

## PART 1910—OCCUPATIONAL SAFETY AND HEALTH STANDARDS (CONTINUED)

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SUBJECT INDEX FOR 29 CFR PART 1910—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

### Subpart Z—Toxic and Hazardous Substances

AUTHORITY: Secs. 4, 6, 8 of the Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, and 657); Secretary of Labor's Order No. 12-71 (36 FR 8754), 8-76 (41 FR 25059), 9-83 (48 FR 35736), 1-90 (55 FR 9033), 6-96 (62 FR 111),

3-2000 (65 FR 50017), 5-2002 (67 FR 65008), or 5-2007 (72 FR 31160), as applicable; and 29 CFR part 1911.

All of subpart Z issued under section 6(b) of the Occupational Safety and Health Act of 1970, except those substances that have exposure limits listed in Tables Z-1, Z-2, and Z-3 of 29 CFR 1910.1000. The latter were issued under section 6(a) (29 U.S.C. 655(a)).

Section 1910.1000, Tables Z-1, Z-2, and Z-3 also issued under 5 U.S.C. 553, but not under 29 CFR part 1911 except for the arsenic (organic compounds), benzene, cotton dust, and chromium (VI) listings.

Section 1910.1001 also issued under section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704) and 5 U.S.C. 553.

Section 1910.1002 also issued under 5 U.S.C. 553, but not under 29 U.S.C. 655 or 29 CFR part 1911.

Sections 1910.1018, 1910.1029, and 1910.1200 also issued under 29 U.S.C. 653.

Section 1910.1030 also issued under Public Law 106-430, 114 Stat. 1901.

SOURCE: 39 FR 23502, June 27, 1974, unless otherwise noted. Redesignated at 40 FR 23072, May 28, 1975.

#### § 1910.1000 Air contaminants.

An employee's exposure to any substance listed in Tables Z-1, 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—(1) Substances with limits preceded by "C"—Ceiling Values.* An employee's exposure to any substance in Table Z-1, the exposure limit of which is preceded by a "C", shall at no time exceed the exposure limit given for that substance. 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 during the working day.

(2) *Other substances—8-hour Time Weighted Averages.* An employee's exposure to any substance in Table Z-1, 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 any 8-hour work shift of a 40-hour work week.

(b) *Table Z-2.* An employee's exposure to any substance listed in Table Z-2 shall not exceed the exposure limits specified as follows:

(1) *8-hour time weighted averages.* An employee's exposure to any substance listed in Table Z-2, in any 8-hour work

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shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that substance in Table Z-2.

(2) *Acceptable ceiling concentrations.* An employee's exposure to a substance listed in Table Z-2 shall not exceed at any time during an 8-hour shift the acceptable ceiling concentration limit given for the substance 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.* 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:

$$E = (C_a T_a + C_b T_b + \dots + C_n T_n) \div 8$$

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 of 29 CFR part 1910 for the substance involved.

(ii) To illustrate the formula prescribed in paragraph (d)(1)(i) of this section, assume that Substance A has an 8-hour time weighted average limit of 100 ppm noted in Table Z-1. Assume that an employee is subject to the following exposure:

- Two hours exposure at 150 ppm
- Two hours exposure at 75 ppm
- Four hours exposure at 50 ppm

Substituting this information in the formula, we have

$$(2 \times 150 + 2 \times 75 + 4 \times 50) \div 8 = 81.25 \text{ ppm}$$

Since 81.25 ppm is less than 100 ppm, 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:

$$E_m = (C_1 + L_1 + C_2 + L_2) + \dots + (C_n + L_n)$$

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 paragraph (d)(2)(i) of this section, consider the following exposures:

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

Substituting in the formula, we have:

$$E_m = 500 + 1,000 + 45 + 200 + 40 + 200$$

$$E_m = 0.500 + 0.225 + 0.200$$

$$E_m = 0.925$$

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

(e) To achieve compliance with paragraphs (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

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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.

TABLE Z-1—LIMITS FOR AIR CONTAMINANTS

| Substance   | CAS No. (c)      | ppm (a) <sup>1</sup> | mg/m <sup>3</sup> (b) <sup>1</sup> | Skin designation |
|---|------------------|----------------------|------------------------------------|------------------|
| Acetaldehyde  | 75-07-0          | 200                  | 360                                |                  |
| Acetic acid   | 64-19-7          | 10                   | 25                                 |                  |
| Acetic anhydride  | 108-24-7         | 5                    | 20                                 |                  |
| Acetone   | 67-64-1          | 1000                 | 2400                               |                  |
| Acetonitrile  | 75-05-8          | 40                   | 70                                 |                  |
| 2-Acetylaminofluorine; see 1910.1014  | 53-96-3          |                      |                                    |                  |
| Acetylene dichloride; see 1,2-Dichloroethylene.   |                  |                      |                                    |                  |
| Acetylene tetrabromide  | 79-27-6          | 1                    | 14                                 |                  |
| Acrolein  | 107-02-8         | 0.1                  | 0.25                               |                  |
| Acrylamide  | 79-06-1          |                      | 0.3                                | X                |
| Acrylonitrile; see 1910.1045  | 107-13-1         |                      |                                    |                  |
| Aldrin  | 309-00-2         |                      | 0.25                               | X                |
| Allyl alcohol   | 107-18-6         | 2                    | 5                                  | X                |
| Allyl chloride  | 107-05-1         | 1                    | 3                                  |                  |
| Allyl glycidyl ether (AGE)  | 106-92-3         | (C)10                | (C)45                              |                  |
| Allyl propyl disulfide  | 2179-59-1        | 2                    | 12                                 |                  |
| alpha-Alumina   | 1344-28-1        |                      |                                    |                  |
| Total dust  |                  |                      | 15                                 |                  |
| Respirable fraction   |                  |                      | 5                                  |                  |
| Aluminum, metal (as Al)   | 7429-90-5        |                      |                                    |                  |
| Total dust  |                  |                      | 15                                 |                  |
| Respirable fraction   |                  |                      | 5                                  |                  |
| 4-Aminodiphenyl; see 1910.1011  | 92-67-1          |                      |                                    |                  |
| 2-Aminoethanol; see Ethanalamine.   |                  |                      |                                    |                  |
| 2-Aminopyridine   | 504-29-0         | 0.5                  | 2                                  |                  |
| Ammonia   | 7664-41-7        | 50                   | 35                                 |                  |
| Ammonium sulfamate  | 7773-06-0        |                      |                                    |                  |
| Total dust  |                  |                      | 15                                 |                  |
| Respirable fraction   |                  |                      | 5                                  |                  |
| n-Amyl acetate  | 628-63-7         | 100                  | 525                                |                  |
| sec-Amyl acetate  | 626-38-0         | 125                  | 650                                |                  |
| Aniline and homologs  | 62-53-3          | 5                    | 19                                 | X                |
| Anisidine (o-, p-isomers)   | 29191-52-4       |                      | 0.5                                | X                |
| Antimony and compounds (as Sb)  | 7440-36-0        |                      | 0.5                                |                  |
| ANTU (alpha Naphthylthiourea)   | 86-88-4          |                      | 0.3                                |                  |
| Arsenic, inorganic compounds (as As); see 1910.1018   | 7440-38-2        |                      |                                    |                  |
| Arsenic, organic compounds (as As)  | 7440-38-2        |                      | 0.5                                |                  |
| Arsine  | 7784-42-1        | 0.05                 | 0.2                                |                  |
| Asbestos; see 1910.1001   | ( <sup>4</sup> ) |                      |                                    |                  |
| Azinphos-methyl   | 86-50-0          |                      | 0.2                                | X                |
| Barium, soluble compounds (as Ba)   | 7440-39-3        |                      | 0.5                                |                  |
| Barium sulfate  | 7727-43-7        |                      |                                    |                  |
| Total dust  |                  |                      | 15                                 |                  |
| Respirable fraction   |                  |                      | 5                                  |                  |
| Benomyl   | 17804-35-2       |                      |                                    |                  |
| Total dust  |                  |                      | 15                                 |                  |
| Respirable fraction   |                  |                      | 5                                  |                  |
| Benzene; see 1910.1028  | 71-43-2          |                      |                                    |                  |
| See Table Z-2 for the limits applicable in the operations or sectors excluded in 1910.1028 <sup>d</sup> |                  |                      |                                    |                  |
| Benzidine; see 1910.1010  | 92-87-5          |                      |                                    |                  |
| p-Benzoquinone; see Quinone.  |                  |                      |                                    |                  |
| Benzo(a)pyrene; see Coal tar pitch volatiles..  |                  |                      |                                    |                  |
| Benzoyl peroxide  | 94-36-0          |                      | 5                                  |                  |
| Benzyl chloride   | 100-44-7         | 1                    | 5                                  |                  |
| Beryllium and beryllium compounds (as Be)   | 7440-41-7        |                      | ( <sup>2</sup> )                   |                  |
| Biphenyl; see Diphenyl.   |                  |                      |                                    |                  |
| Bismuth telluride, Undoped  | 1304-82-1        |                      |                                    |                  |
| Total dust  |                  |                      | 15                                 |                  |
| Respirable fraction   |                  |                      | 5                                  |                  |
| Boron oxide   | 1303-86-2        |                      |                                    |                  |
| Total dust  |                  |                      | 15                                 |                  |
| Boron trifluoride   | 7637-07-2        | (C)1                 | (C)3                               |                  |
| Bromine   | 7726-95-6        | 0.1                  | 0.7                                |                  |
| Bromoform   | 75-25-2          | 0.5                  | 5                                  | X                |
| Butadiene (1,3-Butadiene); See 29 CFR 1910.1051; 29 CFR 1910.19(l).                                     | 106-99-0         | 1 ppm/5 ppm STEL     |                                    |                  |

