

# PESH

## Permissible Exposure Limits

### § 800.5 Permissible exposure limits.

An employee's exposure to any substance listed in Table Z-1-A, Z-2, or Z-3 of this section shall be limited in accordance with the requirements of the following paragraphs of this section.

(a) **Table Z-1-A.** (1) Substances in transitional limits columns with limits preceded by "C"--ceiling values. An employee's exposure to any substance in Table Z-1-A under the transitional limits column, the exposure limit of which is preceded by a "C", shall at no time exceed the exposure limit given for that material in Table Z-1-A under the transitional limits columns.

(2) Other substances in transitional limits columns--8-hour time weighted average. An employee's exposure to any substance in table Z-1-A under the transitional limits columns, the exposure limit of which is not preceded by a "C", shall not exceed the 8-hour time weighted average given for that substance in table Z-1-A under the transitional limits columns in any 8-hour work shift of a 40-hour work week.

(3) Final rule limits columns. An employee's exposure to any substance listed in table Z-1-A shall not exceed the time weighted average (TWA), short term exposure limit (STEL), and ceiling limit specified for that substance in table Z-1-A under the final limits columns.

(4) Skin designation. To prevent or reduce skin absorption, an employee's skin exposure to substances listed in table Z-1-A with an "X" in one or both of the skin designation columns 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.

(5) Definitions. The following definitions are applicable to the final rule limits columns of table Z-1-A:

(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.

(6) Additional definition. The terms *substance*, *air contaminant*, and *material* are equivalent in meaning for 29 CFR 1910.1000. (29 CFR 1910 was previously filed with the Secretary of State on February 2, 1988, under File Number 240. It is available for inspection at the NYS Department of State and the NYS Department of Labor, and can be obtained From the U.S. Government Printing Office in Federal Register, Volume 52, No. 176, pp. 34460-34578, September 11, 1987).

(b) **Table Z-2.** Table Z-2 is applicable for the transitional period and to the extent set forth in subdivision (f) of this section.

(1) Eight-hour time weighted averages. An employee's exposure to any material listed in table Z-2, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that material in table Z-2.

(2) Acceptable ceiling concentrations. An employee's exposure to a material listed in table Z-2 shall not exceed at any time during an 8-hour shift the acceptable ceiling concentration limit given for the material in the table, except for a time period, and up to a concentration not exceeding the maximum duration and concentration allowed in the column under "acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift".

(3) Example. During an 8-hour work shift, an employee may be exposed to a concentration of Substance A (with a 10 ppm TWA, 25 ppm ceiling and 50 ppm peak) above 25 ppm (but never above 50 ppm) only for a maximum period of 10 minutes. Such exposure must be compensated by exposures to concentrations less than 10 ppm so that the cumulative exposure for the entire 8-hour work shift does not exceed a weighted average of 10 ppm.

(c) **Table Z-3.** Table Z-3 is applicable for the transitional period and to the extent set forth in subdivision (f) of this section. An employee's exposure to any substance listed in table Z-3, in any 8-hour work shift of a 40-hour work week shall not exceed the 8-hour time weighted average limit given for that substance in the table.

(d) **Computation formulae.** The computation formula which shall apply to employee exposure to more than one substance for which 8-hour time weighted averages are listed in subpart Z of 29 CFR part 1910 in order to determine whether an employee is exposed over the regulatory limit is as follows:

(1) (i) The cumulative exposure for an 8-hour work shift shall be computed as follows:

$$(E = C(a) T(a) + C(b) T(b) + \dots C(n) T(n)) \text{ divided by } 8$$

Where:

E is the equivalent exposure for the working shift.

C is the concentration during any period of time T where the concentration remains constant.

T is the duration in hours of the exposure at the concentration C.

The value of E shall not exceed the 8-hour time weighted average specified in Subpart Z or 29 CFR part 1910 for the material involved.

(ii) To illustrate the formula prescribed in subparagraph (i) of this paragraph, assume that Substance A has an 8-hour time weighted average limit of 100 ppm noted in table: Z-1-A.

Assume than an employee is subject to the following exposure:

Two hours exposure at 150 p/m

Two hours exposure at 75 p/m

Four hours exposure at 50 p/m

Substituting this information in the formula, we have

$$(2 \times 150 + 2 \times 75 + 4 \times 50) \text{ divided by } 8 = 81.25 \text{ p/m}$$

Since 81.25 p.p.m., is less than 100 p.p.m., the 8-hour time weighted average limit, the exposure is acceptable.

(2) (i) In case of a mixture of air contaminants an employer shall compute the equivalent exposure as follows:

$$E(m) = (C(1) \text{ divided by } L(1) + C(2) \text{ divided by } L(2)) + \dots (C(n) \text{ divided by } L(n))$$

Where:

E(m) is the equivalent exposure for the mixture.

C is the concentration of a particular contaminant.

L is the exposure limit for that substance specified in Subpart Z of 29 CFR part 1910.

The value of E(m) shall not exceed unity (1).

(ii) To illustrate the formula prescribed in subparagraph (d)(2)(i) of this section, consider the following exposures:

Actual concentration of 8-hour exposure	8-hr.TWA
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Substance	(ppm)	PEL (ppm)
B	500	1,000
C	45	200
D	40	200

Substituting in the formula, we have:

$$E(m) = 500 \text{ divided by } 1,000 + 45 \text{ divided by } 200 + 40 \text{ divided by } 200$$

$$E(m) = 0.500 + 0.225 + 0.200$$

$$E(m) = 0.925$$

Since E(m) is less than unity (1), the exposure combination is within acceptable limits.

(e) To achieve compliance with subdivisions (a) through (d) of this section, administrative or engineering controls must first be determined and implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or any other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and/or technical measures used for this purpose must be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with 1910.134.

(f) **Effective dates, start-up dates and transitional provisions.** (1) Effective date. The effective date for the permissible exposure limits specified in the final rule limits columns of table Z-1-A is March 1, 1989.

(2) (i) The permissible exposure limits specified in the final rule columns of table Z-1-A shall be achieved by any reasonable combination of engineering controls, work practices and personal protective equipment effective September 1, 1989, through December 30, 1992. (See note at end of table Z-1-A).

(ii) (a) The permissible exposure limits specified in the final rule limits columns of table Z-1-A shall be achieved by the method of compliance specified in subdivision (e) of this section effective December 31, 1992, if by December 31, 1991, a final rule has been published in the Federal Register amending or determining not to amend subdivision (e) of this section.

(b) If no final rule has been published in the Federal Register by December 31, 1991, amending or determining not to amend subdivision (e) of this section, then the permissible limits specified in the final rule limits columns of table Z-I-A shall be achieved by the methods of compliance specified by subdivision (e) of this section effective December 31, 1993, and subparagraph (f)(2)(i) of this section shall remain in effect through December 30, 1993.

(iii) The skin designations in the final rule limits columns become effective September 1, 1989. The skin designations in the transitional limits columns are in effect from March 1, 1989, through August 31, 1989.

(3) Transitional provisions.

(i) The permissible exposure limits specified in the transitional limits columns of table Z-1-A, table Z-2 and table Z-3 shall continue to be achieved by the methods of compliance specified in subdivision (e) of this section through December 30, 1992. If clause (2)(ii)(b) of this subdivision takes effect, this provision is extended through December 30, 1993. The permissible exposure limits specified in tables Z-2 and Z-3 for substances mentioned in the final rule limits column of table Z-I-A only by cross reference to table Z-2 or Z-3 shall remain in effect indefinitely and continue to be achieved by the methods of compliance specified in subdivision (e) of this section.

(ii) The permissible exposure limits specified in the transitional limits columns of table Z-1-A, Z-2 and Z-3 shall be applicable to the extent cross referenced in 29 CFR parts 1915, 1917 and 1918.

(iii) If any new or amended provisions or new or revised limits for any substance or substances are either administratively stayed or judicially stayed or vacated, then the existing provisions or limits for those substances specified in the transitional limits columns of table Z-1-A, table Z-2 or table Z-3 shall remain in effect until such stay is lifted, or indefinitely, if the limit is vacated.

(4) Enforcement of the limits are indefinitely stayed for: aluminum alkyls; ethylidene norbornene; hexafluoracetone; mercury (alkyl compounds; oxygen difluoride; phenylphosphine; and sulfur pentafluoride; until OSHA publishes in the Federal Register a notice that a sampling and analytical technique is available.

TABLE Z-1-A. LIMITS FOR AIR CONTAMINANTS

*NOTE:* Footnotes specific only to a limited number of substances are also shown within the table.

\* The transitional PELs are 8-hour TWAs unless otherwise noted; a (C) designation denotes a ceiling limit.

\*\* Unless otherwise noted, employers in General Industry (i.e., those covered by 29 CFR 1910) may rise any combination of controls to achieve these limits until December 31, 1993 as set forth in 29 CFR 1910.1000(f).

\*\*\* As determined from breathing-zone air samples;

<sup>a</sup> Parts of vapor or gas per million parts of contaminated air by volume at 25 degrees C and 760 torr.

<sup>b</sup> Milligrams of substance per cubic meter of air. When a numerical entry for a substance is in the mg/m(3) column and not in the ppm column, then the number in the mg/m(3) is exact. When numerical entries for a substance are in both the ppm and mg/m(3) columns, then the number in the ppm column is exact and the number in the mg/m(3) column may be rounded off.

<sup>c</sup> Duration is for 15 minutes, unless otherwise noted.

<sup>d</sup> The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except some subsegments of industry where exposures are consistently under the action level (i.e., distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures); for the excepted subsegment the benzene limits in table Z-2 apply.

<sup>e</sup> Exposures under 10,000 ppm are to be cited de minimus.

<sup>f</sup> The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than one metal compound measured as the metal, the CAS number for the metal is given-not CAS numbers for the individual compounds.

<sup>g</sup> Compliance with the subtilisins PEL is assessed by sampling with a high volume sampler (600 800 liters pm minute) for at least 60 minutes.

<sup>h</sup> The Acetone STEL does not apply to the cellulose acetate fiber industry. It is in effect for all other sectors.

<sup>i</sup> The final rule limit STEL of 5 mg/m(3) is not in effect as a result of reconsideration. Calcium hydroxide is covered by the exposure limits for particulates not otherwise regulated of 5 mg/m(3) respirable dust and 5 mg/m(3) total dust.

<sup>j</sup> The final rule limit TWA of 5 mg/m(3) is not in effect as a result of reconsideration. The calcium oxide transitional limit of 5 mg/m(3) remains in effect and employee exposures shall be kept below that level pursuant to the methods of compliance specified in CFR 1910.1000(e).

<sup>k</sup> The final rule limit STEL of 0.1 mg/m(3) is not in effect as a result of reconsideration for the industrial sector of civilian manufacture and distribution of explosives and propellants for civilian use. The final rule limits skin designation and the transitional limits ceiling limit of 1 mg/m(3) remain in effect for this sector until completion to the reconsideration.

<sup>l</sup> The final rule limit STEL of 0.1 mg/m(3) is not in effect as a result of reconsideration for the industrial sector of civilian manufacture and distribution of explosives and propellants for civilian use. The final rule limits skin designation and the transitional limits ceiling limit of 2 mg/m(3) remain in effect for this sector until completion of the reconsideration.

<sup>m</sup> Sampling for the carbon monoxide ceiling shall be averaged over 5 minutes but an instantaneous reading over 1500 ppm shall not be exceeded.

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Acetaldehyde	CAS NO (f) 75-07-0	
Transitional Limits:		
PEL*	200 ppm(a)	360 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm (a)	180 mg/m(3)(b)
STEL(c)	150 ppm (a)	270 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Acetic acid	CAS NO(f): 64-19-7	
Transitional Limits:		
PEL*	10 ppm (a)	25 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm (a)	25 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--

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Acetic anhydride	CAS NO(f): 108-24-7	
Transitional Limits:		
PEL*	5 ppm(a)	20 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	5 ppm(a)	20 mg/m(3)(b)
Skin Designation	--	

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Acetone (h)	CAS NO(f):67-64-1	
Transitional Limits:		
PEL*	1000 ppm(a)	2400 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	750 ppm (a)	1800 mg/m(3)(b)
STEL(c)	1000 ppm (a) (h)	2400 mg/m(3)(b) (h)
CEILING	--	--
Skin designation	--	

Footnote (h) The Acetone STEL does not apply to the cellulose acetate fiber industry. It is in effect for all other sectors.

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Acetonitrile*	CAS NO(f):75-05-8	
Transitional Limits:		
PEL*	40 ppm(a)	70 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	40 ppm(a)	70 mg/m(3)(b)
STEL(c)	60 ppm (al)	105 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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2-Acetylaminofluorine;  
see 1910.1014

CAS NO(f): 53-96-3

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Acetylene dichloride;  
see 1, 1-Dichloroethylene

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Acetylene tetrabromide	CAS NO(f): 79-27-6	
Transitional Limits:		
PEL*	1 ppm (a)	14mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	14mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Acetylsalicylic acid (Aspirin)	CAS NO(f): 50-78-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Acrolein	CAS NO(f): 107-02-8	
Transitional Limits:		
PEL*	0.1 ppm(a)	0.25 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.25 mg/m(3)(b)
STEL(c)	0.3 ppm(a)	0.8 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Acrylamide	CAS NO(f):79-06-1	
Transitional Limits:		
PEL*	--	0.3 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.03mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

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Acrylic acid	CAS NO(f):79-10-7	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	30mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

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Acrylonitrile; see 1910.1045	CAS NO(f): 107-13-1	
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Aidtin	CAS NO(f):309-00-2	
Transitional Limits:		
PEL*		0.25 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.25mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

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Allyl alcohol	CAS NO(f):107-18-6	
Transitional Limits:		
PEL*	2 ppm(a)	5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	2 ppm(a)	5 mg/m(3)(b)
STEL(c)	4 ppm(a)	10 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	

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Allyl chloride	CAS NO(f):107-05-1	
Transitional Limits:		
PEL*	1 ppm(a)	3 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	3 mg/m(3)(b)
STEL(c)	2 ppm(a)	6 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

Allyl glycidyl ether (AGE)	CAS NO(f): 106-92-3	
Transitional Limits:		
PEL*	(C) 10 ppm(a)	(C) 45 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	5 ppm(a)	22 mg/m(3)(b)
STEL(c)	10 ppm(a)	44 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

Footnote (C) denotes a ceiling limit.

