioxide	7446-09-5	5 ppm TWA	2 ppm TWA 5 ppm STEL
Sulfur hexafluoride	2551-62-4	1000 ppm TWA	1000 ppm TWA
Sulfuric acid	7664-93-9	1 mg/m ³ TWA	1 mg/m ³ TWA
Sulfur monochloride	10025-67-9	1 ppm TWA	1 ppm (C)
Sulfur pentafluoride	5714-22-7	0.025 ppm TWA	0.01 ppm (C)
Sulfur tetrafluoride	7783-60-0		0.1 ppm (C)
Sulfuryl fluoride	2699-79-8	5 ppm TWA	5 ppm TWA 10 ppm STEL
Sulprofos	35400-43-2	No former PEL	1 mg/m ³ TWA
Systox; see Demeton. 2,4,5-T (2,4,5-trichlorophenoxyacetic acid)	93-76-5	10 mg/m ³ TWA	10 mg/m ³ TWA
Talc; see Silicates			
Tantalum, metal and oxide dust	7440-25-7	5 mg/m ³ TWA	5 mg/m ³ TWA
TEDP (Sulfotep)	3689-24-5	0.2 mg/m ³ TWA	0.2 mg/m ³ TWA X
Tellurium and compounds (as Te)	13494-80-9	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA
Tellurium hexafluoride (as Te)	7783-80-4	0.02 ppm TWA	0.02 ppm TWA
Temephos	3383-96-8		
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA
TEPP (Tetraethyl pyrophosphaaate)	107-49-3	0.05 mg/m ³ TWA	0.05 ppm TWA X
Terphenyls	26140-60-3	1 ppm (C)	0.5 ppm (C)
1,1,1,2-Tetrachloro-2,2- difluoroethane	76-11-9	500 ppm TWA	500 ppm TWA
1,1,2,2-Tetrachloro-1,2- difluoroethane	76-12-0	500 ppm TWA	500 ppm TWA

1,1,2,2-Tetrachloroethane	79-34-5	5 ppm TWA	1 ppm TWA	X
Tetrachloroethylene; see Perchloroethylene				
Tetrachloromethane; see Carbon tetrachloride				
Tetrachloronaphthalene	1335-88-2	2 mg/m ³ TWA	2 mg/m ³ TWA	X
Tetraethyl lead (as Pb)	78-00-2	0.075 mg/m ³ TWA	0.075 mg/m ³ TWA	
Tetrahydrofuran	109-99-9	200 ppm TWA	200 ppm TWA 250 ppm STEL	
Tetramethyl lead (as Pb)	75-74-1	0.075 mg/m ³ TWA	0.075 mg/m ³ TWA	X
Tetramethyl succinonitrile	3333-52-6	0.5 ppm TWA	0.5 ppm TWA	X
Tetranitromethane	509-14-8	1 ppm TWA	1 ppm TWA	
Tetrasodium Pyrophosphate	7722-88-5		5 mg/m ³ TWA	
Tetryl (2,4,6-Trinitrophenylmethylnitramine)	479-45-8	1.5 mg/m ³ TWA	0.1 mg/m ³ TWA	X
Thallium, soluble compounds (as Tl)	7440-28-0	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	X
4,4'-Thiobis (6- <i>tert</i> -Butyl- <i>m</i> -cresol)	96-69-5			
Total dust		15 mg/m ³ TWA 5 mg/m ³ TWA	10 mg/m ³ TWA 5 mg/m ³ TWA	
Respirable fraction				
Thioglycolic acid	68-11-1	No former PEL	1 ppm TWA	X
Thionyl chloride	7719-09-7	No former PEL	1 ppm (C)	
Thiram	137-26-8	5 mg/m ³ TWA	5 mg/m ³ TWA	
Tin, inorganic compounds (except oxides) (as Sn)	7440-31-5	No former PEL	2 mg/m ³ TWA	
Tin, organic compounds (as Sn)	7440-31-5	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	X
Tin oxide	7440-31-5	No former PEL	2 mg/m ³ TWA	
Titanium dioxide	13463-67-7			
Total dust		15 mg/m ³ TWA 5 mg/m ³ TWA	10 mg/m ³ TWA 5 mg/m ³ TWA	
Respirable fraction				
Toluene	108-88-3	Table Z-2	100 ppm TWA 150 ppm STEL	
Toluene-2,4-diisocyanate (TDI)	584-84-9	0.02 ppm (C)	0.005 ppm TWA 0.02 ppm STEL	
<i>m</i> -Toluidine	108-44-1	No former PEL	2 ppm TWA	X