TABLE Z-1—LIMITS FOR AIR CONTAMINANTS—Continued

| Substance  | CAS No. (c) | ppm (a) <sup>1</sup> | mg/m <sup>3</sup> (b) <sup>1</sup> | Skin designation |
|--|-------------|----------------------|------------------------------------|------------------|
| Butanethiol; see Butyl mercaptan.  |             |                      |                                    |                  |
| 2-Butanone (Methyl ethyl ketone) .....                                       | 78-93-3     | 200                  | 590                                |                  |
| 2-Butoxyethanol .....  | 111-76-2    | 50                   | 240                                | X                |
| n-Butyl acetate .....  | 123-86-4    | 150                  | 710                                |                  |
| sec-Butyl acetate .....  | 105-46-4    | 200                  | 950                                |                  |
| tert-Butyl acetate .....   | 540-88-5    | 200                  | 950                                |                  |
| n-Butyl alcohol .....  | 71-36-3     | 100                  | 300                                |                  |
| sec-Butyl alcohol .....  | 78-92-2     | 150                  | 450                                |                  |
| tert-Butyl alcohol .....   | 75-65-0     | 100                  | 300                                |                  |
| Butylamine .....   | 109-73-9    | (C)5                 | (C)15                              | X                |
| tert-Butyl chromate (as CrO <sub>3</sub> ); see 1910.1026 <sup>6</sup> ..... | 1189-85-1   |                      |                                    |                  |
| n-Butyl glycidyl ether (BGE) .....   | 2426-08-6   | 50                   | 270                                |                  |
| Butyl mercaptan .....  | 109-79-5    | 10                   | 35                                 |                  |
| p-tert-Butyltoluene .....  | 98-51-1     | 10                   | 60                                 |                  |
| Cadmium (as Cd); see 1910.1027 .....   | 7440-43-9   |                      |                                    |                  |
| Calcium carbonate .....  | 1317-65-3   |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....  |             |                      | 5                                  |                  |
| Calcium hydroxide .....  | 1305-62-0   |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....  |             |                      | 5                                  |                  |
| Calcium oxide .....  | 1305-78-8   |                      | 5                                  |                  |
| Calcium silicate .....   | 1344-95-2   |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....  |             |                      | 5                                  |                  |
| Calcium sulfate .....  | 7778-18-9   |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....  |             |                      | 5                                  |                  |
| Camphor, synthetic .....   | 76-22-2     |                      | 2                                  |                  |
| Carbaryl (Sevin) .....   | 63-25-2     |                      | 5                                  |                  |
| Carbon black .....   | 1333-86-4   |                      | 3.5                                |                  |
| Carbon dioxide .....   | 124-38-9    | 5000                 | 9000                               |                  |
| Carbon disulfide .....   | 75-15-0     |                      | ( <sup>2</sup> )                   |                  |
| Carbon monoxide .....  | 630-08-0    | 50                   | 55                                 |                  |
| Carbon tetrachloride .....   | 56-23-5     |                      | ( <sup>2</sup> )                   |                  |
| Cellulose .....  | 9004-34-6   |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....  |             |                      | 5                                  |                  |
| Chlordane .....  | 57-74-9     |                      | 0.5                                | X                |
| Chlorinated camphene .....   | 8001-35-2   |                      | 0.5                                | X                |
| Chlorinated diphenyl oxide .....   | 55720-99-5  |                      | 0.5                                |                  |
| Chlorine .....   | 7782-50-5   | (C)1                 | (C)3                               |                  |
| Chlorine dioxide .....   | 10049-04-4  | 0.1                  | 0.3                                |                  |
| Chlorine trifluoride .....   | 7790-91-2   | (C)0.1               | (C)0.4                             |                  |
| Chloroacetaldehyde .....   | 107-20-0    | (C)1                 | (C)3                               |                  |
| a-Chloroacetophenone (Phenacyl chloride) .....                               | 532-27-4    | 0.05                 | 0.3                                |                  |
| Chlorobenzene .....  | 108-90-7    | 75                   | 350                                |                  |
| o-Chlorobenzylidene malononitrile .....                                      | 2698-41-1   | 0.05                 | 0.4                                |                  |
| Chlorobromomethane .....   | 74-97-5     | 200                  | 1050                               |                  |
| 2-Chloro-1,3-butadiene; see beta-Chloroprene.                                |             |                      |                                    |                  |
| Chlorodiphenyl (42% Chlorine) (PCB) .....                                    | 53469-21-9  |                      | 1                                  | X                |
| Chlorodiphenyl (54% Chlorine) (PCB) .....                                    | 11097-69-1  |                      | 0.5                                | X                |
| 1-Chloro-2,3-epoxypropane; see Epichlorohydrin.                              |             |                      |                                    |                  |
| 2-Chloroethanol; see Ethylene chlorohydrin.                                  |             |                      |                                    |                  |
| Chloroethylene; see Vinyl chloride.  |             |                      |                                    |                  |
| Chloroform (Trichloromethane) .....  | 67-66-3     | (C)50                | (C)240                             |                  |
| bis(Chloromethyl) ether; see 1910.1008 .....                                 | 542-88-1    |                      |                                    |                  |
| Chloromethyl methyl ether; see 1910.1006 .....                               | 107-30-2    |                      |                                    |                  |
| 1-Chloro-1-nitropropane .....  | 600-25-9    | 20                   | 100                                |                  |
| Chloropicrin .....   | 76-06-2     | 0.1                  | 0.7                                |                  |
| beta-Chloroprene .....   | 126-99-8    | 25                   | 90                                 | X                |
| 2-Chloro-6-(trichloromethyl) pyridine .....                                  | 1929-82-4   |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....  |             |                      | 5                                  |                  |
| Chromium (II) compounds.   |             |                      |                                    |                  |
| (as Cr) .....  | 7440-47-3   |                      | 0.5                                |                  |
| Chromium (III) compounds.  |             |                      |                                    |                  |
| (as Cr) .....  | 7440-47-3   |                      | 0.5                                |                  |
| Chromium (VI) compounds; See 1910.1026 <sup>5</sup>                          |             |                      |                                    |                  |
| Chromium metal and insol. salts (as Cr) .....                                | 7440-47-3   |                      | 1                                  |                  |
| Chrysene; see Coal tar pitch volatiles.                                      |             |                      |                                    |                  |
| Clopidol .....   | 2971-90-6   |                      |                                    |                  |