Allyl propyl disulfide	CAS NO(f):2179-59-1	
Transitional Limits:		
PEL*	2 ppm(a)	12 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	12 mg/m(3)(b)
STEL(c)	3 ppm(a)	18 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

CAS NO(f): 1344-28-1

alpha-Alumina		
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Aluminum (as Al) Metal	(CAS NO (f): 7429-90-5	
Total Dust		
Transitional Limits:		



PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	
CEILING	--	
Skin Designation--		
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Pyro Powders		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	
CEILING	--	
Skin Designation	--	
Welding Fumes***		
Transitional Limits:		
PEL*	--	
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Footnote*** As determined flora breathing-zone air samples.		
Soluble Salts		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Alkyls		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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4-Aminodiphenyl;  
see 1910.1011

CAS NO(f):92-67-1

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2-Aminoethanol;  
see Ethanolamine

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2 Aminopyridine	CAS NO(f):504-29-0	
Transitional Limits:		
PEL*	0.5 ppm(a)	2 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	05 ppm(a)	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Amitrole	CAS NO(f):61-82-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Ammonia	CAS NO(f):7664-41-7	
Transitional Limits:		
PEL*	50 ppm(a)	35 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	35 ppm(a)	27 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Ammonium chloride fume	CAS NO(f): 12125-02-9	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	20 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Ammonium sulfamate	CAS NO(f):7773-06-0	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--

CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)		20 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

n-Amyl acetate	CAS NO(f): 628-63-7	
Transitional Limits:		
PEL*	100 ppm(a)	525 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	525 mg/m(3)(b)
STEL(c)		20 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

sec-Amyl acetate	CAS NO(f): 626-38-0	
Transitional Limits:		
PEL*	125 ppm(a)	650 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	125 ppm(a)	650 mg/m(3)(b)
STEL(c)		20 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

Aniline and homologs	CAS NO(f): 62-53-3	
Transitional Limits:		
PEL*	5 ppm(a)	19 mg/m(3)(b)
Skin Designation	2X	
Final Rule Limits**:		
TWA	ppm(a)	8 mg/m(3)(b)
STEL(c)		20 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	

Anisidine (o-,p-isomers)	CAS NO(f):29191-52-4	
Transitional Limits:		
PEL*		0.5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

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Antimony and compounds (as Sb)	CAS NO(f):7440-36-0	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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ANTU (alpha Naphthylthiourea)	CAS NO(f):86-88-4	
Transitional Limits:		
PEL*	--	0.3 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.3 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Arsenic, organic compounds (as As)	CAS NO(f):7440-32-2	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Arsenic, inorganic compounds (as As) see 1910.1018	CAS NO(f):7440-38-2;	
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Arsine	CAS NO(f):7784-42-1	
Transitional Limits:		
PEL*	0.05 ppm(a)	0.2 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.05 ppm(a)	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Asbestos  
see 1910.1001 and 1910.1101

CAS NO (f): Varies

Atrazine	CAS NO(f):1912-24-9	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	--
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Azinphos metyl	CAS NO(f):86-50-0	
Transitional Limits:		
PEL*	--	0.2 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
Barium, soluble compounds (as Ba)	CAS NO(f):7440-39-3	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Barium sulfate	CAS NO(f):7727-43-7	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Benomyl	CAS NO(f): 17804-35-2	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Benzene  
see 1910.1028

CAS NO(f):71-43-2

See Table Z-2 for the limits applicable in the operations or sectors excluded in 1910.1028(d) Footnote (d) The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except some subsegments of industry where exposures are consistently under the action level (i.e., distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures); for the excepted subsegments, the benzene limits in Table Z-2 apply.

Benzidine  
see 1910.1010

CAS NO(f):92-87-5

p-Benzoquinone;  
see Quinone

Benzo (a) pyrene;  
see Coal tar pitch volatiles

Benzoyl peroxide	CAS NO(f):94-36-0	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Benzyl chloride	CAS NO(f): 100-44-7	
Transitional Limits:		
PEL*	1 ppm(a)	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		

TWA	1 ppm(a)	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Beryllium and beryllium compounds  
(as Be) CAS NO(f):7440-41-7  
See Table Z-2

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Biphenyl;  
see Diphenyl

---

Bismuth telluride, Undoped	CAS NO(f): 1304-82-1	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Bismuth telluride, Se-doped		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Borates, tetra, sodium salts		
Anhydrous	CAS NO (f): 1330-43-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Decahydrate CAS NO(f): 1303-96-4

Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Pentahydrate	CAS NO(f): 12179-04-3	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Boron oxide	CAS NO(f): 1303-86-2	
Total dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Boron tribromide	CAS NO(f):10294 33-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	1 ppm(a)	10 mg.m(3)(b)
Skin Designation		
<hr/>		
Boron trifluoride	CAS NO(f):7637-07-2	
Transitional Limits:		
PEL*	(C) 1 ppm(a)	(C) 3 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	1 ppm(a)	3 mg/m(3)(b)
Skin Designation		
Footnote (C) denotes a ceiling limit.		
<hr/>		
Bromacil	CAS NO(f):314-40-9	
Transitional Limits:		
PEL*	--	--



Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Bromine	CAS NO(f):7726-95-6	
Transitional Limits:		
PEL*	0.1 ppm(a)	0.7 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.7 mg/m(3)(b)
STEL(c)	0.3 ppm(a)	2 mg/m(3)(b)
CEILING		
Skin Designation		
<hr/>		
Bromine pentafluoride	CAS NO(f):7789-30-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	--
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.7 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Bromoform	CAS NO(f):75-25-2	
Transitional Limits:		
PEL*	0.5 ppm(a)	5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	0.5 ppm(a)	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Butadiene (1,3-Butadiene)	CAS NO(f):106-99-0	
Transitional Limits:		
PEL*	1000 ppm(a)	2200 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1000 ppm(a)	2200 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Butane	CAS NO(f):106-97-8	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	800 ppm(a)	1900 mg/m(3)(b)
STEL(c)	--	--

CEILING	--	--
Skin Designation	--	
<hr/>		
Butanethiol; see Butyl mercaptan		
<hr/>		
2-Butanone (Methyl ethyl ketone)	CAS NO(f):78-93-3	
Transitional Limits:		
PEL*	200 ppm(a)	590 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	200 ppm(a)	590 mg/m(3)(b)
STEL(c)	300 ppm(a)	885 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
2 Butoxyethanol	CAS NO(f): 111-76-2	
Transitional Limits:		
PEL*	50 ppm(a)	240 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	25 ppm(a)	120 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
n-Butyl-acetate	CAS NO(f):123-86-4	
Transitional Limits:		
PEL*	150 ppm(a)	710 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	150 ppm(a)	710 mg/m(3)(b)
STEL(c)	200 ppm(a)	950 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
sec-Butyl acetate	CAS NO(f): 105-46-4	
Transitional Limits:		
PEL*	200 ppm(a)	950mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	200 ppm(a)	950 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
tert Butyl-acetate	CAS NO(f):540-88-5	
Transitional Limits:		
PEL*	200 ppm(a)	950 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	200 ppm(a)	950 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--

Skin Designation	--	
<hr/>		
Butyl acrylate	CAS NO(f):141-32-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	55 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
n-Butyl alcohol	CAS NO(f):71-36-3	
Transitional Limits:		
PEL*	100 ppm(a)	300 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	50 ppm(a)	150 mg/m(3)(b)
Skin Designation	X	
<hr/>		
sec-Butyl alcohol	CAS NO(f):78-92-2	
Transitional Limits:		
PEL*	150 ppm(a)	450 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	305 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		

tert Butyl alcohol	CAS NO(f):75-65-0		
Transitional Limits:			
PEL*	100 ppm(a)		300 mg/m(3)(b)
Skin Designation	--		
Final Rule Limits**:			
TWA	100 ppm(a)		300 mg/m(3)(b)
STEL(c)	150 ppm(a)		450 mg/m(3)(b)
CEILING	--		--
Skin Designation	--		

---

Butylamine	CAS NO (f): 109-73-9		
Transitional Limits:			
PEL*	(C) 5 ppm(a)		(C) 15 mg/m(3)(b)
Skin Designation	X		
Final Rule Limits**:			
TWA	--		--
STEL(c)	--		--
CEILING	5 ppm(a)		15 mg/m(3)(b)
Skin Designation	X		

Footnote (C) denotes a ceiling limit.

---

tert Butyl chromate (as CrO (3))	CAS NO(f):1189-85-1		
Transitional Limits:			
PEL*	--		(C) 0.1 mg/m(3)(b)
Skin Designation	X		
Final Rule Limits**:			
TWA	--		--
STEL(c)	--		--
CEILING			0.1 mg/m(3)(b)
Skin Designation	X		

Footnote (C) denotes a ceiling limit.

---

n Butyl glycidyl ether (BGE)	CAS NO(f):2426-08-6		
Transitional Limits:			
PEL*	50 ppm(a)		270 mg/m(3)(b)
Skin Designation	--		
Final Rule Limits**:			
TWA	25 ppm(a)		135 mg/m(3)(b)
STEL(c)	--		--
CEILING	--		--
Skin Designation	--		

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n-Butyl lactate	CAS NO(f):138-22-7		
Transitional Limits:			
PEL*	--		--
Skin Designation	--		
Final Rule Limits**:			
TWA	5 ppm(a)		25 mg/m(3)(b)
STEL(c)	--		--
CEILING	--		--
Skin Designation	--		

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Butyl mercaptan	CAS NO(f):109-79-5		
Transitional Limits:			

PEL*	10 ppm(a)	35 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.5 ppm(a)	1.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

o-sec-Butylphenol	CAS NO(f):89-72-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	5 ppm(a)	30 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

p-tert-Butyltoluene	CAS NO(f):98-51-1	
Transitional Limits:		
PEL*	10 ppm(a)	60 mg/m(3)(0)
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	60 mg/m(3)(b)
STEL(c)	20 ppm(a)	120 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

\* Cadmium fume (as Cd) CAS NO(f): 7440-43-9

(This entire line has been replaced per 57 FR 42388, Sept 14, 1992 by the following):

Cadmium; see 1910.1027. See Table Z-2 for the exposure limits for any operations or sectors where the exposure limits in 1910.1027 are stayed or otherwise not in effect.

Cadmium dust (as Cd) CAS NO(f): 7440-43-9

(This entire line has been replaced per 57 FR 42388, Sept 14, 1992 by the following):

Cadmium; see 1910.1027. See Table Z-2 for the exposure limits for any operations or sectors where the exposure limits in 1910.1027 are stayed or otherwise not in effect

Calcium Carbonate	CAS NO(f): 1317-65-3	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	

Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Calcium cyanamide	CAS NO(f):156-62-7	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Calcium hydroxide (i)	CAS NO(f): 1305-62-0	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)(i)
STEL(c)		
CEILING		
Skin Designation		

Footnote (i) The Final Rule Limit of 5 mg/m(3) is not in effect as a result of reconsideration.

Calcium hydroxide is covered by the exposure limits for particulates not otherwise regulated of 5 mg/m(3) respirable dust and 5 mg/m(3) total dust.

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Calcium oxide (j)	CAS NO(f):1305 78 8	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)(j)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Footnote (j) The Final Rule Limit TWA of 5 mg/m(3) is not in effect as a result of reconsideration.

The calcium oxide Transitional Limit of 5 mg/m(3) remains in effect and employee exposures shall be kept below that level pursuant to the methods of compliance specified in 29 CFR 1910.1000(e).

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Calcium Silicate	CAS NO(f): 1344-95-2	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		

Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Calcium sulfate	CAS NO(f):7778-18-9	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL *	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**		
TWA	--	5 mg/m(3)(b)
STEL(e)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Camphor, synthetic	CAS NO(f):76-22-2	
Transitional Limits:		
PEL*	--	2 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Caprolactam	CAS NO(f): 105-60-2	
Dust		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	3 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
Vapor		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	5 ppm(a)	20 mg/m(3)(b)
STEL(c)	10 ppm(a)	40 mg/m(3)(b)

CEILING	--	--
Skin Designation	--	
<hr/>		
Captafol (Difolatan (R))	CAS NO(f): 2425-06-1	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Captan	CAS NO(f): 133-06-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
TEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Carbaryl (Sevin (R))	CAS NO(f): 63-25-2	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Carbofuran (Furadan (R))	CAS NO(f): 1563-66-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Carbon black	CAS NO(f): 1333-86-4	
Transitional Limits:		
PEL*	--	3.5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	3.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Carbon dioxide	CAS NO(f): 124-38-9	



Transitional Limits:		
PEL*	5000(e) ppm(a)	9,000 mg/m(3)(b)
Skin Designation	-	--
Final Rule Limits**:		
TWA	10,000 ppm(a)	18,000 mg/m(3)(b)
STEL(c)	30,000 ppm(a)	54,000 mg/m(3)(b)
CEILING		
Skin Designation		

Footnote (e) Exposures under 10,000 ppm to be cited de minimus.

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Carbon disulfide	CAS NO(f): 75 15-0	
Transitional Limits:		
PEL*	Tbl. Z-2	
Final Rule Limits**:		
TWA	4 ppm(a)	12 mg/m(3)(b)
STEL(c)	12 ppm(a)	36 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	

---

<b>Carbon monoxide</b>	CAS NO(t): 630-08-0	
Transitional Limits:		
PEL*	50 ppm(a)	55 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
<b>TWA</b>	<b>35 ppm(a)</b>	40 mg/m(3)(b)
STEL(c)	--	--
<b>CEILING</b>	<b>200 ppm(a)(m)</b>	229 mg/m(3)(b)(m)
Skin Designation		

Note: Stayed CEILING for blast furnace operations, vessel blowing at basic oxygen furnaces and sinter plants in the steel industry (SIC 33), termination pending (FR 55: 3724, 2/5/90)

Footnote (m) Sampling for the carbon monoxide ceiling shall be averaged over 5 minutes but an instantaneous reading over 1500 ppm shall not be exceeded.

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Carbon tetrabromide	CAS NO(f): 558-13-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	1.4 mg/m(3)(b)
STEL(c)	0.3 ppm(a)	4 mg/m(3)(h)
CEILING	--	--
Skin Designation	--	

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Carbon tetrachloride	CAS NO(f): 56-23-5	
Transitional Limits:		
PEL*	Tbl. Z-2	
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	12.6 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Carbonyl fluoride	CAS NO(f): 353-50-4	
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Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	5 mg/m(3)(b)
STEL(c)	5 ppm(a)	15 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Catechol (Pyrocatechol)	CAS NO(f): 120 80-9	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	5 ppm(a)	20 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Cellulose	CAS NO(f): 9004-34-6	
Total Dust		
Transitional Limits: PEL*		
Skin Designation	--	15 mg/m(3)(b)
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Cesium hydroxide	CAS NO(f): 21351-79-1	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Chlordane	CAS NO(f): 57-74-9	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--

CEILING	--	--
Skin Designation	X	
<hr/>		
Chlorinated camphene	CAS NO(f): 8001-35-2	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	1 mg/m(b)(3)
CEILING	--	--
Skin Designation	X	
<hr/>		
Chlorinated diphenyl oxide	CAS NO(f): 55720-99-5	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Chlorine	CAS NO(f): 7782-50-5	
Transitional Limits:		
PEL*	(C) 1 ppm(a)	(C) 3 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.5 ppm(a)	1.5 mg/m(3)(b)
STEL(c)	1 ppm(a)	3 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
Footnote (C) denotes a ceiling limit.		
<hr/>		

Chlorine dioxide	CAS NO(f): 10049-04-4	
Transitional Limits:		
PEL*	0.1 ppm(a)	0.3 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.3 mg/m(3)(b)
STEL(c)	0.3 ppm(a)	0.9 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

---

Chlorine trifluoride	CAS NO(f): 7790-91-2	
Transitional Limits:		
PEL*	(C) 0.1 ppm(a)	(C) 0.4 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.1 ppm(a)	0.4 mg/m(3)(b)
Skin Designation	--	

Footnote (C) denotes a ceiling limit.

---

Chloroacetaldehyde	CAS NO(f): 107-20-0	
Transitional Limits:		
PEL*	0.05 ppm(a)	0.3mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.05 ppm(a)	0.3mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Footnote (C) denotes a ceiling limit.