<i>o</i> -Toluidine	95-53-4	5 ppm TWA	5 ppm TWA	X
<i>p</i> -Toluidine	106-49-0	No former PEL	2 ppm TWA	X
Toxaphene; see Chlorinated camphene				
Tremolite; see Silicates				
Tributyl phosphate	126-73-8	5 mg/m ³ TWA	2.5 mg/m ³ TWA	
Trichloroacetic acid	76-03-9	No former PEL	1 ppm TWA	
1,1,1-Trichloroethane; see Methyl chloroform				
1,1,2-Trichloroethane	79-00-5	10 ppm TWA	10 ppm TWA	X
Trichloroethylene	79-01-6	Table Z-2	50 ppm TWA 200 ppm STEL	
Trichloromethane; see Chloroform				
Trichloronaphthalene	1321-65-9	5 mg/m ³ TWA	5 mg/m ³ TWA	
1,2,3-Trichloropropane	96-18-4	50 ppm TWA	10 ppm TWA	
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1000 ppm TWA	1000 ppm TWA 1250 ppm STEL	
Triethylamine	121-44-8	25 ppm TWA	10 ppm TWA 15 ppm STEL	
Trifluorobromomethane	75-63-8	1000 ppm TWA	1000 ppm TWA	
Trimellitic anhydride	552-30-7	No former PEL	0.005 ppm TWA	
Trimethylamine	75-50-3	No former PEL	10 ppm TWA 15 ppm STEL	
Trimethyl benzene	25551-13-7	No former PEL	25 ppm TWA	
Trimethyl phosphite	121-45-9	No former PEL	2 ppm TWA	
2,4,6-Trinitrophenyl; see Picric acid				
2,4,6-Trinitrophenyl-methyl nitramine; see Tetryl				
2,4,6-Trinitrotoluene (TNT)	118-96-7	1.5 mg/m ³ TWA	0.5 mg/m ³ TWA	X
Triorthocresyl phosphate	78-30-8	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	X
Triphenyl amine	603-34-9	No former PEL	5 mg/m ³ TWA	
Triphenyl phosphate	115-86-6	3 mg/m ³ TWA	3 mg/m ³ TWA	
Tungsten Compounds (as W) (insoluble)	7440-33-7	No former PEL	5 mg/m ³ TWA 5 mg/m ³ TWA	
(soluble)			10 mg/m ³ STEL	

			1 mg/m ³ TWA 3 mg/m ³ STEL	
Turpentine	8006-64-2	100 ppm TWA	100 ppm TWA	
Uranium (as U)	7440-61-1			
Soluble compounds		0.05 mg/m ³ TWA	0.05 mg/m ³ TWA	
Insoluble compounds		0.25 mg/m ³ TWA	0.2 mg/m ³ TWA 0.6 mg/m ³ STEL	
<i>n</i> -Valeraldehyde	110-62-3	No former PEL	50 ppm TWA	
Vanadium	1314-62-1			
Respirable dust (as V ₂ O ₅)		0.5 mg/m ³ TWA	0.05 mg/m ³ TWA	
Fume(as V ₂ O ₅)		0.1 mg/m ³ TWA	0.05 mg/m ³ TWA	
Vegetable oil mist				
Total dust		15 mg/m ³ TWA	15 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Vinyl acetate	108-05-4	No former PEL	10 ppm TWA 20 ppm STEL	
Vinyl benzene; see Styrene				
Vinyl bromide	593-60-2	No former PEL	5 ppm TWA	
Vinyl chloride; see 1910.1017				
Vinyl cyanide; see Acrylonitrile				
Vinyl cyclohexene dioxide	106-87-6	No former PEL	10 ppm TWA	X
Vinylidene chloride (1,1-Dichloroethylene)	75-35-4	No former PEL	1 ppm TWA	
Vinyl toluene	25013-15-4	100 ppm TWA	100 ppm TWA	
VM&P Naptha	8032-32-4	No former PEL	300 ppm TWA 400 ppm STEL	
Warfarin	81-81-2	0.1 mg/m ³ TWA	0.1 mg/m ³ TWA	
Welding fumes (Total particulate)		No former PEL	5 mg/m ³ TWA	
Wood dust all soft and hard woods except Western red cedar	NONE	No former PEL	5 mg/m ³ TWA 10 mg/m ³ STEL	
Wood dust, allergenic (Wester Red Cedar)	NONE	No former PEL	2.5 mg/m ³ TWA	
<i>m</i> -Xylene-alpha, alpha', diamine	1477-55-0	No former PEL	0.1 mg/m ³ (C)	X
Xylenes (<i>o</i> -, <i>m</i> -, <i>p</i> -isomers)	1330-20-7	100 ppm TWA	100 ppm TWA 150 ppm STEL	