TABLE Z-1—LIMITS FOR AIR CONTAMINANTS—Continued

| Substance   | CAS No. (c)      | ppm (a) <sup>1</sup> | mg/m <sup>3</sup> (b) <sup>1</sup> | Skin designation |
|---|------------------|----------------------|------------------------------------|------------------|
| Total dust .....  |                  |                      | 15                                 |                  |
| Respirable fraction .....   |                  |                      | 5                                  |                  |
| Coal dust (less than 5% SiO <sub>2</sub> ), respirable fraction .....   |                  |                      | ( <sup>3</sup> )                   |                  |
| Coal dust (greater than or equal to 5% SiO <sub>2</sub> ), respirable fraction.                                 |                  |                      | ( <sup>3</sup> )                   |                  |
| Coal tar pitch volatiles (benzene soluble fraction), anthracene, BaP, phenanthrene, acridine, chrysene, pyrene. | 65966-93-2       |                      | 0.2                                |                  |
| Cobalt metal, dust, and fume (as Co) .....  | 7440-48-4        |                      | 0.1                                |                  |
| Coke oven emissions; see 1910.1029.   |                  |                      |                                    |                  |
| Copper .....  | 7440-50-8        |                      |                                    |                  |
| Fume (as Cu) .....  |                  |                      | 0.1                                |                  |
| Dusts and mists (as Cu) .....   |                  |                      | 1                                  |                  |
| Cotton dust <sup>e</sup> ; see 1910.1043 .....  |                  |                      | 1                                  |                  |
| Crag herbicide (Sesone) .....   | 136-78-7         |                      |                                    |                  |
| Total dust .....  |                  |                      | 15                                 |                  |
| Respirable fraction .....   |                  |                      | 5                                  |                  |
| Cresol, all isomers .....   | 1319-77-3        | 5                    | 22                                 | X                |
| Crotonaldehyde .....  | 123-73-9;        | 2                    | 6                                  |                  |
|   | 4170-30-3        |                      |                                    |                  |
| Cumene .....  | 98-82-8          | 50                   | 245                                | X                |
| Cyanides (as CN) .....  | ( <sup>4</sup> ) |                      | 5                                  | X                |
| Cyclohexane .....   | 110-82-7         | 300                  | 1050                               |                  |
| Cyclohexanol .....  | 108-93-0         | 50                   | 200                                |                  |
| Cyclohexanone .....   | 108-94-1         | 50                   | 200                                |                  |
| Cyclohexene .....   | 110-83-8         | 300                  | 1015                               |                  |
| Cyclopentadiene .....   | 542-92-7         | 75                   | 200                                |                  |
| 2,4-D (Dichlorophenoxyacetic acid) .....  | 94-75-7          |                      | 10                                 |                  |
| Decaborane .....  | 17702-41-9       | 0.05                 | 0.3                                | X                |
| Demeton (Systox) .....  | 8065-48-3        |                      | 0.1                                | X                |
| Diacetone alcohol (4-Hydroxy-4-methyl-2-pentanone) .....  | 123-42-2         | 50                   | 240                                |                  |
| 1,2-Diaminoethane; see Ethylenediamine.   |                  |                      |                                    |                  |
| Diazomethane .....  | 334-88-3         | 0.2                  | 0.4                                |                  |
| Diborane .....  | 19287-45-7       | 0.1                  | 0.1                                |                  |
| 1,2-Dibromo-3-chloropropane (DBCP); see 1910.1044 .....   | 96-12-8          |                      |                                    |                  |
| 1,2-Dibromoethane; see Ethylene dibromide.  |                  |                      |                                    |                  |
| Dibutyl phosphate .....   | 107-66-4         | 1                    | 5                                  |                  |
| Dibutyl phthalate .....   | 84-74-2          |                      | 5                                  |                  |
| o-Dichlorobenzene .....   | 95-50-1          | (C)50                | (C)300                             |                  |
| p-Dichlorobenzene .....   | 106-46-7         | 75                   | 450                                |                  |
| 3,4-Dichlorobenzidine; see 1910.1007 .....  | 91-94-1          |                      |                                    |                  |
| Dichlorodifluoromethane .....   | 75-71-8          | 1000                 | 4950                               |                  |
| 1,3-Dichloro-5,5-dimethyl hydantoin .....   | 118-52-5         |                      | 0.2                                |                  |
| Dichlorodiphenyltrichloroethane (DDT) .....   | 50-29-3          |                      | 1                                  | X                |
| 1,1-Dichloroethane .....  | 75-34-3          | 100                  | 400                                |                  |
| 1,2-Dichloroethane; see Ethylene dichloride.  |                  |                      |                                    |                  |
| 1,2-Dichloroethylene .....  | 540-59-0         | 200                  | 790                                |                  |
| Dichloroethyl ether .....   | 111-44-4         | (C)15                | (C)90                              | X                |
| Dichloromethane; see Methylene chloride.  |                  |                      |                                    |                  |
| Dichloromonofluoromethane .....   | 75-43-4          | 1000                 | 4200                               |                  |
| 1,1-Dichloro-1-nitroethane .....  | 594-72-9         | (C)10                | (C)60                              |                  |
| 1,2-Dichloropropane; see Propylene dichloride.  |                  |                      |                                    |                  |
| Dichlorotetrafluoroethane .....   | 76-14-2          | 1000                 | 7000                               |                  |
| Dichlorvos (DDVP) .....   | 62-73-7          |                      | 1                                  | X                |
| Dicyclopentadienyl iron .....   | 102-54-5         |                      |                                    |                  |
| Total dust .....  |                  |                      | 15                                 |                  |
| Respirable fraction .....   |                  |                      | 5                                  |                  |
| Dieldrin .....  | 60-57-1          |                      | 0.25                               | X                |
| Diethylamine .....  | 109-89-7         | 25                   | 75                                 |                  |
| 2-Diethylaminoethanol .....   | 100-37-8         | 10                   | 50                                 | X                |
| Diethyl ether; see Ethyl ether.   |                  |                      |                                    |                  |
| Difluorodibromomethane .....  | 75-61-6          | 100                  | 860                                |                  |
| Diglycidyl ether (DGE) .....  | 2238-07-5        | (C)0.5               | (C)2.8                             |                  |
| Dihydroxybenzene; see Hydroquinone.   |                  |                      |                                    |                  |
| Diisobutyl ketone .....   | 108-83-8         | 50                   | 290                                |                  |
| Diisopropylamine .....  | 108-18-9         | 5                    | 20                                 | X                |
| 4-Dimethylaminoazobenzene; see 1910.1015 .....  | 60-11-7          |                      |                                    |                  |
| Dimethoxymethane; see Methylal.   |                  |                      |                                    |                  |
| Dimethyl acetamide .....  | 127-19-5         | 10                   | 35                                 | X                |
| Dimethylamine .....   | 124-40-3         | 10                   | 18                                 |                  |
| Dimethylaminobenzene; see Xylidine.   |                  |                      |                                    |                  |
| Dimethylaniline (N,N-Dimethylaniline) .....   | 121-69-7         | 5                    | 25                                 | X                |
| Dimethylbenzene; see Xylene.  |                  |                      |                                    |                  |