---

a-Chloroacetophenone (Phenacyl chloride)	CAS NO(f): 532-27-4	
Transitional Limits:		
PEL*	0.05 ppm(a)	0.3 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.05 ppm(a)	0.3 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Chloroacetyl chloride	CAS NO(f): 79-04-9	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.05 ppm(a)	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Chlorobenzene	CAS NO(f): 108-90-7	
Transitional Limits:		

PEL*	75 ppm(a)	350 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	75 ppm(a)	350 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
o-Chlorobenzylidene malononitrile	CAS NO(f): 2698-41-1	
Transitional Limits:		
PEL*	0.05 ppm(a)	0.4 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.05 ppm(a)	
Skin Designation	X	
<hr/>		
Chlorobromomethane	CAS NO(f): 74--97-5	
Transitional Limits:		
PEL*	200 ppm(a)	1050 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	200 ppm(a)	1050 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
2-Chloro-1,3-butadiene; see b-Chloroprene		
<hr/>		
Chlorodifluoromethane	CAS NO(f): 75 45 6	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	1000 ppm(a)	3500 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Chlorodiphenyl (42% Chlorine) (PCB)	CAS NO(f): 53469-21-9	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Chlorodiphenyl (54% Chlorine) (PCB)	CAS NO(f): 11097-69-1	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)

Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
1-Chloro, 2,3-epoxypropane; see Epichlorohydrin		
<hr/>		
2-Chloroethanol; see Ethylene chlorohydrin		
<hr/>		
Chloroethylene; see Vinyl chloride		
<hr/>		
Chloroform (Trichloromethane)	CAS NO(f): 67-66-3	
Transitional Limits:		
PEL*	(C) 50 ppm(a)	(C) 240 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	9.78 mg/mm(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Footnote (C) denotes a ceiling limit.		
<hr/>		
bis (Chloromethyl) ether see 1910.1008	CAS NO(f): 542-88-1	
<hr/>		
Chloromethyl methyl ether see 1910.1006	CAS NO(f): 107 30-2	
<hr/>		
1-Chloro- 1 –nitropropane	CAS NO(f):600-25-9	
Transitional Limits:		
PEL*	20 ppm(a)	100 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Chloropentafluoroethane	CAS NO(f): 76-15-3	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	1000 ppm(a)	6320 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--
<hr/>		

Chloropicrin	CAS NO(f): 76-06-2	
Transitional Limits:		
PEL*	0.1 ppm(a)	0.7 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.7 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

beta-Chloroprene	CAS NO(f): 126-99-8	
Transitional Limits:		
PEL*	25 ppm(a)	90 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	10 ppm(a)	35 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

o-Chlorostyrene	CAS NO(f): 2039-87-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	50 ppm(a)	285 mg/m(3)(b)
STEL(c)	75 ppm(a)	428 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

o-Chlorotoluene	CAS NO(f): 95-49-8	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	50 ppm(a)	250 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

2-Chloro-6-trichloro-methyl pyridine	CAS NO(f): 1929-82-4	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m (3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		

TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Chlorpyrifos	CAS NO(f): 2921-88-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Chromic acid and chromates (as CrO (3))	Varies with Compound	
Transitional Limits:		
PEL*	--	Tbl. Z-2
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	--	0.1 mg/m(3)(a)
Skin Designation	--	

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\* Chromium (II) compounds (as Cr) CAS NO(f): 7440-47-3  
(This entry removed by 57 ER 29205, July 1, 1992)

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Chromium, Sol. chromic, chromous salts (as Cr)	CAS NO(f): 7440-47-3	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Chromium, metal and soluble salts	CAS NO(f): 7440-47-3	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Chrysene:  
see Coal tar pitch volatiles

---

Clopidol CAS NO(f): 2971-90-6



Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--

---

Coal dust (Less than 5% SiO (2))

Respirable fraction		
Transitional Limits:		
PEL*	See Table Z-3	
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--

---

Coal dust (Greater than or equal to 5% SiO (2))

Respirable quartz fraction		
Transitional Limits:		
PEL*	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--

---

Coal tar pitch volatiles  
(Benzene soluble fraction), Anthracene, BaP, Phenanthrene, Acridine, Chrysene, Pyrene

CAS NO(f): 65966-93-2

Transitional Limits:		
PEL*	--	0.2 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--

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Cobalt metal, dust, and fume (as Co)

CAS NO(f): 7440-48-4

Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)

Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.05 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Cobalt carbonyl (as Co)	CAS NO(f): 10210-68-1	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--

Cobalt hydrocarbonyl (as Co)	CAS NO(f): 16842-03-8	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Coke oven emissions;  
See 1910.1029

Copper	CAS NO(f): 7440-50-8	
Fume (as Cu)		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Dusts and mists (as Cu)		
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Cotton dust (Raw)		
Transitional Limits:		
PEL*		1 mg/m(3)(b)
TWA	--	1 mg/m(3)(b)

STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

This 8 hour TWA applies to respirable dust as measured by a vertical elutriator cotton dust sampler or equivalent instrument. The time weighted average applies to the cotton waste processing operations of waste recycling (sorting, blending, cleaning, and willowing) and garretting. See also 1910.1043 for cotton dust limits applicable to other sectors.

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Crag herbicide (Sesone)	CAS NO(f): 136-78-7	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Cresol, all isomers	CAS NO(f): 1319 77-3	
Transitional Limits:		
PEL*	5 ppm(a)	22 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	5 ppm(a)	22 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Crotonaldehyde	CAS NO(f): 123-73-9; 4170-30-3	
Transitional Limits:		
PEL*	2 ppm(a)	6 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	6 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Crufomate	CAS NO(f): 299-86-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)

STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Cumene	CAS NO(f): 98-82-8	
Transitional Limits:		
PEL*	50 ppm(a)	245mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	50 ppm(a)	245mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Cyanamide	CAS NO(f): 420-04-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Cyanides (as CN)	CAS NO(f): Varies With Compound	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Cyanogen	CAS NO(f): 460-19-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	20 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Cyanogen chloride	CAS NO(f): 506 77-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.3 ppm(a)	0.6 mg/m(3)(b)
Skin Designation	--	
<hr/>		

Cyclohexane	CAS NO(f): 110-82-7	
Transitional Limits		
PEL*	300 ppm(a)	1050 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	300 ppm(a)	1050 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Cyclohexanol	CAS NO(f): 108-93-0	
Transitional Limits:		
PEL*	50 ppm(a)	200 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	50 ppm(a)	200 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Cyclohexanone	CAS NO(f): 108-94-1	
Transitional Limits:		
PEL*	50 ppm(a)	200 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	25 ppm(a)	100 mg/m(3)(b)
STL(c)	--	--
CEILING	--	--
Skin Designation	X	

Cyclohexene	CAS NO(f): 110-83-8	
Transitional Limits:		
PEL*	300 ppm(a)	1015 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	300 ppm(a)	1015 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Cyclohexylamine	CAS NO(f): 108-91-8	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	40 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Cyclonite	CAS NO(f): 121-82-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	

Final Rule Limits**:		
TWA	--	1.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Cyclopentadiene	CAS NO(f): 542-92-7	
Transitional Limits:		
PEL *	75 ppm(a)	200 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	75 ppm(a)	200 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Cyclopentane	CAS NO(f): 287-92-3	
Transitional Limits:		
PEL *	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	600 ppm(a)	1720 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Cyhexatin	CAS NO(f): 13121-70-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING		
Skin Designation	--	--
<hr/>		
* 2,4-D (Dichlorophenoxyacetic acid)	CAS NO(f): 94-75-7	
Transitional Limits:		
PEL*	--	10 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Decaborane	CAS NO(f): 17702-41-9	
Transitional Limits:		
PEL*	0.05 ppm(a)	0.3 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	0.05 ppm(a)	0.3 mg/m(3)(b)
STEL(c)	0.15 ppm(a)	0.9 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	
<hr/>		
Demeton (Systox (R))	CAS NO(f): 8065-48-3	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Dichlorodiphenyltrichloroethane (DDT)	CAS NO(f): 50-29-3	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Dichlorvos (DDVP)	CAS NO(f): 62-73-7	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		

TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Diacetone alcohol (4-Hydroxy 4-methyl-2-pentanone)	CAS NO(f): 123-42-2	
Transitional Limits:		
PEL*	50 ppm(a)	240 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	50 ppm(a)	240 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
1,2-Diaminoethane; see Ethylenediamine		
<hr/>		
Diazinon	CAS NO(f): 333-41-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Diazomethane	CAS NO(f): 334-88-3	
Transitional Limits:		
PEL*	0.2 ppm(a)	0.4 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.2 ppm(a)	0.4 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Diborane	CAS NO(f): 19287-45-7	
Transitional Limits:		
PEL*	0.1 ppm(a)	0.1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
1,2-Dibromo 3-chloropropane see 1910.1044	CAS NO(f): 96-12-8	
<hr/>		
2-N-Dihutylaminoethanol	CAS NO(f): 102-81-8	



Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	14 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Dibutyl phosphate	CAS NO(f): 107-66-4	
Transitional Limits:		
PEL*	1 ppm(a)	5mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	5 mg/m(3)(b)
STEL(c)	2 ppm(a)	10mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Dibutyl phthalate	CAS NO(f): 84-74-2	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Dichloroacetylene	CAS NO(f): 7572-29-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.1 ppm(a)	0.4 mg/m(3)(b)
Skin Designation	--	
<hr/>		
o-Dichlorobenzene	CAS NO(f): 95-50-1	
Transitional Limits:		
PEL*	(C) 50 ppm(a)	(C) 300 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	50 ppm(a)	300 mg/m(3)(b)
Skin Designation	--	
Footnote (C) denotes a ceiling limit.		
<hr/>		
p-DICHLOROBENZENE	CAS NO(f): 106-46-7	
Transitional Limits:		
PEL*	75 ppm(a)	450 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	75 ppm(a)	450 mg/m(3)(b)

STEL(c)	110 ppm(a)	675 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	--
<hr/>		
3,3' -Dichlorobenzidine; see 1910.1007	CAS NO(f): 91-94-1	
<hr/>		
Dichlorodifluoro-methane	CAS NO(f): 75-71-8	
Transitional Limits:		
PEL *	1000 ppm(a)	4950 mg/m(3)(b)
Skin Designation	--	--
Final Rule Limits**:		
TWA	1000 ppm(a)	4950 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--
<hr/>		
1,3-Dichloro-5,5 dimethyl hydantoin	CAS NO(f): 118-52-5	
Transitional Limits:		
PEL *	--	0.2 mg/m(3)(b)
Skin Designation	--	--
Final Rule Limits**:		
TWA	--	0.2 mg/m(3)(b)
STEL(c)	--	0.4 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	--
<hr/>		
1,1-Dichloroethane	CAS NO(f): 75-34-3	
Transitional Limits:		
PEL *	100 ppm(a)	400 mg/m(3)(b)
Skin Designation	--	--
Final Rule Limits**:		
TWA	100 ppm(a)	400 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--
<hr/>		
1,2-Dichloroethylene	CAS NO(f): 540-59-0	
Transitional Limits:		
PEL *	200 ppm(a)	790 mg/m(3)(b)
Skin Designation	--	--
Final Rule Limits**:		
TWA	200 ppm(a)	790 mg/m(3)(b)
STEL(e)	--	--
CEILING	--	--
Skin Designation	--	--
<hr/>		
Dichlorathyl ether	CAS NO(f): 111-44-4	
Transitional Limits:		
PEL *	(C) 15 ppm(a)	(C) 90 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	5 ppm(a)	30 mg/m(3)(b)
STEL(c)	10 ppm(a)	60 mg/m(3)(b)

CEILING	--	--
Skin Designation	X	

Footnote (C) denotes a ceiling limit.

---

Dichloromethane; see Methylene chloride

Dichloromonofluoro-methane	CAS NO(f): 75 43-4	
Transitional Limits:		
PEL*	1000 ppm(a)	4200 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	40 mg/m(3)(b)
STEL(c)	--	--)
CEILING	--	--
Skin Designation	--	

---

1,1-Dichloro- 1 –nitroethane

	CAS NO(f): 594-72-9	
Transitional Limits:		
PEL*	(C)10 ppm(a)	(C) 60 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Footnote (C) denotes a ceiling limit.

---

1,2-Dichloropropane;  
see Propylenedichloride

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1,3-Dichloropropene

	CAS NO(f): 542-75-6	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

2,2 Dichloropropionic acid

	CAS NO(f): 75-99-0	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	6 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Dichlorotetrafluoroethane

	CAS NO(f): 76-14-2	
Transitional Limits:		
PEL*	1000 ppm(a)	7000 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		

TWA	1000 ppm(a)	7000 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Dicrotophos	CAS NO(f): 141-66-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.25mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Dicyclopentadiene	CAS NO(f): 77-73-6	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	5 ppm(a)	30mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Dicyclopentadienyl iron	CAS NO(f): 102-54-5	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Dieldrin	CAS NO(f): 60-57-1	
Transitional Limits:		
PEL*		0.25 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	.025 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Diethanolamine	CAS NO(f): 111-42-2	
Transitional Limits:		
PEL*	--	
Skin Designation	--	
Final Rule Limits**:		
TWA	3 ppm(a)	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Diethylamine

CAS NO(f): 109-89-7		
Transitional Limits:		
PEL*	25 ppm(a)	75 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	10 ppm(a)	30 mg/m(3)(b)
STEL(c)	25 ppm(a)	75 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

---

2-Diethylaminoethanol

CAB NO(f): 100-37-8

Transitional Limits:		
PEL*	10 ppm(a)	50 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	10 ppm(a)	50 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Diethylene talamine

CAS NO(f): 111-40-0

Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	4 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Diethyl ether;  
see Ethyl ether

---

Diethyl ketone

CAS NO(f): 96-22-0

Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	200 ppm(a)	705 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Diethyl phthalate	CAS NO(f): 84-66-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Difluorodibromomethane	CAS NO(f):75-61-6	
Transitional Limits:		
PEL *	100 ppm(a)	860mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	100 ppm(a)	860mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Diglycidyl ether (DGE)	CAS NO(f): 2238-07-5	
Transitional Limits:		
PEL*	(C) 0.5 ppm(a)	(C) 2.8 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Footnote (C) denotes a ceiling limit.		
<hr/>		
Dihydroxybenzene; see Hydroquinone		
<hr/>		
Diisobutyl ketone	CAS NO(f): 108-83-8	
Transitional Limits:		
PEL*	50 ppm(a)	290 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	25 ppm(a)	150 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Diisopropylamine	CAS NO(f): 108-18-9	
Transitional Limits:		
PEL*	5 ppm(a)	20 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	5 ppm(a)	20 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		

4-Dimethylaminoazobenzene;  
see 1910.1015

CAS NO(f): 60-11-7

---

Dimethoxymethane;  
see Methylal

---

Dimethyl acetamide

CAS NO(f): 127-19-5

Transitional Limits:

PEL\*

10 ppm(a)

35 mg/m(3)(b)

Skin Designation

X

Final Rule Limits\*\*:

TWA

10 ppm(a)

35 mg/m(3)(b)

STEL(c)

--

--

CEILING

--

--

Skin Designation

X

--

---

Dimethylamine

CAS NO(f): 124-40-3

Transitional Limits:

PEL\*

10 ppm(a)

18 mg/m(3)(b)

Skin Designation

--

Final Rule Limits\*\*:

TW

10 ppm(a)

18 mg/m(3)(b)

STEL(c)

--

--

CEILING

--

--

Skin Designation

--

---

Dimethylaminobenzene;  
see Xylidine

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* Diethylaniline (N,N Dimethylaalline)	CAS NO(f): 121-69-7	
Transitional Limits:		
PEL*	5 ppm(a)	25 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	5 ppm(a)	25 mg/m(3)(b)
STEL(c)	10 ppm(a)	50 mg/m(3)(b)
CEILING		
Skin Designation	X	

Dimethylbenzene;  
see Xylene

Dimethyl L2-dibromo-2,2-dichloroethyl phosphate	CAS NO(f): 300-76-5	
Transitional Limits:		
PEL*	--	3 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	3 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Dimethyloformamide	CAS NO(f): 68-12-2	
Transitional Limits:		
PEL*	10 ppm(a)	30 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	10 ppm(a)	30 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