Xylidine	1300-73-8	5 ppm TWA	2 ppm TWA	X
Yttrium	7440-65-5	1 mg/m ³ TWA	1 mg/m ³ TWA	
Zinc chloride fume	7646-85-7	1 mg/m ³ TWA	1 mg/m ³ TWA 2 mg/m ³ STEL	
Zinc chromate (as CrO ₃)	Varies with compound	Table Z-2	0.1 mg/m ³ TWA	
Zinc oxide fume	1314-13-2	5 mg/m ³ TWA	5 mg/m ³ TWA 10 mg/m ³ STEL	
Zinc oxide	1314-13-2			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Zinc stearate	557-05-1			
Total dust		15 mg/m ³ TWA	10 mg/m ³ TWA	
Respirable fraction		5 mg/m ³ TWA	5 mg/m ³ TWA	
Zirconium compounds (as Zr)	7440-67-7	5 mg/m ³ TWA	5 mg/m ³ TWA 10 mg/m ³ STEL	

(B) Incorporation by reference of modified final rule for 29 CFR 1910.1200, Hazard Communication, including Appendices A through E, published in 59 FR (February 9, 1994) pages 6170 - 6184 except that 1910.1200(b)(6)(ii) is amended to read: "(ii) Any hazardous substance as such term is defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. 9601 et seq), when regulated as a hazardous waste under that Act by the Environmental Protection Agency."

(b) The parts of the Code of Federal Regulations adopted by reference in this Subchapter shall not automatically include any subsequent amendments thereto, except as follows:

(1) Subpart H - Hazardous Materials:

(A) Technical corrections at 1910.109(g)(4)(v), Explosives and Blasting Agents, published in 58 FR (March 29, 1993) page 16496 and effective on December 31, 1993.

(B) Technical corrections at 1910.110(d)(11), Storage and Handling of Liquefied Petroleum Gases, published in 58 FR (March 19, 1993) page 15089 and effective on December 31, 1993.

(C) Technical amendments to the existing Appendix B and addition of non-mandatory Appendix E to 1910.120, *Hazardous waste operations and emergency*

response published in 59 FR (August 22, 1994) pages 43270 - 43280 and effective on November 1, 1994.

(2) Subpart I - Personal Protective Equipment:

(A) Addition of paragraphs (d), (e) and (f) to 1910.132 -*General requirements*; revisions to 1910.133 - *Eye and face protection*, 1910.135 - *Head protection*, 1910.136 - *Foot protection*, - and addition of 1910.138 - *Hand protection*, including non-mandatory Appendices A and B, published in 59 FR (April 6, 1994) pages 16360 - 16364 and effective on September 1, 1994; addition of paragraph (g) to 1910.132 - *General requirements*; technical and clarifying amendments to 1910.133 - *Eye and face protection*, 1910.136 - *Foot protection*, and 1910.138 - *Hand protection*, as published in 59 FR (July 1, 1994) pages 33910 - 33911 and effective on September 1, 1994.

(B) Revisions to 1910.137, *Electrical Protective Equipment*, published in 59 FR (January 31, 1994) pages 4435 - 4437 and effective on November 1, 1994.

(3) Subpart J - General Environmental Controls - typographical and clarifying corrections at 1910.146, Permit-Required Confined Spaces, published in 59 FR (June 29, 1993) pages 34844 - 34851 and effective on September 24, 1993; a metric equivalent addition of "1.52 m" to 1910.146 (k)(3)(ii) and revisions to "Atmospheric monitoring" section of Appendix E as published in 59 FR (May 19, 1994) pages 26114 - 26116 and effective on September 1, 1994; corrections are to final rule for Permit-Required Confined Spaces as originally published in 58 FR 4462 (January 14, 1993).

(4) Subpart R - Special Industries:

(A) Amendment to Authority Citation for Subpart R of 1910 as published in 59 FR (October 12, 1994) page 51741.

(B) Amendments to 1910.266, *Logging operations*, including Appendices A, B, and C as published in 59 FR (October 12, 1994) pages 51741 - 51748 and effective on April 1, 1995; corrections and technical amendments to 1901.266(c), (d), (e), (f), (g), (h), (i) and Appendix A as published in 60 FR (September 8, 1995) pages 47035-47037 and effective on January 1, 1996.