TABLE Z–1—LIMITS FOR AIR CONTAMINANTS—Continued

| Substance   | CAS No. (c)      | ppm (a) <sup>1</sup> | mg/m <sup>3</sup> (b) <sup>1</sup> | Skin designation |
|---|------------------|----------------------|------------------------------------|------------------|
| Dimethyl-1,2-dibromo-2,2-dichloroethyl phosphate .....            | 300–76–5         | .....                | 3                                  |                  |
| Dimethylformamide .....   | 68–12–2          | 10                   | 30                                 | X                |
| 2,6-Dimethyl-4-heptanone; see Diisobutyl ketone.                  |                  |                      |                                    |                  |
| 1,1-Dimethylhydrazine .....                                       | 57–14–7          | 0.5                  | 1                                  | X                |
| Dimethylphthalate .....   | 131–11–3         | .....                | 5                                  |                  |
| Dimethyl sulfate .....  | 77–78–1          | 1                    | 5                                  | X                |
| Dinitrobenzene (all isomers) .....                                |                  |                      | 1                                  | X                |
| (ortho) .....   | 528–29–0         |                      |                                    |                  |
| (meta) .....  | 99–65–0          |                      |                                    |                  |
| (para) .....  | 100–25–4         |                      |                                    |                  |
| Dinitro-o-cresol .....  | 534–52–1         | .....                | 0.2                                | X                |
| Dinitrotoluene .....  | 25321–14–6       | .....                | 1.5                                | X                |
| Dioxane (Diethylene dioxide) .....                                | 123–91–1         | 100                  | 360                                | X                |
| Diphenyl (Biphenyl) .....   | 92–52–4          | 0.2                  | 1                                  |                  |
| Diphenylmethane diisocyanate; see Methylene bisphenyl isocyanate. |                  |                      |                                    |                  |
| Dipropylene glycol methyl ether .....                             | 34590–94–8       | 100                  | 600                                | X                |
| Di-sec octyl phthalate (Di-(2-ethylhexyl) phthalate) .....        | 117–81–7         | .....                | 5                                  |                  |
| Emery .....   | 12415–34–8       | .....                |                                    |                  |
| Total dust .....  |                  |                      | 15                                 |                  |
| Respirable fraction .....   |                  |                      | 5                                  |                  |
| Endrin .....  | 72–20–8          | .....                | 0.1                                | X                |
| Epichlorohydrin .....   | 106–89–8         | 5                    | 19                                 | X                |
| EPN .....   | 2104–64–5        | .....                | 0.5                                | X                |
| 1,2-Epoxypropane; see Propylene oxide.                            |                  |                      |                                    |                  |
| 2,3-Epoxy-1-propanol; see Glycidol.                               |                  |                      |                                    |                  |
| Ethanedithiol; see Ethyl mercaptan.                               |                  |                      |                                    |                  |
| Ethanolamine .....  | 141–43–5         | 3                    | 6                                  |                  |
| 2-Ethoxyethanol (Cellosolve) .....                                | 110–80–5         | 200                  | 740                                | X                |
| 2-Ethoxyethyl acetate (Cellosolve acetate) .....                  | 111–15–9         | 100                  | 540                                | X                |
| Ethyl acetate .....   | 141–78–6         | 400                  | 1400                               |                  |
| Ethyl acrylate .....  | 140–88–5         | 25                   | 100                                | X                |
| Ethyl alcohol (Ethanol) .....                                     | 64–17–5          | 1000                 | 1900                               |                  |
| Ethylamine .....  | 75–04–7          | 10                   | 18                                 |                  |
| Ethyl amyl ketone (5-Methyl-3-heptanone) .....                    | 541–85–5         | 25                   | 130                                |                  |
| Ethyl benzene .....   | 100–41–4         | 100                  | 435                                |                  |
| Ethyl bromide .....   | 74–96–4          | 200                  | 890                                |                  |
| Ethyl butyl ketone (3-Heptanone) .....                            | 106–35–4         | 50                   | 230                                |                  |
| Ethyl chloride .....  | 75–00–3          | 1000                 | 2600                               |                  |
| Ethyl ether .....   | 60–29–7          | 400                  | 1200                               |                  |
| Ethyl formate .....   | 109–94–4         | 100                  | 300                                |                  |
| Ethyl mercaptan .....   | 75–08–1          | (C)10                | (C)25                              |                  |
| Ethyl silicate .....  | 78–10–4          | 100                  | 850                                |                  |
| Ethylene chlorohydrin .....                                       | 107–07–3         | 5                    | 16                                 | X                |
| Ethylenediamine .....   | 107–15–3         | 10                   | 25                                 |                  |
| Ethylene dibromide .....  | 106–93–4         | .....                | ( <sup>2</sup> )                   |                  |
| Ethylene dichloride (1,2-Dichloroethane) .....                    | 107–06–2         | .....                | ( <sup>2</sup> )                   |                  |
| Ethylene glycol dinitrate .....                                   | 628–96–6         | (C)0.2               | (C)1                               | X                |
| Ethylene glycol methyl acetate; see Methyl cellosolve acetate.    |                  |                      |                                    |                  |
| Ethyleneimine; see 1910.1012 .....                                | 151–56–4         | .....                |                                    |                  |
| Ethylene oxide; see 1910.1047 .....                               | 75–21–8          | .....                |                                    |                  |
| Ethylidene chloride; see 1,1-Dichloroethane.                      |                  |                      |                                    |                  |
| N-Ethylmorpholine .....   | 100–74–3         | 20                   | 94                                 | X                |
| Ferbam .....  | 14484–64–1       | .....                |                                    |                  |
| Total dust .....  |                  |                      | 15                                 |                  |
| Ferrovandium dust .....   | 12604–58–9       | .....                | 1                                  |                  |
| Fluorides (as F) .....  | ( <sup>4</sup> ) | .....                | 2.5                                |                  |
| Fluorine .....  | 7782–41–4        | 0.1                  | 0.2                                |                  |
| Fluorotrichloromethane (Trichlorofluoromethane) .....             | 75–69–4          | 1000                 | 5600                               |                  |
| Formaldehyde; see 1910.1048 .....                                 | 50–00–0          | .....                |                                    |                  |
| Formic acid .....   | 64–18–6          | 5                    | 9                                  |                  |
| Furfural .....  | 98–01–1          | 5                    | 20                                 | X                |
| Furfuryl alcohol .....  | 98–00–0          | 50                   | 200                                |                  |
| Grain dust (oat, wheat, barley) .....                             |                  |                      | 10                                 |                  |
| Glycerin (mist) .....   | 56–81–5          | .....                |                                    |                  |
| Total dust .....  |                  |                      | 15                                 |                  |
| Respirable fraction .....   |                  |                      | 5                                  |                  |
| Glycidol .....  | 556–52–5         | 50                   | 150                                |                  |
| Glycol monoethyl ether; see 2-Ethoxyethanol.                      |                  |                      |                                    |                  |
| Graphite, natural, respirable dust .....                          | 7782–42–5        | .....                | ( <sup>3</sup> )                   |                  |
| Graphite, synthetic.  |                  |                      |                                    |                  |