2,6 Dimethyl 4-hepta-none;  
see Diisobutyl ketone

1,1-Dimethylhydrazine	CAS NO(f): 57-14-7	
Transitional Limits:		
PEL*	0.5 ppm(a)	1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	0.5 ppm(a)	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Dimethylphthalate	CAS NO(f): 131-11-3	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--



CEILING	--	--
Skin Designation	--	
<hr/>		
Dimethyl sulfate	CAS NO(f): 77-78-1	
Transitional Limits:		
PEL*	1 ppm(a)	5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Dinitolmide (3,5-Dinitro-o-toluamide)	CAS NO(f): 148-01-6	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(e)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Dinitrobenzene (all isomers)	CAS NO(f): (alpha-) 528-29-0; (meta-) 99-65-0; (pma-) 100-25-4	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Dinitro-o-cresol	CAS NO(f): 534-52-1	
Transitional Limits:		
PEL*	--	0.2 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Dinitrotoluene	CAS NO(f): 25321-14-6	
Transitional Limits:		
PEL*	--	1.5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	1.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--

Skin Designation	X	
<hr/>		
Dioxane (Diethylene dioxide)	CAS NO(f): 123-91-1	
Transitional Limits:		
PEL*	100 ppm(a)	360 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	25 ppm(a)	90 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Dioxathion (Delnav)	CAS NO(f): 78-34-2	
Transitional Limits:		
PEL*	--	
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.2 mg/m(3)(b)
STEL(e)	--	
CEILING	--	
Skin Designation	X	
<hr/>		
Diphenyl (Biphenyl)	CAS NO(f): 92-52-4	
Transitional Limits:		
PEL*	0.2 ppm(a)	1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.2 ppm(a)	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Diphenylamine	CAS NO(f): 122-39-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Diphenylmethane diisocyanate; see Methylene bisphenyl isocyanate		
<hr/>		
Dipropylene glycol methyl ether	CAS NO(f): 34590-94-8	
Transitional Limits:		
PEL*	100 ppm(a)	600mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	100 ppm(a)	600mg/m(3)(b)
STEL(c)	150 ppm(a)	900mg/m(3)(b)
CEILING	--	--
Skin Designation	X	

Dipropyl ketone	CAS NO(f): 123-19-3		
Transitional Limits:			
PEL *	--	--	
Skin Designation	--		
Final Rule Limits**:			
TWA	50 ppm(a)	235 mg/m(3)(b)	
STEL(c)	--	--	
CEILING	--	--	
Skin Designation	--		
<hr/>			
Diquat	CAS NO(f): 85-00-7		
Transitional Limits:			
PEL *	--	--	
Skin Designation	--		
Final Rule Limits**:			
TWA	--	0.5mg/m(3)(b)	
STEL(c)	--	--	
CEILING	--	--	
Skin Designation	--		
<hr/>			
Di-sec octyl phthalate (Di-2-ethylhexyl-phthalate)	CAS NO(f): 117-81-7		
Transitional Limits:			
PEL *	--	5 mg/m(3)(b)	
Skin Designation	--		
Final Rule Limits**:			
TWA	--	5 mg/m(3)(b)	
STEL(c)	--	10 mg/m(3)(b)	
CEILING	--	--	
Skin Designation	--		
<hr/>			
Disulfiram	CAS NO(f): 97-77-8		
Transitional Limits:			
PEL *	--	--	
Skin Designation	--		
Final Rule Limits* *:			
TWA	--	2 mg/m(3)(b)	
STEL(c) CEILING	--	--	
Skin Designation	--	--	
<hr/>			
Disulfoton	CAS NO(f): 298-04-4		
Transitional Limits:			
PEL *	--	--	
Skin Designation	--		
Final Rule Limits**:			
TWA STEL(c)	--	0.1 mg/m(3)(b)	
CEILING	--	--	
Skin Designation	--		
<hr/>			
2,6-Di-tert-butyl-p-cresol	CAS NO(f): 128-37-0		
Transitional Limits:			
PEL *	--	--	
Skin Designation	--		

Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Diuron	CAS NO(f): 330-54-1	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Divinyl benzene	CAS NO(f): 1321-74-0	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	50 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation *	--	

---

Emery	CAS NO(f): 12415-34-8	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Endosulfan	CAS NO(f): 115-29-7	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Endrin	CAS NO(f): 72-20-8	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Epichlorohydrin	CAS NO(f): 106-89-8	
Transitional Limits:		
PEL*	5 ppm(a)	19 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	2 ppm(a)	8 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
EPN	CAS NO(f): 2104-64-5	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
1,2-Epoxypropane; see Propylene oxide		
2,3-Epoxy I propanol; see Glycidol		
Ethanethiol; see Ethyl mercaptan		
Ethanolamine	CAS NO(f): 141-43-5	
Transitional Limits:		
PEL*	3 ppm(a)	6 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	3 ppm(a)	8 mg/m(3)(b)
STEL(c)	6 ppm(a)	15 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
Ethion	CAS NO(f): 563-12-2	
Transitional Limits:		
PEL*	--	--

Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.4 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
2-Ethoxyethanol	CAS NO(f): 110-80-5	
Transitional Limits:		
PEL*	200 ppm(a)	740 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	200 ppm(a)	740 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
2-Ethoxyethyl acetate (Cellosolve acetate)	CAS NO(f): 111-15-9	
Transitional Limits:		
PEL*	100 ppm(a)	540 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	100 ppm(a)	540 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Ethyl acetate	CAS NO(f): 141-78-6	
Transitional Limits:		
PEL*	400 ppm(a)	1400 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	400 ppm(a)	1400 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--
<hr/>		

Ethyl acrylate	CAS NO(f): 140-88-5	
Transitional Limits:		
PEL *	25 ppm(a)	100 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	5 ppm(a)	20 mg/m(3)(b)
STEL(c)	25 ppm(a)	100 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	

---

Ethyl alcohol (Ethanol)	CAS NO(f): 64-17-5	
Transitional Limits:		
PEL *	1000 ppm(a)	1900 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1000 ppm(a)	1900 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Ethylamine	CAS NO(f): 75-04-7	
Transitional Limits:		
PEL*	10 ppm(a)	18 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	18 mg/m(3)(b)
STEL	--	--
CEILING	--	--
Designation	--	

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Ethyl amyl ketone (5-Methyl-3-heptanone)	CAS NO(f): 541-85-5	
Transitional Limits'		
PEL *	25 ppm(a)	130 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	25 ppm(a)	130 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Ethyl benzene	CAS NO(f): 100-41-4	
Transitional Limits:		
PEL*	100ppm(a)	435 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	100 ppm(a)	435 mg/m(3)(b)
STEL(c)	125 ppm(a)	545 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

---

Ethyl bromide	CAS NO(f): 74-96-4	
Transitional Limits:		
PEL*	200 ppm(a)	890 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	200 ppm(a)	890 mg/m(3)(b)
STEL(c)	250 ppm(a)	1110 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Ethyl butyl ketone (3-Heptanone)	CAS NO(f): 106-35-4	
Transitional Limits:		
PEL*	50 ppm(a)	230 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	50 ppm(a)	230 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Ethyl chloride	CAS NO(f): 75-00-3	
Transitional Limits:		
PEL*	1000 ppm(a)	2600 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	1000 ppm(a)	2600 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Ethyl ether	CAS NO(f): 60-29-7	
Transitional Limits:		
PEL*	400 ppm(a)	1200 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	400 ppm(a)	1200 mg/m(3)(b)
TEL(c)	500 ppm(a)	1500 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Ethyl formate	CAS NO(f): 109-94-4	
Transitional Limits:		
PEL*	100 ppm(a)	300 mg/m(3)(6)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	300 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Ethyl mercaptan	CAS NO(f): 75-08-1	
Transitional Limits:		
PEL*	(C) 10 ppm(a)	(C) 25 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	0.5 ppm(a)	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--

Footnote (C) denotes a ceiling limit.

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Ethyl silicate	CAS NO(f): 78-10-4	
Transitional Limits:		
PEL*	100 ppm(a)	850 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	85 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--

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Ethylene chlorohydrin	CAS NO(f): 107-07-3	
Transitional Limits:		
PEL*	5 ppm(a)	16 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	1 ppm(a)	3 mg/m(3)(b)
Skin Designation	X	

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Ethylenediamine	CAS NO(f): 107-15-3	
Transitional Limits:		
PEL*	10 ppm(a)	25 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	25 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--

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Ethylene dibromide	CAS NO(f): 106-93-4	
Transitional Limits:		
PEL*	Tbl. Z-2	Tbl. Z-2
Skin Designation	Tbl. Z-2	
Final Rule Limits**:		
TWA	Tbl. Z-2	Tbl. Z-2
STEL(c)	Tbl Z-2	Tbl. Z-2
CEILING		
Skin Designation	Tbl. Z-2	

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Ethylene Dichloride	CAS NO(f): 107-06-2	
Transitional Limits:		
PEL *	Tbl. Z 2	Tbl. Z 2
Skin Designation	Tbl. Z-2	
Final Rule Limits**:		
TWA	1 ppm(a)	4 mg/m(3)(b)
STEL(c)	2 ppm(a)	8 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

Ethylene glycol	CAS NO(f): 107-21-1	
Transitional Limits:		
PEL *	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	50 ppm(a)	125 mg/m(3)(b)
Skin Designation	--	

Ethylene glycol dinitrate(k)	CAS NO(f): 628-96-6	
Transitional Limits:		
PEL*	(C) 0.2 ppm(a)	(C) 1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	
STEL(c)	--	0.1 mg/m(3)(b)(k)
CEILING	--	
Skin Designation	X	

Footnote (C) denotes a ceiling limit.

Footnote (k) The Final Rule Limit STEL, of 0.1 mg/m(3) is not in effect as a result of reconsideration for the industrial sector of civilian manufacture and distribution of explosives and propellants for civilian use. The Final rule limits skin designation and the Transitional limits ceiling limit of 1 mg/m(3) remain in effect for this sector until completion of the reconsideration.

Ethylene glycol methyl acetate;  
see Methyl cellosolve acetate

Ethyleneimine;  
see 1910.1012

Ethylene oxide;  
see 1910.1047

Ethylidene chloride;  
see 1,1 Dichlorethane

Ethylidene norbornene	CAS NO(f): 16219-75-3	
Transitional Limits:		
PEL *	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	5 ppm(a)	25 mg/m(3)(b)
Skin Designation	--	

N-Ethylmorpholine	CAS NO(f): 100-74-3	
Transitional Limits:		
PEL *	20 ppm(a)	94 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	5 ppm(a)	23 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Fenamiphos	CAS NO(f): 22224-92-6	
Transitional Limits:		
PEL *	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Fensulfothion (Dasanit)	CAS NO(f): 115-90-2	
Transitional Limits:		
PEL *	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Fenthion	CAS NO(f): 55-38-9	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Ferbam	CAS NO(f): 14484-64-1	
Total Dust		
Transinonal Limits:		
PEL *	--	15 mg/m(3)(b)
Skin Designation		

Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Ferrovanadium dust	CAS NO(f): 12604-58-9	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL	--	3 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Fluorides (as F)	CAS NO(f): Varies with Compound	
Transitional Limits:		
PEL*	--	2.5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Fluorine	CAS NO(f): 77821-41-4	
Transitional Limits:		
PEL*	0.1 ppm(a)	0.2 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Fluorotrichloro-methane (Trichloro-fluoromethane)	CAS NO(f): 75-69-4	
Transitional Limits:		
PEL*	1000 ppm(a)	5600 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA)	--	--
STEL(c)	--	--
CEILING	1000 ppm(a)	1000 ppm(a)
Skin Designation	--	
<hr/>		
Fononfos	CAS NO(f): 944-22-9	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--

Skin Designation	X		
<hr/>			
* Formaldehyde; see 1910.1048	CAS NO(f): 50-00-0		
<hr/>			
Formanfide	CAS NO(f): 75-12-7		
Transitional Limits:			
PEL*	--	--	
Skin Designation	--	--	
Final Rule Limits**:			
TWA	20 ppm(a)	30 mg/m(3)(b)	
STEL(c)	30 ppm(a)	45 mg/in(3)(b)	
CEILING	--	--	
Skin Designation	--	--	
<hr/>			
Formic acid	CAS NO(f): 64-18-6		
Transitional Limits:			
PEL*	5 ppm(a)	9 mg/m(3)(b)	
Skin Designation	--	--	
Final Rule Limits**:			
TWA	5 ppm(a)	9 mg/m(3)(b)	
STEL(c)	--	--	
CEILING	--	--	
Skin Designation	--	--	
<hr/>			
Furfural	CAS NO(f): 98-01-1		
Transitional Limits:			
PEL*	5 ppm(a)	20 mg/m(3)(b)	
Skin Designation	X		
Final Rule Limits**:			
TWA	2 ppm(a)	8 mg/m(3)(b)	
STEL(c)	--	--)	
CEILING	--	--	
Skin Designation	X		
<hr/>			
Furfuryl alcohol	CAS NO (f): 98-00-		
Transitional Limits:			
PEL*	50 ppm(a)	200 mg/m(3)(b)	
Skin Designation	--	--	
Final Rule Limits**:			
TWA	10 ppm(a)	40 mg/m(3)(b)	
STEL(c)	15 ppm(a)	60 mg/m(3)(b)	
CEILING	--	--	
Skill Designation	X		
<hr/>			
Gasoline	CAS NO(f): 8006-61-9		
Transitional Limits:			
PEL*	--	--	
Skin Designation	--	--	
Final Rule Limits**:			
TWA	300 ppm(a)	900 mg/m(3)(b)	
STEL(c)	500 ppm(a)	1500 mg/m(3)(b)	
CEILING	--	--	
Skin Designation	--	--	

Germanium tetrahydride	CAS NO(f): 7782-65-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.2 ppm(a)	0.6 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Glutaraldehyde	CAS NO(f): 111-30-8	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.2 ppm(a)	0.8 mg/m(3)(b)
Skin Designation	--	
Glycerin (Mist)	CAS NO(f): 56-81-5	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Glycidol	CAS NO(f): 556-52-5	
Transitional Limits:		
PEL*	50 ppm(a)	150 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	25 ppm(a)	75 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Glycol monoethyl ether; see 2 Ethoxyethanol		

Grain dust (oat, wheat, barley)		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Graphite, natural respirable dust	CAS NO(f): 7782-42-5	
Transitional Limits:		
PEL*	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Graphite, synthetic		
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Guthion (R);  
see Azinphos methyl

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Gypsum	CAS NO(f): 13397-24-5	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)		
CEILING		
Skin Designation		
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)

Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Hafnium	CAS NO(f): 7440-58-6	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Heptachlor	CAS NO(f): 76-44-8	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Heptane (n-Heptane)	CAS NO(f): 142-82-5	
Transitional Limits:		
PEL*	500 ppm(a)	2000 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	400 ppm(a)	1600 mg/m(3)(b)
STEL(c)	500 ppm(a)	2000 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Hexachlorobutadiene	CAS NO(f): 87-68-3	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.02 ppm(a)	0.24 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Hexachlorocyclo-pentadiene	CAS NO(f): 77-47-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.01 ppm(a)	0.1 mg/m(3)(b)
STEL(c)	--	--



CEILING	--	--
Skin Designation	--	
<hr/>		
Hexachloroethane	CAS NO(f); 67-72-1	
Transitional Limits:		
PEL*	1 ppm(a)	10 mg/m(3)9B0
Skin Designation	X	
Final Rule Limits**:		
TWA	1 ppm(a)	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--
<hr/>		
Hexachloronaphthalene	CAS NO(f): 1335-87-1	
Transitional Limits:		
PEL*	--	0.2 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--
<hr/>		
Hexafluoracetone	CAS NO(f): 684-16-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.7 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	x	
<hr/>		
n-Hexane	CAS	NO(f): 110-54-3
Transitional Limits:		
PEL*	500 ppm(a)	180 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	50 ppm(a)	180 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--
<hr/>		
Hexane isomers	CAS NO(f): Varies With Compound	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	500 ppm(a)	180 mg/m(3)(b)
STEL(c)	1000 ppm(a)	3600 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	--
<hr/>		
2-Hexanone (Methyl n-butyl ketone)	CAS NO(f): 591-78-6	