(C) Amendment to *Electrical Protective Equipment* at 1910.269 (r)(5) that requires gasoline-engine power saw operations to also meet the requirements of 1910.266 (e) as published in 59 FR (October 12, 1994) page 51748 and effective on April 1, 1995.

(5) Subpart S - *Electrical* - amendment to citation authority for Subpart S of 1910, and amendments to Notes 2 and 3 for 1910.133 (c)(1) and the Note for 1910.133 (c)(3), published in 59 FR (January 31, 1994) pages 4475 - 4576 and effective on November 1, 1994.

(6) Subpart Z - Toxic and Hazardous Substances:

(A) Revision of Authority Citation for Subpart Z of Part 1910 published in 59 FR (July 19, 1994) pages 36699 - 36700 and effective on November 1, 1994.

(B) Revocation of exposure limits in "Final rule limits" columns of Table Z-1-A at 1910.1000, Air contaminants, published in 59 FR (June 30, 1993) pages 35338 - 35351 and effective on September 24, 1993.

(C) Correction to Table Z-3 Mineral Dust at 1910. 1000, Air Contaminants, published in 58 FR (July 27, 1993) page 40191 and effective on December 31, 1993.

(D) Technical amendments and corrections to final rule on Occupational Exposure to Lead, 29 CFR 1910.1025, including amendments to Appendices B and C of 1910.1025, with the same compliance dates as found in Table I of subparagraph 1910.1025 (e)(1), as published in 60 FR (October 11, 1995) page 52859, and effective on April 1, 1996.

(E) Typographical and technical corrections at 1910.1027, Cadmium, published in 58 FR (April 23, 1993) pages 21778 - 21787 and effective on September 24, 1993; corrections are to final rule for Occupational Exposure to Cadmium as originally published in 57 FR 42101 (September 14, 1992).

(F) Addition of 1910.1201 "Retention of DOT markings, placards, and labels," published in 59 FR (July 19, 1994) pages 36699 - 36700 and effective on November 1, 1994.

(G) Final rule revisions to 1910.19(a), Special provisions for air contaminants, and revisions to 19 10. 1001, Asbestos, with amendments to Appendices A, B, D, F, G, and H and the addition of Appendix J, as published in 59 FR (August 10, 1994) pages 41057 - 41080; effective on February 1, 1995 with corresponding delayed effective dates as follows: 1910.1001(o)(3)(i) is effective May 1, 1995; 1910.1001(o)(3)(ii) is effective May 31, 1995; 1910.1001(o)(3)(iii) is effective May 1, 1995; 1910.1001(o)(3)(iv) is effective October 31, 1995; 1910.1001(o)(3)(v) is effective July 31, 1995; 1910.1001(o)(3)(vi) is effective May 1, 1995; 1910.1001(o)(3)(vii) is effective May 31, 1995; and 1910.1001(o)(3)(viii) is effective July 31, 1995;

typographical and technical corrections to 1910.1001 including corrections to Appendices B, F, G and 1, published in 60 FR (June 29, 1995) pages 33984 - 33997.

(c) Copies of the applicable Code of Federal Regulations sections referred to in this Subchapter are available to the public. Please refer to 13 NCAC 7A .0302 for the costs involved and from whom copies may be obtained.

History Note:

Filed as a Temporary Amendment Eff. August 16, 1993, for a Period of 180 Days or Until the Permanent Rule Becomes Effective, Whichever is Sooner;

Authority G.S. 95-131; 95-133; 15OB-21.6;

Eff. August 2, 1993;

Amended Eff. April 1, 1996; January 1, 1996; September 6, 1995; April 1, 1995;

Temporary Amendment Eff. April 1, 1996.

.0102 LIFE SAFETY CODE All places of employment shall be designed, constructed, maintained, and occupied in accordance with the standards set out in the 1991 edition of the Code for Safety to Life from Fire in Buildings and Structures, ANSI/NFPA 101, which is hereby incorporated by reference. This incorporation shall not include any subsequent editions or amendments to this code. Copies of this code may be obtained from the National Fire Protection Association, 1 Batterymarch Park, Quincy, Massachusetts 02269, for twenty-seven dollars and fifty cents (\$27.50). This rule supersedes any standards based on earlier editions of the Life Safety Code.

History Note:

Statutory Authority G. S. 95-131;

Eff. April 1, 1992;

Recodified from 13 NCAC 7C. 0107 Eff. August 2, 1993.