TABLE Z-1—LIMITS FOR AIR CONTAMINANTS—Continued

| Substance  | CAS No. (c) | ppm (a) <sup>1</sup> | mg/m <sup>3</sup> (b) <sup>1</sup> | Skin designation |
|--|-------------|----------------------|------------------------------------|------------------|
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....                                |             |                      | 5                                  |                  |
| Guthion; see Azinphos methyl.                            |             |                      |                                    |                  |
| Gypsum .....   | 13397-24-5  |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....                                |             |                      | 5                                  |                  |
| Hafnium .....  | 7440-58-6   |                      | 0.5                                |                  |
| Heptachlor .....   | 76-44-8     |                      | 0.5                                | X                |
| Heptane (n-Heptane) .....                                | 142-82-5    | 500                  | 2000                               |                  |
| Hexachloroethane .....                                   | 67-72-1     | 1                    | 10                                 | X                |
| Hexachloronaphthalene .....                              | 1335-87-1   |                      | 0.2                                | X                |
| n-Hexane .....   | 110-54-3    | 500                  | 1800                               |                  |
| 2-Hexanone (Methyl n-butyl ketone) .....                 | 591-78-6    | 100                  | 410                                |                  |
| Hexone (Methyl isobutyl ketone) .....                    | 108-10-1    | 100                  | 410                                |                  |
| sec-Hexyl acetate .....                                  | 108-84-9    | 50                   | 300                                |                  |
| Hydrazine .....  | 302-01-2    | 1                    | 1.3                                | X                |
| Hydrogen bromide .....                                   | 10035-10-6  | 3                    | 10                                 |                  |
| Hydrogen chloride .....                                  | 7647-01-0   | (C)5                 | (C)7                               |                  |
| Hydrogen cyanide .....                                   | 74-90-8     | 10                   | 11                                 | X                |
| Hydrogen fluoride (as F) .....                           | 7664-39-3   |                      | ( <sup>2</sup> )                   |                  |
| Hydrogen peroxide .....                                  | 7722-84-1   | 1                    | 1.4                                |                  |
| Hydrogen selenide (as Se) .....                          | 7783-07-5   | 0.05                 | 0.2                                |                  |
| Hydrogen sulfide .....                                   | 7783-06-4   |                      | ( <sup>2</sup> )                   |                  |
| Hydroquinone .....                                       | 123-31-9    |                      | 2                                  |                  |
| Iodine .....   | 7553-56-2   | (C)0.1               | (C)1                               |                  |
| Iron oxide fume .....                                    | 1309-37-1   |                      | 10                                 |                  |
| Isoamyl acetate .....                                    | 123-92-2    | 100                  | 525                                |                  |
| Isoamyl alcohol (primary and secondary) .....            | 123-51-3    | 100                  | 360                                |                  |
| Isobutyl acetate .....                                   | 110-19-0    | 150                  | 700                                |                  |
| Isobutyl alcohol .....                                   | 78-83-1     | 100                  | 300                                |                  |
| Isophorone .....   | 78-59-1     | 25                   | 140                                |                  |
| Isopropyl acetate .....                                  | 108-21-4    | 250                  | 950                                |                  |
| Isopropyl alcohol .....                                  | 67-63-0     | 400                  | 980                                |                  |
| Isopropylamine .....                                     | 75-31-0     | 5                    | 12                                 |                  |
| Isopropyl ether .....                                    | 108-20-3    | 500                  | 2100                               |                  |
| Isopropyl glycidyl ether (IGE) .....                     | 4016-14-2   | 50                   | 240                                |                  |
| Kaolin .....   | 1332-58-7   |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....                                |             |                      | 5                                  |                  |
| Ketene .....   | 463-51-4    | 0.5                  | 0.9                                |                  |
| Lead, inorganic (as Pb); see 1910.1025 .....             | 7439-92-1   |                      |                                    |                  |
| Limestone .....  | 1317-65-3   |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....                                |             |                      | 5                                  |                  |
| Lindane .....  | 58-89-9     |                      | 0.5                                | X                |
| Lithium hydride .....                                    | 7580-67-8   |                      | 0.025                              |                  |
| L.P.G. (Liquefied petroleum gas) .....                   | 68476-85-7  | 1000                 | 1800                               |                  |
| Magnesite .....  | 546-93-0    |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....                                |             |                      | 5                                  |                  |
| Magnesium oxide fume .....                               | 1309-48-4   |                      |                                    |                  |
| Total particulate .....                                  |             |                      | 15                                 |                  |
| Malathion .....  | 121-75-5    |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 | X                |
| Maleic anhydride .....                                   | 108-31-6    | 0.25                 | 1                                  |                  |
| Manganese compounds (as Mn) .....                        | 7439-96-5   |                      | (C)5                               |                  |
| Manganese fume (as Mn) .....                             | 7439-96-5   |                      | (C)5                               |                  |
| Marble .....   | 1317-65-3   |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....                                |             |                      | 5                                  |                  |
| Mercury (aryl and inorganic) (as Hg) .....               | 7439-97-6   |                      | ( <sup>2</sup> )                   |                  |
| Mercury (organo) alkyl compounds (as Hg) .....           | 7439-97-6   |                      | ( <sup>2</sup> )                   |                  |
| Mercury (vapor) (as Hg) .....                            | 7439-97-6   |                      | ( <sup>2</sup> )                   |                  |
| Mesityl oxide .....                                      | 141-79-7    | 25                   | 100                                |                  |
| Methanethiol; see Methyl mercaptan.                      |             |                      |                                    |                  |
| Methoxychlor .....                                       | 72-43-5     |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| 2-Methoxyethanol (Methyl cellosolve) .....               | 109-86-4    | 25                   | 80                                 | X                |
| 2-Methoxyethyl acetate (Methyl cellosolve acetate) ..... | 110-49-6    | 25                   | 120                                | X                |
| Methyl acetate .....                                     | 79-20-9     | 200                  | 610                                |                  |
| Methyl acetylene (Propyne) .....                         | 74-99-7     | 1000                 | 1650                               |                  |
| Methyl acetylene-propadiene mixture (MAPP) .....         |             | 1000                 | 1800                               |                  |

TABLE Z-1—LIMITS FOR AIR CONTAMINANTS—Continued

| Substance  | CAS No. (c) | ppm (a) <sup>1</sup> | mg/m <sup>3</sup> (b) <sup>1</sup> | Skin designation |
|--|-------------|----------------------|------------------------------------|------------------|
| Methyl acrylate .....                                  | 96-33-3     | 10                   | 35                                 | X                |
| Methylal (Dimethoxy-methane) .....                     | 109-87-5    | 1000                 | 3100                               |                  |
| Methyl alcohol .....                                   | 67-56-1     | 200                  | 260                                |                  |
| Methylamine .....                                      | 74-89-5     | 10                   | 12                                 |                  |
| Methyl amyl alcohol; see Methyl isobutyl carbinol.     |             |                      |                                    |                  |
| Methyl n-amyl ketone .....                             | 110-43-0    | 100                  | 465                                |                  |
| Methyl bromide .....                                   | 74-83-9     | (C)20                | (C)80                              | X                |
| Methyl butyl ketone; see 2-Hexanone.                   |             |                      |                                    |                  |
| Methyl cellosolve; see 2-Methoxyethanol.               |             |                      |                                    |                  |
| Methyl cellosolve acetate; see 2-Methoxyethyl acetate. |             |                      |                                    |                  |
| Methyl chloride .....                                  | 74-87-3     |                      | ( <sup>2</sup> )                   |                  |
| Methyl chloroform (1,1,1-Trichloroethane) .....        | 71-55-6     | 350                  | 1900                               |                  |
| Methylcyclohexane .....                                | 108-87-2    | 500                  | 2000                               |                  |
| Methylcyclohexanol .....                               | 25639-42-3  | 100                  | 470                                |                  |
| o-Methylcyclohexanone .....                            | 583-60-8    | 100                  | 460                                | X                |
| Methylene chloride .....                               | 75-09-2     |                      | ( <sup>2</sup> )                   |                  |
| Methyl ethyl ketone (MEK); see 2-Butanone.             |             |                      |                                    |                  |
| Methyl formate .....                                   | 107-31-3    | 100                  | 250                                |                  |
| Methyl hydrazine (Monomethyl hydrazine) .....          | 60-34-4     | (C)0.2               | (C)0.35                            | X                |
| Methyl iodide .....                                    | 74-88-4     | 5                    | 28                                 | X                |
| Methyl isoamyl ketone .....                            | 110-12-3    | 100                  | 475                                |                  |
| Methyl isobutyl carbinol .....                         | 108-11-2    | 25                   | 100                                | X                |
| Methyl isobutyl ketone; see Hexone.                    |             |                      |                                    |                  |
| Methyl isocyanate .....                                | 624-83-9    | 0.02                 | 0.05                               | X                |
| Methyl mercaptan .....                                 | 74-93-1     | (C)10                | (C)20                              |                  |
| Methyl methacrylate .....                              | 80-62-6     | 100                  | 410                                |                  |
| Methyl propyl ketone; see 2-Pentanone.                 |             |                      |                                    |                  |
| alpha-Methyl styrene .....                             | 98-83-9     | (C)100               | (C)480                             |                  |
| Methylene bisphenyl isocyanate (MDI) .....             | 101-68-8    | (C)0.02              | (C)0.2                             |                  |
| Mica; see Silicates.                                   |             |                      |                                    |                  |
| Molybdenum (as Mo) .....                               | 7439-98-7   |                      |                                    |                  |
| Soluble compounds .....                                |             |                      | 5                                  |                  |
| Insoluble compounds.                                   |             |                      |                                    |                  |
| Total dust .....                                       |             |                      | 15                                 |                  |
| Monomethyl aniline .....                               | 100-61-8    | 2                    | 9                                  | X                |
| Monomethyl hydrazine; see Methyl hydrazine.            |             |                      |                                    |                  |
| Morpholine .....                                       | 110-91-8    | 20                   | 70                                 | X                |
| Naphtha (Coal tar) .....                               | 8030-30-6   | 100                  | 400                                |                  |
| Naphthalene .....                                      | 91-20-3     | 10                   | 50                                 |                  |
| alpha-Naphthylamine; see 1910.1004 .....               | 134-32-7    |                      |                                    |                  |
| beta-Naphthylamine; see 1910.1009 .....                | 91-59-8     |                      |                                    |                  |
| Nickel carbonyl (as Ni) .....                          | 13463-39-3  | 0.001                | 0.007                              |                  |
| Nickel, metal and insoluble compounds (as Ni) .....    | 7440-02-0   |                      | 1                                  |                  |
| Nickel, soluble compounds (as Ni) .....                | 7440-02-0   |                      | 1                                  |                  |
| Nicotine .....   | 54-11-5     |                      | 0.5                                | X                |
| Nitric acid .....                                      | 7697-37-2   | 2                    | 5                                  |                  |
| Nitric oxide .....                                     | 10102-43-9  | 25                   | 30                                 |                  |
| p-Nitroaniline .....                                   | 100-01-6    | 1                    | 6                                  | X                |
| Nitrobenzene .....                                     | 98-95-3     | 1                    | 5                                  | X                |
| p-Nitrochlorobenzene .....                             | 100-00-5    |                      | 1                                  | X                |
| 4-Nitrodiphenyl; see 1910.1003 .....                   | 92-93-3     |                      |                                    |                  |
| Nitroethane .....                                      | 79-24-3     | 100                  | 310                                |                  |
| Nitrogen dioxide .....                                 | 10102-44-0  | (C)5                 | (C)9                               |                  |
| Nitrogen trifluoride .....                             | 7783-54-2   | 10                   | 29                                 |                  |
| Nitroglycerin .....                                    | 55-63-0     | (C)0.2               | (C)2                               | X                |
| Nitromethane .....                                     | 75-52-5     | 100                  | 250                                |                  |
| 1-Nitropropane .....                                   | 108-03-2    | 25                   | 90                                 |                  |
| 2-Nitropropane .....                                   | 79-46-9     | 25                   | 90                                 |                  |
| N-Nitrosodimethylamine; see 1910.1016.                 |             |                      |                                    |                  |
| Nitrotoluene (all isomers) .....                       |             | 5                    | 30                                 | X                |
| o-isomer .....   | 88-72-2     |                      |                                    |                  |
| m-isomer .....   | 99-08-1     |                      |                                    |                  |
| p-isomer .....   | 99-99-0     |                      |                                    |                  |
| Nitrotrichloromethane; see Chloropicrin.               |             |                      |                                    |                  |
| Octachloronaphthalene .....                            | 2234-13-1   |                      | 0.1                                | X                |
| Octane .....   | 111-65-9    | 500                  | 2350                               |                  |
| Oil mist, mineral .....                                | 8012-95-1   |                      | 5                                  |                  |
| Osmium tetroxide (as Os) .....                         | 20816-12-0  |                      | 0.002                              |                  |
| Oxalic acid .....                                      | 144-62-7    |                      | 1                                  |                  |
| Oxygen difluoride .....                                | 7783-41-7   | 0.05                 | 0.1                                |                  |
| Ozone .....  | 10028-15-6  | 0.1                  | 0.2                                |                  |