Transitional Limits:		
PEL*	100 ppm(a)	410 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	5 ppm(a)	20 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Hexone (Methyl isobutyl ketone)	CAS NO(f): 108-10-1	
Transitional Limits:		
PEL*	100 ppm(a)	410 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	50 ppm(a)	205 mg/m(3)(b)
STEL(c)	75 ppm(a)	300 mg/m(3)(b)
CEILING		
Skin Designation		
<hr/>		
sec-Hexyl acetate	CAS NO(f): 108-84-9	
Transitional Limits:		
PEL*	50 ppm(a)	300 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	50 ppm(a)	300 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Hexylene glycol	CAS NO(f): 107-41-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	25 ppm(a)	125 mg/m(3)(b)
Skin Designation	--	
<hr/>		
Hydrazine	CAS NO(f): 302-01-2	
Transitional Limits:		
PEL*	1 ppm(a)	1.3 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Hydrogenated terphenyls	CAS NO(f): 61788-32-7	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		

TWA	0.5 ppm(a)	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--
<hr/>		
Hydrogen bromide	CAS NO(f): 10035-10-6	
Transitional Limits:		
PEL*	3 ppm(a)	10 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	3 mg/m(3)(b)	10 mg/m(3)(b)
Skin Designation	--	
<hr/>		
Hydrogen chloride	CAS NO(f): 7647-01-0	
Transitional Limits:		
PEL*	(C) 5 ppm(a)	(C) 7 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	5ppm(a)	7 mg/m(3)(b)
Skin Designation	--	
Footnote (C) denotes a ceiling limit.		
<hr/>		
Hydrogen cyanide	CAS NO(f): 74-90-8	
Transitional Limits:		
PEL*	10 ppm(a)	11 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	--
STEL(c)	4.7 ppm(a)	5 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	
<hr/>		
Hydrogen fluoride (as F)	CAS NO(f): 7664-39-3	
Transitional Limits:		
PEL*	Tbl. Z-2	
Skin Designation	--	
Final Rule Limits**:		
TWA	3 ppm(a)	--
STEL(c)	6 ppm(a)	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Hydrogen peroxide	CAS NO(f): 7722-84-1	
Transitional Limits:		
PEL*	1 ppm(a)	1.4 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	1.4 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--

Skin Designation	--	
<hr/>		
Hydrogen selenide (as Se)	CAS NO(f): 7783-07-5	
Transitional Limits:		
PEL*	0.05 ppm(a)	0.2 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.05ppm(a)	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Hydrogen sulfide	CAS NO(f): 7783-06-4	
Transitional Limits:		
PEL*	Tbl. Z-2	Tbl. Z-2
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	14 mg/m(3)(b)
STEL(c)	15 ppm(a)	21 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Hydroquinone	CAS NO(f): 123-31-9	
Transitional Limits:		
PEL*	--	2 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2 mg/m(3)(b)
STEL(e)	--	--
CEILING		
Skin Designation	--	
<hr/>		
2-Hydroxypropyl acrylate	CAS NO(f): 999-61-1	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.5 ppm(a)	3 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Indene	CAS NO(f): 95-13-6	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	45 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Indium and compounds (as in)	CAS NO(f): 7440-74-6	
Transitional Limits:		

PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Iodine	CAS NO(f): 7553-56-2	
Transitional Limits:		
PEL*	(C) 0.1 ppm(a)	(C) 1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.1 ppm(a)	1 mg/m(3)(b)
Skin Designation	--	
Footnote (C) denotes a ceiling limit.		
<hr/>		
Iodoform	CAS NO(f): 75-47-8	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.6 ppm(a)	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Iron oxide fume (as Fe)	CAS NO(f): 1309-37-1	
Total Particulate		
Transitional Limits:		
PEL*	--	10 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Iron pentacarbonyl (as Fe)	CAS NO(f): 13463-40-6	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.8 mg/m(3)(b)
STEL(c)	0.2 ppm(a)	1.6 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Iron salts (Soluble) (as Fe)	CAS NO(f): Varies With Compound	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	

Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Isoamyl acetate	CAS NO(f): 123-92-2	
Transitional Limits:		
PEL*	100 ppm(a)	525 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	525 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Isoamyl alcohol (primary and secondary)	CAS NO(f): 123-51-3	
Transitional Limits:		
PEL*	100 ppm(a)	360 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	360 mg/m(3)(b)
STEL(c)	125 ppm(a)	450 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Isobutyl acetate	CAS NO(f): 110-19-0	
Transitional Limits:		
PEL*	150 ppm(a)	700 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	150 ppm(a)	700 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Isobutyl alcohol	CAS NO(f): 78-83-1	
Transitional Limits:		
PEL*	100 ppm(a)	300 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	50 ppm(a)	150 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Isooctyl alcohol	CAS NO(f): 26952-21-6	
Transitional Limits:		
PEL*	--	--
Skin Designation	00	
Final Rule Limits**:		
TWA	50 ppm(a)	270 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--

Skin Designation	X	
<hr/>		
IsophoroneCAS NO(f): 78-59-1		
Transitional Limits:		
PEL*	25 ppm(a)	140 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	4 ppm(a)	23 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Isophorone diisocyanate	CAS NO(f): 4098-71-9	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.005 ppm(a)	--
STEL(c)	0.02 ppm(a)	--
CEILING		
Skin Designation	X	
<hr/>		
2-Isopropoxyethanol	CAS NO(f): 109-59-1	
Transitional Limits:		
PEL*		
Skin Designation	--	
Final Rule Limits**:		
TWA	25 ppm(a)	105 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Isopropyl acetate	CAS NO(f): 108-21-4	
Transitional Limits:		
PEL*	250 ppm(a)	950 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	250ppm(a)	950 mg/m(3)(b)
STEL(c)	310 ppm(a)	1185 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Isopropyl alcohol	CAS NO(f): 67-63-0	
Transitional Limits:		
PEL*	400 ppm(a)	980 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	400 ppm(a)	980 mg/m(3)(b)
STEL(c)	500 ppm(a)	1225 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Isopropylamine	CAS NO(f): 75-31-0	
Transitional Limits:		

PEL*	5 ppm(a)	12 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	5 ppm(a)	12 mg/m(3)(b)
STEL(c)	10 ppm(a)	24 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
N-Isopropylaniline	CAS NO(f): 768-52-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Isopropyl ether	CAS NO(f): 108-20-3	
Transitional Limits:		
PEL*	500 ppm(a)	2100 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	500 ppm(a)	2100 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Isopropyl glycidyl ether (IGE)	CAS NO(f): 4016-14-2	
Transitional Limits:		
PEL*	50 ppm(a)	240 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	50 ppm(a)	240 mg/m(3)(b)
STEL(c)	75 ppm(a)	360 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Kaolin		
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(e)	--	--



CEILING	--	--
Skin Designation	--	
<hr/>		
Ketene	CAS NO(f): 463-51-4	
Transitional Limits:		
PEL*	0.5 ppm(a)	0,9 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.5 ppm(a)	0,9 mg/m(3)(b)
STEL(c)	1.5 ppm(a)	3 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Lead inorganic (as Pb) see 1910.1025	CAS NO(f): 7439-92-1	
<hr/>		
Limestone	CAS NO(f): 1317-65-3	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Lindane	CAS NO(f): 58-89-9	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Lithium hydride	CAS NO(f): 7580-67-8	
Transitional Limits:		
PEL*	--	0.025 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.025 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--

Skin Designation	--	
<hr/>		
L.P.G. (Liquified petroleum gas)	CAS NO(f): 68476-85-7	
Transitional Limits:		
PEL*	1000 ppm(a)	1800 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1000 ppm(a)	1800 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Magnesite	CAS NO(f): 546-93-0	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Magnesium oxide fume `	CAS NO(f): 1309-48-4	
Total Particulate		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Malathion	CAS NO(f): 121-75-5	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		

Maleic anhydride	CAS NO(f): 108-31-6	
Transitional Limits:		
PEL*	0.25 ppm(a)	1 mg/m(3)(b)
Final Rule Limits**:		
TWA	0.25 ppm(a)	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--

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Manganese compounds (as Mn)	CAS NO(f): 7439-96-5	
Transitional Limits:		
PEL*	--	(C) 5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	--	5 mg/m(3)(b)
Skin Designation	--	--

Footnote (C) denotes a ceiling limit.

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Manganese fume (as Mn)	CAS NO(f): 7439-96-5	
Transitional Limits:		
PEL*	--	(C) 5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits*:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	3 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	--

Footnote (C) denotes a ceiling limit.

---

Manganese cyclopentadienyl tricarbonyl (as Mn)	CAS NO(f): 12079-65-1	
Transitional Limit s:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Manganese tetroxide (as Mn)	CAS NO(f): 1317-35-7	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--

---

Marble	CAS NO(f): 1317-65-3	
Total Dust		
Transitional Limits:		

PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	
CEILING	--	--
Skin Designation		
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Mercury (aryl and inorganic) (as Hg)	CAS NO(f): 7439-97-6	
Transitional Limits:		
PEL*		Tbl. Z-2
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	--	0.1 mg/m(3)(b)
Skin Designation	X	

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Mercury (organo) alkyl compounds (as Hg)	CAS NO(f): 7439 97-6	
Transitional Limits:		
PEL*		Tbl. Z-2
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.01 mg/m(3)(b)
STEL(c)	--	0.03 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	

---

Mercury (vapor) (as Hg)	CAS NO(f): 7439-97-6	
Transitional Limits:		
PEL*		Tbl. Z-2
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.05 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Mesityl oxide	CAS NO(f): 141-79-7	
Transitional Limits:		
PEL*	25 ppm(a)	100 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	15 ppm(a)	60 mg/m(3)(b)
STEL(c)	25 ppm(a)	100 mg/m(3)(b)
CEILING	--	--

Skin Designation

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Methacrylic acid	CAS NO(f): 79-41-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	20 ppm(a)	70 mg/m( 9(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

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Methanethiol;  
see Methyl mercaptan

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Methomyl (Lannate)	CAS NO(f): 16752-77-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Methoxychlor	CAS NO(f): 72-43-5	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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2-Methoxyethanol;  
see Methyl cellosolve

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4-Methoxyphenol	CAS NO(f): 150-76-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Methyl acetate	CAS NO(f): 79-20-9	
Transitional Limits:		
PEL*	200 ppm(a)	610 mg/m(3)(b)
Skin Designation	--	

Final Rule Limits**:		
TWA	200 ppm(a)	610 mg/m(3)(b)
STEL(c)	250 ppm(a)	760 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	--
<hr/>		
Methyl acetylene (Propyne)	CAS NO(f): 74-99-7	
Transitional Limits:		
PEL*	1000 ppm(a)	1650 mg/m(3)(b)
Skin Designation	--	--
Final Rule Limits**:		
TWA	1000 ppm(a)	1650 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--
<hr/>		
Methyl acetylene propadiene mixture (MAPP)		
Transitional Limits:		
PEL*	1000 ppm(a)	1800 mg/m(3)(b)
Skin Designation	--	--
Final Rule Limits**:		
TWA	1000 ppm(a)	1800 mg/m(3)(b)
STEL(c)	1250 ppm(a)	2250 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	--
<hr/>		
Methyl acrylate	CAS NO(f): 96-33-3	
Transitional Limits:		
PEL*	10 ppm(a)	35 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	10 ppm(a)	35 mg/m(3)(b)
STEL(c)		
CEILING		
Skin Designation		
<hr/>		
Methylacrylonitrile	CAS NO(f): 126-98-7	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	--
Final Rule Limits**:		
TWA	1 ppm(a)	3 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Methylal (Dimethoxy-methane)	CAS NO(f): 109-87-5	
Transitional Limits:		
PEL*	1000 ppm(a)	3100 mg/m(3)(6)
Skin Designation	--	--
Final Rule Limits**:		
TWA	1000 ppm(a)	3100 mg/m(3)(b)
STEL(c)	--	--

CEILING	--	--
Skin Designation	--	
<hr/>		
Methyl alcohol	CAS NO(f): 67-56-1	
Transitional Limits:		
PEL*	200 ppm(a)	260 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	200 ppm(a)	260 mg/m(3)(b)
STEL(c)	250 ppm(a)	325 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	
<hr/>		
Methylamine	CAS NO(f): 74-89-5	
Transitional Limits:		
PEL*	10 ppm(a)	12 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	12 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Methyl amyl alcohol; see Methyl Isobutyl carbinol		
<hr/>		
Methyl n-amyl ketone	CAS NO(f): 110-43-0	
Transitional Limits:		
PEL*	100 ppm(a)	465 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	465 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Methyl bromide	CAS NO(f): 74-83-9	
Transitional Limits:		
PEL*	(C) 20 ppm(a)	(C) 80 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	5 ppm(a)	20 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Footnote (C) denotes a ceiling limit.		
<hr/>		
Methyl butyl ketone; see 2 Hexanone		
<hr/>		
Methyl cellosolve (2-Methoxyethanol)	CAS NO(f): 109-86-4	
Transitional Limits:		
PEL*	25 ppm(a)	80 mg/m(3)(b)

Skin Designation	X	
Final Rule Limits**:		
TWA	25 ppm(a)	80 mg/m(3)(b)
STEL(c)		
CEILING		
Skin Designation	X	
<hr/>		
Methyl cellosolve acetate (2 Methoxyethyl acetate)	CAS NO(f): 110-49-6	
Transitional Limits:		
PEL*	25 ppm(a)	120 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	25 ppm(a)	120 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Methyl chloride	CAS NO(f): 74-87-3	
Transitional Limits:		
PEL*		Tbl. Z-2
Final Rule Limits**:		
TWA	50 ppm(a)	105 mg/m(3)(b)
STEL(c)	100 ppm(a)	210 mg/m(3)(b)
CEILING		
Skin Designation		
<hr/>		
Methyl chloroform(1,1,1-Trichloroethane)	CAS NO(f): 71-55-6	
Transitional Limits:		
PEL*	350 ppm(a)	1900 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	350 ppm(a)	1900 mg/m (3)(b)
STEL(c)	450 ppm(a)	2450 mg/m(3)(b)
CEILLNG	--	--
Skin Designation	--	
<hr/>		
Methyl 2-cyanoacrylate	CAS NO(f): 137-05-3	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	8 mg/m(3)(b)
STEL(c)	4 ppm(a)	16 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Methylcyclohexane	CAS NO(f): 108-87-2	
Transitional Limits:		
PEL*	500 ppm(a)	2000 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	400 ppm(a)	1600 mg/m(3)(b)
STEL(c)	--	--



CEILING	--	--
Skin Designation	--	
<hr/>		
Methylcyclohexanol	CAS NO(f): 25639-42-3	
Transitional Limits:		
PEL*	100 ppm(a)	470 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits* *:		
TWA	50 ppm(a)	235 mg/m(3)(b)
STEL(c)		
CEILING		
Skin Designation		
<hr/>		

o-Methylcyclohexanone	CAS NO(f): 583-60-8	
Transitional Limits:		
PEL*	100 ppm(a)	460 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	50 ppm(a)	230 mg/m(3)(b)
STEL(c)	75 ppm(a)	345 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	

Methylcyclopentadienyl manganese tricarbonyl (as Mn)	CAS NO(f): 12108-13-3	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	02 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Methyl demeton	CAS NO(f): 8022-00-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

4,4'-Methylene bis (2-chloroaniline) (MBOCA)	CAS NO(f): 101-14-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.02ppm(a)	0.22 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Methylene bis (4-cyclohexylisocyanate)	CAS NO(f): 5124-30-1	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.01ppm(a)	0.11 mg/m(3)(b)
Skin Designation	X	

Methylene chloride	CAS NO(f) 75-09-2	
Transitional Limits:		

PEL*	Tbl. Z-2	--
Skin Designation	--	
Final Rule Limits**:		
TWA	Tbl. Z-2	--
STEL(c)	Tbl. Z-2	--
CEILING	Tbl. Z-2	--
Skin Designation	--	

---

Methyl ethyl ketone peroxide (MEKP)	CAS NO(f): 1338-23-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.7 ppm(a)	5 mg/m(3)(b)
Skin Designation	--	

---

Methyl formate	CAS NO(f): 107-31-3	
Transitional Limits:		
PEL*	100 ppm(a)	250 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	250 mg/m(3)(b)
STEL(c)	150 ppm(a)	375 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

---

Methyl hydrazine (Monomethyl hydrazine)	CAS NO(f): 60-34-4	
Transitional Limits:		
PEL*	(C) 0.2 ppm(a)	(C) 0.35 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.2 ppm(a)	0.35 mg/m(3)(b)
Skin Designation	X	

Footnote (C) denotes a ceiling limit.

---

Methyl iodide	CAS NO(f): 74-88-4	
Transitional Limits:		
PEL*	5 ppm(a)	28 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	2 ppm(a)	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Methyl isoamyl ketone	CAS NO(f): 110-12-3	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		

TWA	50 ppm(a)	240 mg/m(3)(b)
STEL(c)	--	
CEILING		--
Skin Designation	--	

---

Methyl isobutyl carbinol	CAS NO(f): 108-11-2	
Transitional Limits:		
PEL*	25 ppm(a)	100 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	25 ppm(a)	100 mg/m(3)(b)
STEL(c)	40 ppm(a)	165 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	

Methyl isobutyl ketone; see Hexone

---

Methyl isocyanate	CAS NO(f): 624-83-9	
Transitional Limits:		
PEL*	0.02 ppm(a)	0.05 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	0.02 ppm(a)	0.05 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Methyl isopropyl ketone	CAS NO(f): 563-80-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	200 ppm(a)	705 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Methyl mercaptan	CAS NO(f): 74-93-1	
Transitional Limits:		
PEL*	(C) 10 ppm(a)	(C) 20 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.5 ppm(a)	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Footnote (C) denotes a ceiling limit.

---

Methyl methacrylate	CAS NO(f): 80-62-2	
Transitional Limits:		
PEL*	100 ppm(a)	410 mg/m(3) (b)
Skin Designation	--	
Final Rule Limits**:		

TWA	100 ppm(a)	410 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Methyl parathion CAS NO(f) 298-00-0

Transitional Limits:

PEL\* --

Skin Designation --

Final Rule Limits\*\*:

TWA --

STEL(c) --

CEILING --

Skin Designation X

---

Methyl propyl ketone;  
see 2-Pentanone

---

Methyl silicate CAS NO(f) 68-84-5

Transitional Limits:

PEL\* -- --

Skin Designation --

Final Rule Limits\*\*:

TWA 1 ppm(a) 6 mg/m(3)(b)

STEL(c) -- --

CEILING -- --

Skin Designation --

---

alpha-Methyl styrene CAS NO(f): 98-83-9

Transitional Limits:

PEL\* (C) 100 ppm(a) (C) 480 mg/m(3)(b)

Skin Designation --

Final Rule Limits\*\*:

TWA 50 ppm(a) 240 mg/m(3)(b)

STEL(c) 100 ppm(a) 485 mg/m(3)(b)

CEILING -- --

Skin Designation --

Footnote (C) denotes a ceiling Limit.

---

Methylene bisphenyl isocyanate (MDI) CAS NO(f): 101-68-8

Transitional Limits:

PEL\* (C) 0.02 ppm(a) (C) 0.2 mg/m(3)(b)

Skin Designation --

Final Rule Limits\*\*:

TWA -- --

STEL(c) -- --

CEILING 0.02 ppm(a) 0.2 mg/m(3)(b)

Skin Designation --

Footnote (C) denotes a ceiling limit.

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Metribuzin CAS NO(f): 21087-64-9

Transitional Limits:

PEL\* --

Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Mica;		
see Silicates		
<hr/>		
Molybdenum (as Mo)	CAS NO(f): 7439-98-7	
Soluble compounds		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Insoluble Compounds - total dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Monocrotophos (Azodrin (R))	CAS NO(f): 6923-22-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.25 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Monomethyl aniline	CAS NO(f): 100-61-8	
Transitional Limits:		
PEL*	2 ppm(a)	9 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	0.5 ppm(a)	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Morpholine	CAS NO(f): 110-91-8	
Transitional Limits:		
PEL*	20 ppm(a)	70 mg/m(3)(b)
Skin Designation	X	

Final Rule Limits**:		
TWA	20 ppm(a)	70 mg/m(3)(b)
STEL(c)	30 ppm(a)	105 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	

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Naphtha (Coal tar)	CAS NO(f): 8030-30-6	
Transitional Limits:		
PEL*	100 ppm(a)	400 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	400 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Naphthalene	CAS NO(f): 91-20-3	
Transitional Limits:		
PEL*	10 ppm(a)	50 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	50 mg/m(3)(b)
STEL(c)	15 ppm(a)	75 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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alpha-Naphthylamine; see 1910.1004	CAS NO(f): 134-32-7	
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beta-Naphthylamine; see 1910.1009	CAS NO(f): 91-59-8	
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Nickel carbonyl (as Ni)	CAS NO(f): 13463-39-3	
Transitional Limits:		
PEL*	0.001 ppm(a)	0.007 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.001 ppm(a)	0.007 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Nickel, metal and insoluble compounds (as Ni)	CAS NO(f): 7440-02-0	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Nickel, insoluble compounds (as Ni)	CAS NO(f): 7440-02-0	
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Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Nicotine	CAS NO(f): 54-11-5	
Transitional Limits:		
PEL*	--	0.5mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Nitric acid	CAS NO(f):7697-37-2	
Transitional Limits:		
PEL*	2 ppm(a)	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	5 mg/m(3)(b)
STEL(c)	4 ppm(a)	10 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Nitric oxide	CAS NO(f): 10102-43-9	
Transitional Limits:		
PEL*	25 ppm(a)	30 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	25 ppm(a)	30 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
p-Nitroaniline	CAS NO(f): 100-01-6	
Transitional Limits:		
PEL*	1 ppm(a)	6 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	3 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Nitrobenzene	CAS NO(f): 98-95-3	
Transitional Limits:		
PEL*	1 ppm(a)	5 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		



TWA	1 ppm(a)	5 mg/m(3)(b)
STEL(c)		
CEILING	--	--
Skin Designation	X	
<hr/>		
p-Nitrochlorobenzene	CAS NO(f): 100-00-5	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
4-Nitrodiphenyl; see 1910.1003	CAS NO(f): 92-93-3	
<hr/>		
Nitroethane	CAS NO(f): 79-24-3	
Transitional Limits:		
PEL*	100 ppm(a)	310 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	310 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Nitrogen dioxide	CAS NO(f): 10102-44-0	
Transitional Limits:		
PEL*	(C) 5 ppm(a)	(C) 9 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA		
STEL(c)	1 ppm(a)	1.8 mg/m(3)(b)-- --
CEILING	--	--
Skin Designation	--	
Footnote (C) denotes a ceiling limit,		
<hr/>		
Nitrogen trifluoride	CAS NO(f): 7783-54-2	
Transitional Limits:		
PEL*	10 ppm(a)	29 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	29 mg/m(3)(b)
STEL(e)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Nitroglycerin(l)	CAS NO(f): 55-63-0	
Transitional Limits:		
PEL*	(C) 0.2 ppm(a)	(C) 2 mg/m(3)(b)
Skin Designation	X	

Final Rule Limits**:		
TWA	--	--
STEL(e)	--	0.1 mg/m(3)(b)(l)
CEILING	--	--
Skin Designation	X	

Footnote (C) denotes a ceiling limit.

Footnote (1) The Final Rule Limit STEL of 0.1 mg/m(3) is not in effect as a result of reconsideration for the industrial sector of civilian manufacture and distribution of explosives and propellants for civilian use. The Final rule limits skin designation and the Transitional limits ceiling limit of 2 mg/m(3) remains in effect for this sector until completion of the reconsideration.

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Nitromethane	CAS NO(f): 75-52-5	
Transitional Limits:		
PEL*	100 ppm(a)	250 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	250 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

1-Nitropropane	CAS NO(f): 108-03-2	
Transitional Limits:		
PEL*	25 ppm(a)	90 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	25 ppm(a)	90 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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2-Nitropropane	CAS NO(f): 79-46-9	
Transitional Limits:		
PEL*	25 ppm(a)	90 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	35 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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N-Nitrosodimethylamine; see 1910.1016	CAS NO(f): 62-79-9	
--	--------------------	--

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Nitrotoluene	CAS NO(f): o-isomer 88-72-2; m-isomer 99 08-1; p-isomer 99-99-0	
Transitional Limits:		
PEL*	5 ppm(a)	30 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	2 ppm(a)	11 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--

Skin Designation	X	
<hr/>		
Nitrotrichloromethane; see Chloropicrin		
<hr/>		
Nonane	CAS NO(f): 111-84-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	200 ppm(a)	1050 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Octachloronaphthalene	CAS NO(f): 2234-13-1	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	0.3 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	
<hr/>		
Octane	CAS NO(f): 111-65-9	
Transitional Limits:		
PEL*	500 ppm(a)	2350 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	300 ppm(a)	1450 mg/m(3)(b)
STEL(c)	375 ppm(a)	1800 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Oil mist, mineral	CAS NO(f): 8012-95-1	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Osmium tetroxide (as Os)	CAS NO(f): 20816-12-0	
Transitional Limits:		
PEL*	--	0.002 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.0002 ppm(a)	0.002 mg/m(3)(b)
STEL(c)	0.0006 ppm(a)	0.006 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		

Oxalic acid	CAS NO(f): 144-62-7	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	2 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Oxygen difluoride	CAS NO(f): 7783-41-7	
Transitional Limits:		
PEL*	0.05 ppm(a)	0.1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.05 ppm(a)	0.1 mg/m(3)(b)
Skin Designation	--	
<hr/>		
Ozone	CAS NO(f): 10028-15-6	
Transitional Limits:		
PEL*	0.1 ppm(a)	0.2 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.2 mg/m(3)(b)
STEL(c)	0.3 ppm(a)	0.6 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Paraffin wax fume	CAS NO(f): 8002-74-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	--
Final Rule Limits**:		
TWA	--	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Paraquat, respirable dust	CAS NO(f): 1910-42-5; 2074-50-2; 4685-14-7	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Parathion	CAS NO(f): 56-38-2	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	X	

Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Particulates not otherwise regulated

Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Pentaborane	CAS NO(f): 19624-22-7	
Transitional Limits:		
PEL*	0.005 ppm(a)	0.01mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.005 ppm(a)	0.01mg/m(3)(b)
STEL(c)	0.015 ppm(a)	0.03mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Pentachloronaphthalene	CAS NO(f):1321-64-8	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Pentachlorophenol	CAS NO(f): 87-86-5 X	
Transitional Limits:		
PEL*	--	0.5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

<hr/>		
Pentaerythritol	CAS NO(f): 115-77-5	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Pentane	CAS NO(f): 109-66-0	
Transitional Limits:		
PEL*	1000 ppm(a)	2950 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	600 ppm(a)	1800 mg/m(3)(b)
STEL(c)	750 ppm(a)	2250 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
2-Pentanone (Methyl propyl ketone)	CAS NO(f): 107-87-9	
Transitional Limits:		
PEL*	200 ppm(a)	700 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	200 ppm(a)	700 mg/m(3)(b)
STEL(c)	250 ppm(a)	875 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Perchloroethylene(Tetrachloroethylene)	CAS NO(f)-127-18-4	
Transitional Limits:		
PEL*	See Table Z-2	
Skin designation		
Final Rule Limits**:		
TWA	25ppm(a)	170 mg/m(3)(b)
STEL©	--	--
CEILING	--	--
Skin designation	--	
<hr/>		

Perchloromethyl mercaptan	CAS NO(f): 594-42-3	
Transitional Limits:		
PEL*	0.1 ppm(a)	0.8 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.8 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Perchloryl fluoride	CAS NO(f): 7616-94-6	
Transitional Limits:		
PEL*	3 ppm(a)	13.5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	3 ppm(a)	14 mg/m(3)(b)
STEL(c)	6 ppm(a)	28 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Perlite		
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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* Petroleum distillates (Naphtha) (Rubber Solvent)		
Transitional Limits:		
PEL*	500 ppm(a)	2000 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	400 ppm(a)	1600 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Phenol	CAS NO(f): 108-95-2	
Transitional Limits:		

PEL*	5 ppm(a)	19 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	5 ppm(a)	<u>X</u> 19 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Phenothiazine	CAS NO(f): 92-84-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

p-Phenylene diamine	CAS NO(f): 106-50-3	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Phenyl ether, vapor	CAS NO(f): 101-84-8	
Transitional Limits:		
PEL*	1 ppm(a)	7 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	7 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Phenyl ether-biphenyl mixture, vapor		
Transitional Limits:		
PEL*	1 ppm(a)	7 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	7 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Phenylethylene;  
see Styrene

Phenyl glycidyl ether (PGE)	CAS NO(f): 122-60-1	
Transitional Limits:		
PEL*	10 ppm(a)	60 mg/m(3)(b)



Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	6 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Phenylhydrazine	CAS NO(f): 100-63-0	
Transitional Limits:		
PEL*	5 ppm(a)	22 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	5 ppm(a)	20 mg/m(3)(b)
STEL(c)	10 ppm(a)	45 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	
<hr/>		
Phenyl mercaptan	CAS NO(f): 108-98-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.5 ppm(a)	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Phenylphosphine	CAS NO(f): 638-21-1	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.05 ppm(a)	0.25 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Phorate	CAS NO(f): 298-02-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.05 mg/m(3)(b)
STEL(c)	--	0.2 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	
<hr/>		
Phosdrin (Mevinphos (R))	CAS NO(f): 7786-34-7	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	0.01 ppm(a)	0.1 mg/m(3)(b)
STEL(c)	0.03 ppm(a)	0.3 mg/m(3)(b)

CEILING	--	--
Skin Designation	X	
		Phosgene
(Carbonyl chloride)	CAS NO(f): 75-44-5	
Transitional Limits:		
PEL*	0.1 ppm(a)	0.4 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.4 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Phosphine	CAS NO(f): 7803-51-2	
Transitional Limits:		
PEL*	0.3 ppm(a)	0.4 mg/m (3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.3 ppm(a)	0.4 mg/m(3)(b)
STEL(c)	1 ppm(a)	1 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
Phosphoric acid	CAS NO(f): 7664-38-2	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	3 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
Phosphorus (yellow)	CAS NO(f): 7723-14-0	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Phosphorous oxychloride	CAS NO(f): 10025-87-3	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.6 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Phosphorus pentachloride	CAS NO(f): 10026-13 8	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Phosphorus pentasulfide	CAS NO(f): 1314-80-3	
Transitional Limits:		
PEL*		1 mg/m(3)(b)
Skin designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	3 mg/rn(3)(b)
CEILING	--	--
Skin Designation	--	