TABLE Z-1—LIMITS FOR AIR CONTAMINANTS—Continued

| Substance  | CAS No. (c)                           | ppm (a) <sup>1</sup> | mg/m <sup>3</sup> (b) <sup>1</sup> | Skin designation |
|--|---------------------------------------|----------------------|------------------------------------|------------------|
| Paraquat, respirable dust .....                            | 4685-14-7;<br>1910-42-5;<br>2074-50-2 | .....                | 0.5                                | X                |
| Parathion .....  | 56-38-2                               | .....                | 0.1                                | X                |
| Particulates not otherwise regulated (PNOR) <sup>1</sup> . |                                       |                      |                                    |                  |
| Total dust .....   |                                       |                      | 15                                 |                  |
| Respirable fraction .....                                  |                                       |                      | 5                                  |                  |
| PCB; see Chlorodiphenyl (42% and 54% chlorine).            |                                       |                      |                                    |                  |
| Pentaborane .....  | 19624-22-7                            | 0.005                | 0.01                               |                  |
| Pentachloronaphthalene .....                               | 1321-64-8                             | .....                | 0.5                                | X                |
| Pentachlorophenol .....                                    | 87-86-5                               | .....                | 0.5                                | X                |
| Pentaerythritol .....                                      | 115-77-5                              | .....                |                                    |                  |
| Total dust .....   |                                       |                      | 15                                 |                  |
| Respirable fraction .....                                  |                                       |                      | 5                                  |                  |
| Pentane .....  | 109-66-0                              | 1000                 | 2950                               |                  |
| 2-Pentanone (Methyl propyl ketone) .....                   | 107-87-9                              | 200                  | 700                                |                  |
| Perchloroethylene (Tetrachloroethylene) .....              | 127-18-4                              | .....                | ( <sup>2</sup> )                   |                  |
| Perchloromethyl mercaptan .....                            | 594-42-3                              | 0.1                  | 0.8                                |                  |
| Perchloryl fluoride .....                                  | 7616-94-6                             | 3                    | 13.5                               |                  |
| Petroleum distillates (Naphtha) (Rubber Solvent) .....     |                                       | 500                  | 2000                               |                  |
| Phenol .....   | 108-95-2                              | 5                    | 19                                 | X                |
| p-Phenylene diamine .....                                  | 106-50-3                              | .....                | 0.1                                | X                |
| Phenyl ether, vapor .....                                  | 101-84-8                              | 1                    | 7                                  |                  |
| Phenyl ether-biphenyl mixture, vapor .....                 |                                       | 1                    | 7                                  |                  |
| Phenylethylene; see Styrene.                               |                                       |                      |                                    |                  |
| Phenyl glycidyl ether (PGE) .....                          | 122-60-1                              | 10                   | 60                                 |                  |
| Phenylhydrazine .....                                      | 100-63-0                              | 5                    | 22                                 | X                |
| Phosdrin (Mevinphos) .....                                 | 7786-34-7                             | .....                | 0.1                                | X                |
| Phosgene (Carbonyl chloride) .....                         | 75-44-5                               | 0.1                  | 0.4                                |                  |
| Phosphine .....  | 7803-51-2                             | 0.3                  | 0.4                                |                  |
| Phosphoric acid .....                                      | 7664-38-2                             | .....                | 1                                  |                  |
| Phosphorus (yellow) .....                                  | 7723-14-0                             | .....                | 0.1                                |                  |
| Phosphorus pentachloride .....                             | 10026-13-8                            | .....                | 1                                  |                  |
| Phosphorus pentasulfide .....                              | 1314-80-3                             | .....                | 1                                  |                  |
| Phosphorus trichloride .....                               | 7719-12-2                             | 0.5                  | 3                                  |                  |
| Phthalic anhydride .....                                   | 85-44-9                               | 2                    | 12                                 |                  |
| Picloram .....   | 1918-02-1                             | .....                |                                    |                  |
| Total dust .....   |                                       |                      | 15                                 |                  |
| Respirable fraction .....                                  |                                       |                      | 5                                  |                  |
| Picric acid .....  | 88-89-1                               | .....                | 0.1                                | X                |
| Pindone (2-Pivalyl-1,3-indandione) .....                   | 83-26-1                               | .....                | 0.1                                |                  |
| Plaster of Paris .....                                     | 26499-65-0                            | .....                |                                    |                  |
| Total dust .....   |                                       |                      | 15                                 |                  |
| Respirable fraction .....                                  |                                       |                      | 5                                  |                  |
| Platinum (as Pt) .....                                     | 7440-06-4                             | .....                |                                    |                  |
| Metal.   |                                       |                      |                                    |                  |
| Soluble salts .....  |                                       |                      | 0.002                              |                  |
| Portland cement .....                                      | 65997-15-1                            | .....                |                                    |                  |
| Total dust .....   |                                       |                      | 15                                 |                  |
| Respirable fraction .....                                  |                                       |                      | 5                                  |                  |
| Propane .....  | 74-98-6                               | 1000                 | 1800                               |                  |
| beta-Propiolactone; see 1910.1013 .....                    | 57-57-8                               | .....                |                                    |                  |
| n-Propyl acetate .....                                     | 109-60-4                              | 200                  | 840                                |                  |
| n-Propyl alcohol .....                                     | 71-23-8                               | 200                  | 500                                |                  |
| n-Propyl nitrate .....                                     | 627-13-4                              | 25                   | 110                                |                  |
| Propylene dichloride .....                                 | 78-87-5                               | 75                   | 350                                |                  |
| Propylene imine .....                                      | 75-55-8                               | 2                    | 5                                  | X                |
| Propylene oxide .....                                      | 75-56-9                               | 100                  | 240                                |                  |
| Propyne; see Methyl acetylene.                             |                                       |                      |                                    |                  |
| Pyrethrum .....  | 8003-34-7                             | .....                | 5                                  |                  |
| Pyridine .....   | 110-86-1                              | 5                    | 15                                 |                  |
| Quinone .....  | 106-51-4                              | 0.1                  | 0.4                                |                  |
| RDX; see Cyclonite.  |                                       |                      |                                    |                  |
| Rhodium (as Rh), metal fume and insoluble compounds .....  | 7440-16-6                             | .....                | 0.1                                |                  |
| Rhodium (as Rh), soluble compounds .....                   | 7440-16-6                             | .....                | 0.001                              |                  |
| Ronnel .....   | 299-84-3                              | .....                | 15                                 |                  |
| Rotenone .....   | 83-79-4                               | .....                | 5                                  |                  |
| Rouge.   |                                       |                      |                                    |                  |
| Total dust .....   |                                       |                      | 15                                 |                  |
| Respirable fraction .....                                  |                                       |                      | 5                                  |                  |
| Selenium compounds (as Se) .....                           | 7782-49-2                             | .....                | 0.2                                |                  |
| Selenium hexafluoride (as Se) .....                        | 7783-79-1                             | 0.05                 | 0.4                                |                  |