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Phosphorus trichloride	CAS NO(f): 7719-12-2	
Transitional Limits:		
PEL*	0.5 ppm(a)	3 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.2 ppm(a)	1 5 mg/m(3)(b)
STEL(c)	0.5 ppm(a)	3 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Phthalic anhydride	CAS NO(f): 85-44-9	
Transitional Limits:		
PEL*	2 ppm(a)	12 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	6 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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m-Phthalodinitrile	CAS NO(f): 626-17-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Picloram	CAS NO(f): 1918-02-1	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Picric acid	CAS NO(f): 88-89-1	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

Piperazine dihydro-chloride	CAS NO(f): 142-64-3	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Pindone (2 Pivalyl- 1,3-indandione)	CAS NO(f): 83-26-1	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Plaster of paris	CAS NO(f): 26499-65-0	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Platinum (as Pt)	CAS NO(f): 7440-06-4	
Metal		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Soluble Salts		
Transitional Limits:		
PEL*	--	0.002 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.002 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Portland cement	CAS NO(f): 65997-15-1	
Total Dust		
Transitional Limits:		
PEL*	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)

STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Potassium hydroxide	CAS NO(f): 1310-58-3	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	--	2 mg/m(3)(b)
Skin Designation	--	
<hr/>		
Propane	CAS NO(f): 74-98-6	
Transitional Limits:		
PEL*	1000 ppm(a)	1800 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1000 ppm(a)	1800 mg/m(3)(b)
STEL(c)	--	--
CEILING		
Skin Designation	--	
<hr/>		
Propargyl alcohol	CAS NO(f): 107-19-7	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
beta-Propiolactone; see 1910.1013	CAS NO(f): 57-57-8	
<hr/>		
Propionic acid	CAS NO(f): 79-09-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	30 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Propoxur (Baygon)	CAS NO(f): 114-26-1	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--

Skin Designation	--	
<hr/>		
n Propyl acetate	CAS NO(f): 109-60-4	
Transitional Limits:		
PEL*	200 ppm(a)	840 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	200 ppm(a)	840 mg/m(3)(b)
STEL(c)	250 ppm(a)	1050 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
n Propyl alcohol	CAS NO(f): 71-23-8	
Transitional Limits:		
PEL*	200 ppm(a)	500 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	200 ppm(a)	500mg/m(3)(b)
STEL(c)	250 ppm(a)	625 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
n-Propyl nitrate	CAS NO(f): 627-13-4	
Transitional Limits:		
PEL*	25 ppm(a)	110 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	25 ppm(a)	105 mg/m(3)(b)
STEL(c)	40 ppm(a)	170 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Propylene dichloride	CAS NO(f): 78-87-5	
Transitional Limits:		
PEL*	75 ppm(a)	350 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	75 ppm(a)	350 mg/m(3)(b)
STEL(c)	110 ppm(a)	510 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Propylene glycol dinitrate	CAS NO(f): 6423-43-4	
Transitional Limits:		
PEL*	--	
Skin Designation	--	
Final Rule Limits**:		
TWA	0.05 ppm(a)	0.8 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Propylene glycol monomethyl ether	CAS NO(f): 107-98-2	
Transitional Limits:		

PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	360 mg/m(3)(b)
STEL(c)	150 ppm(a)	540 mg/in(3)(b)
CEILING	--	--
Skin Designation	--	

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Propylene imine	CAS NO(f): 75-55-8	
Transitional Limits:		
PEL*	2 ppm(a)	5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	2 ppm(a)	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Propylene oxide	CAS NO(f): 75-56-9	
Transitional Limits:		
PEL*	100 ppm(a)	240 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	20 ppm(a)	50 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	--

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Propyne;  
see Methyl acetylene

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Pyrethrum	CAS NO(f): 8003-34-7	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA		5 mg/m(3)(b)--
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Pyridine	CAS NO(f): 110-86-1	
Transitional Limits:		
PEL*	5 ppm(a)	15 mg/m(3)(b)
Skin Designation		
Final Rule Limits**:		
TWA	5 ppm(a)	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Quinone	CAS NO(f): 106-51-4	
Transitional Limits:		
PEL*	0.1 ppm(a)	0.4 mg/m(3)(b)



Skin Designation	--	
Final Rule Limits* *:		
TWA	0.1 ppm(a)	0.4 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Resorcinol	CAS NO(f): 108-46-3	
Transitional Limits:		
PEL*		
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	45 mg/m(3)(b)
STEL(c)	20 ppm(a)	90 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Rhodium (as Rh), metal fume and insoluble Compounds	CAS NO(f): 7440-16-6	
Transitional Limits:		
PEL*		0.1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Rhodium (as Rh), soluble compounds	CAS NO(f): 7440-16-6	
Transitional Limits:		
PEL*	--	0.001 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.001 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Ronnel	CAS NO(f): 299-84-3	
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
15 mg/m(3)(b)		
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Rosin core solder pyrolysis products, as formaldehyde		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	

Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Rotenone	CAS NO(f): 83-79-4	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Rouge		
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Selenium compounds (as Se)	CAS NO(f): 7782-49-2	
Transitional Limits:		
PEL*	--	0.2 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Selenium hexafluoride (as Se)	CAS NO(f): 7783-79-1	
Transitional Limits:		
PEL*	0.05 ppm(a)	0.4 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.05 ppm(a)	0.4 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Silica, amorphous, precipitated and gel	CAS NO(f): 112926-00-8	
Transitional Limits:		
PEL*	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	6 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Silica, amorphous, diatomaceous earth, containing less than 1% crystalline silica	CAS NO(f): 61790-53-2	
Transitional Limits:		
PEL*	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	6 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
*Silica, crystalline cristobalite, respirable dust	CAS NO(f): 14464-46-1	
Transitional Limits:		
PEL*	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.05 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
* Silica, crystalline quartz, respirable dust	CAS NO(f): 14808-60-7	
Transitional Limits:		
PEL*	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Silica, crystalline tripoli (as quartz), respirable dust	CAS NO(f): 1317 95-9	
Transitional Limits:		
PEL*	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

\*Silica, crystalline tridymite, respirable dust CAS NO(f): 15468-32-3

Transitional Limits:		
PEL *	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.05 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Silica, fused, respirable dust	CAS NO(f): 60676-86-0	
Transitional Limits:		
PEL *	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Silicates (less than 1% crystalline silica CAS NO(f): -2001-26-2		
Mica (respirable dust)		
Transitional Limits:		
PEL *	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	3 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Soapstone, Total Dust		
Transitional Limits:		
PEL *	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	6 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Soapstone, Respirable Dust		
Transitional Limits:		
PEL *	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	3 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Talc (containing asbestos): use asbestos limit: See 29 CRF 1910.1001		
Transitional Limits:		
PEL *	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits* *:		

Talc (containing no asbestos), respirable dust	CAS NO(f): 14807-96 6	
Transitional Limits:		
PEL*	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Tremolite		
Transitional Limits:	See 29 CFR 1010.1101	
PEL*	--	Tbl. Z-3
Skin Designation	--	
Final Rule Limits**:		
<hr/>		
Silicon	CAS NO(f): 7440-21-3	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Silicon carbide	CAS NO(f): 409-21-2	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Silicon tetrahydride	CAS NO(f): 7803-62-5	

Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	5 ppm(a)	7 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Silver, metal and soluble compounds (as Ag)	CAS NO(f): 7440-22-4	
Transitional Limits:		
PEL*	--	0.01 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.01 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Soapstone; see Silicates		
<hr/>		
Sodium azide (as HN <sub>3</sub> ):	CAS NO(f): 26628-22-8	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.1 ppm(a)	--
Skin Designation	X	
(as NaN <sub>3</sub> ):		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	--	0.3 mg/m(3)(b)
Skin Designation	X	
<hr/>		
Sodium bisulfite	CAS NO(f): 7631-90-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Sodium fluoroacetate	CAS NO(f): 62-74-8	
Transitional Limits:		

PEL*	--	0.05 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.05 mg/m(3)(b)
STEL(c)	--	0.15 mg/m(3)(b)
CEILING	--	--
Skin Designation	X	

---

Sodium hydroxide	CAS NO(f): 1310-73-2	
Transitional Limits:		
PEL*	--	2 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	--	2 mg/m(3)(b)
Skin Designation	--	

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Sodium metabisulfite	CAS NO(f): 7681-57-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Starch	CAS NO(f): 9005-25-8	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Stibine CAS	CAS NO(f): 7803-52-3	
Transitional Limits:		
PEL*	0.1 ppm(a)	0.5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.1 ppm(a)	0.5 mg/m(3)(b)
STEL(c)	--	--

CEILING	--	--
Skin Designation	--	
<hr/>		
Stoddard solvent	CAS NO(f): 8052-41-3	
Transitional Limits:		
PEL*	500 ppm(a)	2900 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	525 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Strychnine	CAS NO(f):57-24-9	
Transitional Limits:		
PEL*	--	0.15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Styrene	CAS NO(f): 100-42-5	
Transitional Limits:		
PEL*	Tbl. Z-2	--
Skin Designation	--	
Final Rule Limits**:		
TWA	50 ppm(a)	215 mg/m(3)(b)
STEL(c)	100 ppm(a)	425 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Subtilisins (Proteolytic enzymes)	CAS NO(f): 9014-01-1	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	0.00006 mg/m(3)(b) (60 min.) (g)
CEILING	--	--
Skin Designation	--	
Footnote (g) Compliance with the subtilisins PEL is assessed by sampling with a high volume sampler (600-800 liters per minute) for at least 60 minutes.		
<hr/>		
Surcose	CAS NO(f): 57-50-1	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--



CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Sulfur dioxide	CAS NO(f): 7446-09-5	
Transitional Limits:		
PEL*	5 ppm(a)	13 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	5 mg/m(3)(b)
*STEL(c)	5 ppm(a)	13 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Sulfur hexafluoride	CAS NO(f): 2551-62-4	
Transitional Limits:		
PEL*	1000 ppm(a)	6000 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1000 ppm(a)	6000 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Sulfuric acid	CAS NO(f): 7664-93-9	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Sulfur monochloride	CAS NO(f): 10025-67-9	
Transitional Limits:		
PEL*	1 ppm(a)	6 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	1 ppm(a)	6 mg/m(3)(b)
Skin Designation	--	

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Sulfur pentafluoride	CAS NO(f): 5714-22-7	
Transitional Limits:		

PEL*	0.025 ppm(a)	0.25 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.01 ppm(a)	0.1 mg/m(3)(b)
Skin Designation	--	

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Sulfur tetrafluoride	CAS NO(f): 7783-60-0	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.1 ppm(a)	0.4 mg/m(3)(b)
Skin Designation		

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Sulfuryl fluoride	CAS NO(f): 2699-79-8	
Transitional Limits:		
PEL*	5 ppm(a)	20 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	5 ppm(a)	20 mg/m(3)(b)
STEL(c)	10 ppm(a)	40 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Sulprofos	CAS NO(f): 35400-43-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Systox (R);  
see Demeton

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2,4,5-T	CAS NO(f): 93-76-5	
Transitional Limits:		
PEL*	--	10 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Talc;  
see Silicates

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Tantalum, metal and oxide dust	CAS NO(f): 7440-25-7	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
TEDP (Sulfotep)	CAS NO(f): 3689-24-5	
Transitional Limits:		
PEL*	--	0.2 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Tellurium and compounds (as Te)	CAS NO(f): 13494-80-9	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Tellurium hexafluoride (as Te)	CAS NO(f): 7783-80-4	
Transitional Limits:		
PEL*	0.02 ppm(a)	0.2 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.02 ppm(a)	0.2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Temephos	CAS NO(f): 3383-96-8	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		

TWA	--	5 mg/m(3 )(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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TEPP	CAS NO(f): 107-49-3	
Transitional Limits:		
PEL*	--	0.05 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.05 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Terphenyls	CAS NO(f): 26140-60-3	
Transitional Limits:		
PEL*	(C) 1 ppm(a)	(C) 9 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	0.5 ppm(a)	5 mg/m(3)(b)
Skin Designation	--	

Footnote (C) denotes a ceiling limit.

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1,1,1,2-Tetrachloro-2,2 difluoroethane	CAS NO(f): 76-11-9	
Transitional Limits:		
PEL*	500 ppm(a)	4170 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	500 ppm(a)	4170 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

500 ppm(a)

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1,1,1,2,2-Tetrachloro- 1,2-difluoroethane	CAS NO(f): 76-12-0	
Transitional Limits:		
PEL*	500 ppm(a)	4170 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	500 ppm(a)	4170 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

1,1,2,2-Tetrachloroethane	CAS NO(f): 79-34-5	
Transitional Limits:		
PEL*	5 ppm(a)	35 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	1 ppm(a)	7 mg/m(3)(b)
STEL(c)	--	--

CEILING	--	--
Skin Designation	X	
<hr/>		
Tetrachlorethylene; see Perchloroethylene		
<hr/>		
Tetrachloromethane; see Carbon tetrachloride		
<hr/>		
Tetrachloronaphthalene	CAS NO(f): 1335-88-2	
Transitional Limits:		
PEL*	--	2 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Tetraethyl lead (as Pb)	CAS NO(f): 78-00-2	
Transitional Limits:		
PEL*	--	0.075 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.075 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Tetrahydrofuran	CAS NO(f): 109-99-9	
Transitional Limits:		
PEL*	200 ppm(a)	590 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	200 ppm(a)	590 mg/m(3)(b)
STEL(c)	250 ppm(a)	735 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Tetramethyl lead, (as Pb)	CAS NO (f): 75-74-1	
Transitional Limits:		
PEL*	--	0.075 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.075 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Tetramethyl succinonitrile	CAS NO (f): 3333-52-6	
Transitional Limits:		
PEL*	0.5 ppm(a)	3 mg/m(3)(b)
Skin Designation	X	

Final Rule Limits**:		
TWA	0.5 ppm(a)	3 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Tetranitromethane	CAS NO (f): 509-14-8	
Transitional Limits:		
PEL*	1 ppm(a)	8 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	8 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Tetrasodium pyrophosphate	CAS NO (f): 7722-88-5	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Tetryl (2,4,6-Trinitro-phenyl-methyl-nitramine)	CAS NO (f): 479-45-8	
Transitional Limits:		
PEL*	--	1.5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	1.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Thallium, soluble compounds (as Ti)	CAS NO (f): 7440-28-0	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
4,4'-Thiobis (6 tert, Butyl-m-cresol)	CAS NO (f): 96-69-5	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		

Thioglycolic acid	CAS NO (f): 68-11-1	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	4 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		
Thionyl chloride	CAS NO (f): 7719-09-7	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	1 ppm(a)	5 mg/m(3)(b)
Skin Designation	--	
<hr/>		
Thiram	CAS NO (f): 137-26-8	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Tin, inorganic compounds (except oxides) (as Sn)	CAS NO (f): 7440-31-5	
Transitional Limits:		
PEL*	--	2 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Tin, organic compounds (as Sn)	CAS NO (f): 7440-31-5	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		



Tin oxide (as Sn)	CAS NO (f):21651-19-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Titanium dioxide	CAS NO (f): 13463-67-7	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Toluene	CAS NO (f): 108-88-3	
Transitional Limits:		
PEL*	Tbl. Z-2	
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	375 mg/m(3)(b)
STEL(c)	150 ppm(a)	560 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Toluene-2,4-diisocyanate (TDI)	CAS NO (f): 584-84-9	
Transitional Limits:		
PEL*	(C) 002 ppm(a)	(C) 0.14 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.005 ppm(a)	0.04 mg/m(3)(b)
STEL(c)	0.02 ppm(a)	0.15 mg/m(3)(b)
CEILING	--	--
Skin Designation		
Footnote (C) denotes a ceiling limit		
<hr/>		
m-Toluidine	CAS NO (f): 108-44-1	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	9 mg/m(3)(b)
STEL(c)		
CEILING	--	--
Skin Designation	X	
<hr/>		
o-Toluidine	CAS NO (f): 95-53-4	
Transitional Limits:		

PEL*	5 ppm(a)	22 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	5 ppm(a)	22 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

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p-Toluidine	CAS NO (f):106-49-0	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	9 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

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Toxaphene;  
see Chlorinated camphene

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Tremolite;  
see Silicates

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Tributyl phosphate	CAS NO (f): 126-73-8	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	0.2 ppm(a)	2.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Trichloroacetic acid	CAS NO (f): 76-03-9	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	1 ppm(a)	7 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

1,2,4-Trichlorobenzene	CAS NO (f): 120-82-1	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	5 ppm(a)	40 mg/m(3)(b)
Skin Designation	--	

---

1,1,1-Trichloroethane;  
see Methyl chloroform

---

1,1,2 Trichloroethane	CAS NO (f): 79-00-5	
Transitional Limits:		
PEL*	10 ppm(a)	45 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	10 ppm(a)	45 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Trichloroethylene	CAS NO (f):79-01-6	
Transitional Limits:		
PEL*	Tbl. Z-2	Tbl. Z-2
Skin Designation	Tbl. Z-2	
Final Rule Limits**:		
TWA	50 ppm(a)	270 mg/m(3)(b)
STEL(c)	200 ppm(a)	1080 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Trichloromethane;  
see Chloroform

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Trichloronaphthalene	CAS NO(f): 1321-65-9	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

1,2,3-Trichloropropane	CAS NO (f): 96-18-4	
Transitional Limits:		
PEL*	50 ppm(a)	300 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	60 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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1,1,2-Trichloro- 1,2,2-trifluoroethane	CAS NO (f): 76-13-1	
Transitional Limits:		
PEL*	1000 ppm(a)	7600 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1000 ppm(a)	7600 mg/m(3)(b)
STEL(c)	1250 ppm(a)	9500 mg/m(3)(b)
CEILING	--	--

Skin Designation	--	
<hr/>		
Triethylamine	CAS NO (f):121-44-8	
Transitional Limits:		
PEL*	25 ppm(a)	100 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	40 mg/m(3)(b)
STEL(c)	15 ppm(a)	60 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Trifluorobromomethane	CAS NO (f): 75-63-8	
Transitional Limits:		
PEL*	1000 ppm(a)	6100 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	1000 ppm(a)	6100 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Trimellitic anhydride	CAS NO (f): 552-30-7	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	0.005 ppm(a)	0.04 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Trimethylamine	CAS NO (f): 75-50-3	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	24 mg/m(3)(b)
STEL(c)	15 ppm(a)	36 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		

Trimethyl benzene	CAS NO (f): 25551-13-7	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	25 ppm(a)	125 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Trimethyl phosphite	CAS NO (f): 121-45-9	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	2 ppm(a)	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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2,4,6-Trinitrophenyl;  
see Picric acid

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2,4,6-Trinitrophenylmethyl nitramine;  
see Tetryl

---

2,4,6 Trinitrotoluene (TNT)	CAS NO (f): 118-96-7	
Transitional Limits:		
PEL*	--	1.5 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	--	0.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Triorthocresyl phosphate	CAS NO (f): 78-30-8	
Transitional Limits:		
PEL*	--	0.1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

---

Triphenyl amine	CAS NO (f): 603-34-9	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--

Skin Designation	--	
<hr/>		
Triphenyl phosphate	CAS NO(f): 115-86-6	
Transitional Limits:		
PEL*	--	3 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	3 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Tungsten (as W)	CAS NO (f): 7440-33-7	
Insoluble Compounds		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	10 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
Soluble Compounds		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	3 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Turpentine	CAS NO (f): 8006-64-2	
Transitional Limits:		
PEL*	100 ppm(a)	560 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	560 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Uranium (as U)	CAS NO (f): 7,40-61-1	
Soluble Compounds		
Transitional Limits:		
PEL*	--	0.05 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.05 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Insoluble Compounds		
Transitional Limits:		
PEL*	--	0.25 mg/m(3)(b)

Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.2 mg/m(3)(b)
STEL(c)	--	0.6 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
n-Valeraldehyde	CAS NO (f): 110-62-3	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	50 ppm(a)	175 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Vanadium	CAS NO (f): 1314-62-1	
Respirable dust (as V(2)O(5))		
Transitional Limits:		
PEL*	--	(C) 0.5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.05 mg/m(3)(b)
STEL(c)--	--	--
CEILING	--	--
Skin Designation		
Fume (as V(2)O(5))		
Transitional Limits:		
PEL*	--	(C) 0.1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	0.05 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Footnote (C) denotes a ceiling limit		
<hr/>		
Vegetable oil mist		
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	15 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

---

Vinyl acetate	CAS NO (f): 108-05-4	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	30 mg/m(3)(b)
STEL(c)	20 ppm(a)	60 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

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Vinyl benzene;  
see Styrene

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Vinyl bromide	CAS NO (f): 593-60-2	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	5 ppm(a)	20 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Vinyl chloride;  
see 1910.1017

CAS NO (f): 75-01-4

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Vinyl cyanide\*;  
see Acrylonitrile

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Vinyl cyclohexene dioxide	CAS NO (f):106-87-6	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	10 ppm(a)	60 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	

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Vinylidene chloride (1,1 Dichloroethylene)	CAS NO (f): 75-35-4		
Transitional Limits:			
PEL *	--	--	
Skin Designation	--		
Final Rule Limits**:			
TWA	1 ppm(a)	4 mg/m(3)(b)	
STEL(c)	--	--	
CEILING	--	--	
Skin Designation	--		

---

Vinyl toluene	CAS NO (f): 25013-15-4		
Transitional Limits:			
PEL *	100 ppm(a)	480 mg/m(3)(b)	
Skin Designation	--		
Final Rule Limits**:			
TWA	100 ppm(a)	480 mg/m(3)(b)	
STEL(c)	--	--	
CEILING	--	--	
Skin Designation	--		

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VM & P Naphtha	CAS NO (f): 8032-32-4		
Transitional Limits:			
PEL *	--	--	
Skin Designation	--		
Final Rule Limits**:			
TWA	300 ppm(a)	1350 mg/m(3)(b)	
STEL(c)	400 ppm(a)	1800 mg/m(3)(b)	
CEILING	--	--	
Skin Designation	--		

---

Warfarin	CAS NO (f): 81-81-2		
Transitional Limits:			
PEL *	--	0.1 mg/m(3)(b)	
Skin Designation	--		
Final Rule Limits**:			
TWA	--	0.1 mg/m(3)(b)	
STEL(c)	--	--	
CEILING	--	--	
Skin Designation	--		

---

Welding fumes (total particulate***) (As determined from breathing-zone air samples)			
Transitional Limits:			
PEL *	--	--	
Skin Designation	--		
Final Rule Limits**:			
TWA	--	5 mg/m(3)(b)	
STEL(c)	--	--	
CEILING	--	--	
Skin Designation	--		

Footnote\*\* \* As determined from breathing-zone air samples.

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Wood dust, all soft and hard woods, except Western red cedar  
Transitional Limits:

PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	10 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
Wood dust, Western red cedar		
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	2.5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
<hr/>		
Xylenes (o-, m-, p-isomers)	CAS NO(f): 1330-20-7	
Transitional Limits:		
PEL*	100 ppm(a)	435 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	100 ppm(a)	435 mg/m(3)(b)
STEL(c)	150 ppm(a)	655 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	
<hr/>		
m-Xylene alpha, alpha'-diamine	CAS NO(f): 1477-55-0	
Transitional Limits:		
PEL*	--	--
Skin Designation	--	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	--	0.1 mg/m(3)(b)
Skin Designation	X	
<hr/>		
Xylidine	CAS NO(f): 1300-73-8	
Transitional Limits:		
PEL*	5 ppm(a)	25 mg/m(3)(b)
Skin Designation	X	
Final Rule Limits**:		
TWA	2 ppm(a)	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	X	
<hr/>		

Yttrium	CAS NO(f): 7440-65-5	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Zinc chloride fume	CAS NO(f): 7646-85-7	
Transitional Limits:		
PEL*	--	1 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	1 mg/m(3)(b)
STEL(c)	--	2 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

---

Zinc chromate (as CrO (3))	CAS NO(f): Varies with Compound	
Transitional Limits:		
PEL*	Tbl. Z-2	Tbl. Z-2
Skin Designation	Tbl. Z-2	
Final Rule Limits**:		
TWA	--	--
STEL(c)	--	--
CEILING	--	0.1 mg/m(3)(b)
Skin Designation	--	

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Zinc oxide fume	CAS NO(f): 1314-13-2	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	10 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

---

Zinc oxide	CAS NO (f): 1314-13-2	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	

Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	

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Zinc stearate	CAS NO (f): 557-05-1	
Total Dust		
Transitional Limits:		
PEL*	--	15 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	10 mg/m(3)(b)
STEL(c)	--	--
CEILING	--	--
Skin Designation	--	
Respirable fraction		
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(e)	--	--
CEILING	--	--
Skin Designation	--	

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Zirconium compounds (as Zr)	CAS NO (f): 7440-67-7	
Transitional Limits:		
PEL*	--	5 mg/m(3)(b)
Skin Designation	--	
Final Rule Limits**:		
TWA	--	5 mg/m(3)(b)
STEL(c)	--	10 mg/m(3)(b)
CEILING	--	--
Skin Designation	--	

\*The transitional PELs are 8-hour TWAs unless otherwise noted; a (C) designation denotes a ceiling limit.

\*\* Unless otherwise noted, employers in General Industry (*i.e.*, those covered by 29 CFR 1910) may use any combination of controls to achieve these limits until December 31, 1993 as set forth in 29 CFR 1910.1000(f).

\*\*\* As determined from breathing zone air samples.

<sup>a</sup> Parts of vapor or gas per million parts of contaminated air by volume at 25 degrees C and 760 torr.

<sup>b</sup> Milligrams of substance per cubic meter of air. When a numeric entry for a substance is in file mg/m(3) column and not in the ppm column, then the number in the mg/m(3) column is exact. When numerical entries for a substance are in both the ppm and mg/m(3) columns, then the number in the mg/m(3) column may be rounded off.

<sup>c</sup> Duration is for 15 minutes, unless otherwise noted.

<sup>d</sup> The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except some subsegments of industry where exposures are consistently under the action level (*i.e.*, distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures); for the excepted subsegments, the benzene limits in Table Z-2 apply

<sup>e</sup> Exposures under 10,000 ppm to be cited de minimus

<sup>f</sup> The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than one metal compound measured as the metal, the CAS number for the metal is given – not CAS numbers for the individual compounds.

<sup>g</sup> Compliance with the substituted PEL is assessed by sampling with a high volume sampler (600-800 liters per minute) for at least 60 minutes.



**TABLE Z-2**

<i>Material</i>	<i>8 hour time-wtd Average</i>	<i>Acceptable ceiling concentration</i>	<i>Acceptable max peak above the acceptable ceil concentration for an 8.hr shift</i>	
			<i>Concentration</i>	<i>Maximum duration</i>
*Benzene (Z37.40-1969)(a)	10 ppm	25 ppm	50 ppm	10 minutes
Beryllium and Beryllium compounds (Z37.29-1970)	2 ug/m(3)	5 ug/m(3)	25 ug/m(3)	30 minutes
*Cadmium fume (Z37.5-1970)(c)	0.1 mg/m(3)	0.3 mg/m(3)	.....	
Cadmium dust (Z37.5-1970)(c)	0.2 mg/m(3)	0.6 mg/m(3)	.....	
Carbon disulfide (Z37.3-1968)	20 ppm	30 ppm	100 ppm	30 minutes
Carbon Tetrachloride (Z37.17-1967)	10 ppm	25 ppm	200 ppm	5 min. in any 4 hrs.
Chromic acid and chromates (Z37-7-1971)	1 mg/10 m(3)	.....		
Ethylene dibromide (Z37.31-1970)	20 ppm	30 ppm	50 ppm	5 minutes
Ethylene dichloride (Z37.21-1969)	50 ppm	100 ppm	200 ppm	5 min. in any 3 hrs.
Formaldehyde (Z37.16-1967)(b)	3 ppm	5 ppm	10 ppm	30 minutes
Hydrogen fluoride (Z37.28-1969)	3 ppm	.....	.....	
Hydrogen sulfide (Z37.2-1966)		20 ppm	50 ppm	10 minutes once only if no other meas. exposure occurs
Fluoride as dust (Z37.38-1969)	2.5 mg.m(3)	.....	.....	
Mercury (Z237.8-1971)	1 mg/10 m(3)	.....		
Methyl chloride (Z37.18-1969)	100 ppm	200 ppm	300 ppm	5 min. in any 3 hrs.
Methylene chloride (Z37.23-1969)	500 ppm	1,000 ppm	2,000 ppm	5 min. in any 2 hrs.
Organo (alkyl) mercury (Z37.30-1969)		0.01 mg/m(3)	0.04 mg/m(3)	.....
Styrene (Z37.15-1969)	100 ppm	200 ppm	600 ppm	5 min. in any 3 hrs.
Tetrachloroethylene (Z37.22-1967)	100 ppm	200 ppm	300 ppm	5 min. in any 3 hrs.
Toluene (Z37.12-1967)	200 ppm	300 ppm	500 ppm	10 minutes
Trichloroethylene (Z37.19-1967)	100 ppm	200 ppm	300 ppm	5 min. in any 2 hrs.

\*This standard applies to the industry segments exempt from the 1 ppm 8 hour TWA and 5 ppm STEL of the benzene standard at 1910.1028

**TABLE Z-3**  
Mineral Dusts

<i>Substance</i>	<i>mppcf(e)</i>	<i>mg/m(3)</i>
SILICA: CRYSTALLINE QUARTZ (RESPIRABLE) .....	250(f)	10 mg/ m(3)(m)
QUARTZ (TOTAL DUST) .....	<u>%SiO(2)+5</u>	<u>%SiO(2)+2</u> <u>30 mg/m(3)</u> <u>%SiO(2)+2</u>
CRYSTOBALITE: Use ½ the value calculated from the count or mass formulae for quartz		
TRIDYMITE: Use ½ the value calculated from the formulae for quartz		
AMORPHOUS. including natural diatomaceous earth ..	20	<u>80mg/m(3)</u> <u>%SiO(2)</u>
SILICATES (less than 1% crystalline silica):		
Mica .....	20	.....
Soapstone .....	20	.....
Talc (not containing asbestos) .....	20(n)	.....
Talc (containing asbestos).		
Use asbestos limit		
Tremolite (see 29 CFR 1910.1101)		
Portland cement .....	50	.....
GRAPHITE (NATURAL) .....	15	.....
COAL DUST (respirable fraction less than 5% SiO(2))		2.4 mg/m(3)
		Or
For more than 5% SiO(2) .....		<u>10 mg/m(3)</u> <u>%SiO(2)+2</u>
* INERT OR NUISANCE DUST(G):		
Respirable fraction .....	15	5 mg/m(3)
Total dust .....	50	15 mg/m(3)

Note - Conversion factors-mppcf X 35.3 = million particles per cubic meter = particles per c.c.

(e)  
(f)

**Historical Note**

Sec. filed: Nov. 9, 1993 as emergency measure; Feb. 7, 1994 as emergency measure; April 7, 1994 as emergency measure; May 19, 1994 eff. June 8, 1994.