TABLE Z-1—LIMITS FOR AIR CONTAMINANTS—Continued

| Substance  | CAS No. (c) | ppm (a) <sup>1</sup> | mg/m <sup>3</sup> (b) <sup>1</sup> | Skin designation |
|--|-------------|----------------------|------------------------------------|------------------|
| Silica, amorphous, precipitated and gel .....                                      | 112926-00-8 |                      | ( <sup>3</sup> )                   |                  |
| Silica, amorphous, diatomaceous earth, containing less than 1% crystalline silica. | 61790-53-2  |                      | ( <sup>3</sup> )                   |                  |
| Silica, crystalline cristobalite, respirable dust .....                            | 14464-46-1  |                      | ( <sup>3</sup> )                   |                  |
| Silica, crystalline quartz, respirable dust .....                                  | 14808-60-7  |                      | ( <sup>3</sup> )                   |                  |
| Silica, crystalline tripoli (as quartz), respirable dust .....                     | 1317-95-9   |                      | ( <sup>3</sup> )                   |                  |
| Silica, crystalline tridymite, respirable dust .....                               | 15468-32-3  |                      | ( <sup>3</sup> )                   |                  |
| Silica, fused, respirable dust .....   | 60676-86-0  |                      | ( <sup>3</sup> )                   |                  |
| Silicates (less than 1% crystalline silica).                                       |             |                      |                                    |                  |
| Mica (respirable dust) .....   | 12001-26-2  |                      | ( <sup>3</sup> )                   |                  |
| Soapstone, total dust .....  |             |                      | ( <sup>3</sup> )                   |                  |
| Soapstone, respirable dust .....   |             |                      | ( <sup>3</sup> )                   |                  |
| Talc (containing asbestos); use asbestos limit; see 29 CFR 1910.1001.              |             |                      | ( <sup>3</sup> )                   |                  |
| Talc (containing no asbestos), respirable dust .....                               | 14807-96-6  |                      | ( <sup>3</sup> )                   |                  |
| Tremolite, asbestiform; see 1910.1001.   |             |                      |                                    |                  |
| Silicon .....  | 7440-21-3   |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....  |             |                      | 5                                  |                  |
| Silicon carbide .....  | 409-21-2    |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....  |             |                      | 5                                  |                  |
| Silver, metal and soluble compounds (as Ag) .....                                  | 7440-22-4   |                      | 0.01                               |                  |
| Soapstone; see Silicates.  |             |                      |                                    |                  |
| Sodium fluoroacetate .....   | 62-74-8     |                      | 0.05                               | X                |
| Sodium hydroxide .....   | 1310-73-2   |                      | 2                                  |                  |
| Starch .....   | 9005-25-8   |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....  |             |                      | 5                                  |                  |
| Stibine .....  | 7803-52-3   | 0.1                  | 0.5                                |                  |
| Stoddard solvent .....   | 8052-41-3   | 500                  | 2900                               |                  |
| Strychnine .....   | 57-24-9     |                      | 0.15                               |                  |
| Styrene .....  | 100-42-5    |                      | ( <sup>2</sup> )                   |                  |
| Sucrose .....  | 57-50-1     |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....  |             |                      | 5                                  |                  |
| Sulfur dioxide .....   | 7446-09-5   | 5                    | 13                                 |                  |
| Sulfur hexafluoride .....  | 2551-62-4   | 1000                 | 6000                               |                  |
| Sulfuric acid .....  | 7664-93-9   |                      | 1                                  |                  |
| Sulfur monochloride .....  | 10025-67-9  | 1                    | 6                                  |                  |
| Sulfur pentafluoride .....   | 5714-22-7   | 0.025                | 0.25                               |                  |
| Sulfuryl fluoride .....  | 2699-79-8   | 5                    | 20                                 |                  |
| Systox; see Demeton.   |             |                      |                                    |                  |
| 2,4,5-T (2,4,5-trichlorophenoxyacetic acid) .....                                  | 93-76-5     |                      | 10                                 |                  |
| Talc; see Silicates.   |             |                      |                                    |                  |
| Tantalum, metal and oxide dust .....   | 7440-25-7   |                      | 5                                  |                  |
| TEDP (Sulfotep) .....  | 3689-24-5   |                      | 0.2                                | X                |
| Tellurium and compounds (as Te) .....  | 13494-80-9  |                      | 0.1                                |                  |
| Tellurium hexafluoride (as Te) .....   | 7783-80-4   | 0.02                 | 0.2                                |                  |
| Temephos .....   | 3383-96-8   |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....  |             |                      | 5                                  |                  |
| TEPP (Tetraethyl pyrophosphate) .....  | 107-49-3    |                      | 0.05                               | X                |
| Terphenyls .....   | 26140-60-3  | (C)1                 | (C)9                               |                  |
| 1,1,1,2-Tetrachloro-2,2-difluoroethane .....                                       | 76-11-9     | 500                  | 4170                               |                  |
| 1,1,2,2-Tetrachloro-1,2-difluoroethane .....                                       | 76-12-0     | 500                  | 4170                               |                  |
| 1,1,2,2-Tetrachloroethane .....  | 79-34-5     | 5                    | 35                                 | X                |
| Tetrachloroethylene; see Perchloroethylene.  |             |                      |                                    |                  |
| Tetrachloromethane; see Carbon tetrachloride.                                      |             |                      |                                    |                  |
| Tetrachloronaphthalene .....   | 1335-88-2   |                      | 2                                  | X                |
| Tetraethyl lead (as Pb) .....  | 78-00-2     |                      | 0.075                              | X                |
| Tetrahydrofuran .....  | 109-99-9    | 200                  | 590                                |                  |
| Tetramethyl lead (as Pb) .....   | 75-74-1     |                      | 0.075                              | X                |
| Tetramethyl succinonitrile .....   | 3333-52-6   | 0.5                  | 3                                  | X                |
| Tetranitromethane .....  | 509-14-8    | 1                    | 8                                  |                  |
| Tetryl (2,4,6-Trinitrophenylmethylnitramine) .....                                 | 479-45-8    |                      | 1.5                                | X                |
| Thallium, soluble compounds (as Tl) .....  | 7440-28-0   |                      | 0.1                                | X                |
| 4,4'-Thiobis (6-tert, Butyl-m-cresol) .....  | 96-69-5     |                      |                                    |                  |
| Total dust .....   |             |                      | 15                                 |                  |
| Respirable fraction .....  |             |                      | 5                                  |                  |
| Thiram .....   | 137-26-8    |                      | 5                                  |                  |
| Tin, inorganic compounds (except oxides) (as Sn) .....                             | 7440-31-5   |                      | 2                                  |                  |

TABLE Z-1—LIMITS FOR AIR CONTAMINANTS—Continued

| Substance   | CAS No. (c) | ppm (a) <sup>1</sup> | mg/m <sup>3</sup> (b) <sup>1</sup> | Skin designation |
|---|-------------|----------------------|------------------------------------|------------------|
| Tin, organic compounds (as Sn) .....                      | 7440-31-5   | .....                | 0.1                                |                  |
| Titanium dioxide .....                                    | 13463-67-7  | .....                | .....                              |                  |
| Total dust .....  | .....       | .....                | 15                                 |                  |
| Toluene .....   | 108-88-3    | .....                | ( <sup>2</sup> )                   |                  |
| Toluene-2,4-diisocyanate (TDI) .....                      | 584-84-9    | (C)0.02              | (C)0.14                            |                  |
| o-Toluidine .....   | 95-53-4     | 5                    | 22                                 | X                |
| Toxaphene; see Chlorinated camphene.                      |             |                      |                                    |                  |
| Tremolite; see Silicates.                                 |             |                      |                                    |                  |
| Tributyl phosphate .....                                  | 126-73-8    | .....                | 5                                  |                  |
| 1,1,1-Trichloroethane; see Methyl chloroform.             |             |                      |                                    |                  |
| 1,1,2-Trichloroethane .....                               | 79-00-5     | 10                   | 45                                 | X                |
| Trichloroethylene .....                                   | 79-01-6     | .....                | ( <sup>2</sup> )                   |                  |
| Trichloromethane; see Chloroform.                         |             |                      |                                    |                  |
| Trichloronaphthalene .....                                | 1321-65-9   | .....                | 5                                  | X                |
| 1,2,3-Trichloropropane .....                              | 96-18-4     | 50                   | 300                                |                  |
| 1,1,2-Trichloro-1,2,2-trifluoroethane .....               | 76-13-1     | 1000                 | 7600                               |                  |
| Triethylamine .....                                       | 121-44-8    | 25                   | 100                                |                  |
| Trifluorobromomethane .....                               | 75-63-8     | 1000                 | 6100                               |                  |
| 2,4,6-Trinitrophenol; see Picric acid.                    |             |                      |                                    |                  |
| 2,4,6-Trinitrophenylmethylnitramine; see Tetryl.          |             |                      |                                    |                  |
| 2,4,6-Trinitrotoluene (TNT) .....                         | 118-96-7    | .....                | 1.5                                | X                |
| Triorthocresyl phosphate .....                            | 78-30-8     | .....                | 0.1                                |                  |
| Triphenyl phosphate .....                                 | 115-86-6    | .....                | 3                                  |                  |
| Turpentine .....  | 8006-64-2   | 100                  | 560                                |                  |
| Uranium (as U) .....                                      | 7440-61-1   | .....                | .....                              |                  |
| Soluble compounds .....                                   | .....       | .....                | 0.05                               |                  |
| Insoluble compounds .....                                 | .....       | .....                | 0.25                               |                  |
| Vanadium .....  | 1314-62-1   | .....                | .....                              |                  |
| Respirable dust (as V <sub>2</sub> O <sub>5</sub> ) ..... | .....       | .....                | (C)0.5                             |                  |
| Fume (as V <sub>2</sub> O <sub>5</sub> ) .....            | .....       | .....                | (C)0.1                             |                  |
| Vegetable oil mist.                                       |             |                      |                                    |                  |
| Total dust .....  | .....       | .....                | 15                                 |                  |
| Respirable fraction .....                                 | .....       | .....                | 5                                  |                  |
| Vinyl benzene; see Styrene.                               |             |                      |                                    |                  |
| Vinyl chloride; see 1910.1017 .....                       | 75-01-4     | .....                | .....                              |                  |
| Vinyl cyanide; see Acrylonitrile.                         |             |                      |                                    |                  |
| Vinyl toluene .....                                       | 25013-15-4  | 100                  | 480                                |                  |
| Warfarin .....  | 81-81-2     | .....                | 0.1                                |                  |
| Xylenes (o-, m-, p-isomers) .....                         | 1330-20-7   | 100                  | 435                                |                  |
| Xylidine .....  | 1300-73-8   | 5                    | 25                                 | X                |
| Yttrium .....   | 7440-65-5   | .....                | 1                                  |                  |
| Zinc chloride fume .....                                  | 7646-85-7   | .....                | 1                                  |                  |
| Zinc oxide fume .....                                     | 1314-13-2   | .....                | 5                                  |                  |
| Zinc oxide .....  | 1314-13-2   | .....                | .....                              |                  |
| Total dust .....  | .....       | .....                | 15                                 |                  |
| Respirable fraction .....                                 | .....       | .....                | 5                                  |                  |
| Zinc stearate .....                                       | 557-05-1    | .....                | .....                              |                  |
| Total dust .....  | .....       | .....                | 15                                 |                  |
| Respirable fraction .....                                 | .....       | .....                | 5                                  |                  |
| Zirconium compounds (as Zr) .....                         | 7440-67-7   | .....                | 5                                  |                  |

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

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

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

(c) 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.

(d) The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except in some circumstances the 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. See 1910.1028 for specific circumstances.

(e) 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 garnetting. See also 1910.1043 for cotton dust limits applicable to other sectors.

(f) All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is the same as the inert or nuisance dust limit of Table Z-3.

<sup>2</sup>See Table Z-2.

<sup>3</sup>See Table Z-3.

<sup>4</sup>Varies with compound.

<sup>5</sup>See Table Z-2 for the exposure limit for any operations or sectors where the exposure limit in § 1910.1026 is stayed or is otherwise not in effect.

<sup>6</sup>If the exposure limit in § 1910.1026 is stayed or is otherwise not in effect, the exposure limit is a ceiling of 0.1 mg/m<sup>3</sup>.

TABLE Z-2

| Substance   | 8-hour time weighted average | Acceptable ceiling concentration | Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift |  |
|---|------------------------------|----------------------------------|--|--|
|   |                              |                                  | Concentration  | Maximum duration                                   |
| Benzene <sup>a</sup> (Z37.40-1969) .....  | 10 ppm .....                 | 25 ppm .....                     | 50 ppm .....   | 10 minutes.  |
| Beryllium and beryllium compounds (Z37.29-1970) .....                             | 2 µg/m <sup>3</sup> .....    | 5 µg/m <sup>3</sup> .....        | 25 µg/m <sup>3</sup> .....   | 30 minutes.  |
| Cadmium fume <sup>b</sup> (Z37.5-1970) .....                                      | 0.1 mg/m <sup>3</sup> .....  | 0.3 mg/m <sup>3</sup> .....      |  |  |
| Cadmium dust <sup>b</sup> (Z37.5-1970) .....                                      | 0.2 mg/m <sup>3</sup> .....  | 0.6 mg/m <sup>3</sup> .....      |  |  |
| 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) (as CrO <sub>3</sub> ) <sup>c</sup> ..... |                              | 1 mg/10m <sup>3</sup> .          |  |  |
| 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.                               |
| Fluoride as dust (Z37.28-1969) .....  | 2.5 mg/m <sup>3</sup> .      |                                  |  |  |
| Formaldehyde; see 1910.1048.  |                              |                                  |  |  |
| Hydrogen fluoride (Z37.28-1969) .....   | 3 ppm.                       |                                  |  |  |
| Hydrogen sulfide (Z37.2-1966) .....   |                              | 20 ppm .....                     | 50 ppm .....   | 10 mins. once, only if no other meas. exp. occurs. |
| Mercury (Z37.8-1971) .....  |                              | 1 mg/10m <sup>3</sup> .          |  |  |
| Methyl chloride (Z37.18-1969) .....   | 100 ppm .....                | 200 ppm .....                    | 300 ppm .....  | 5 mins. in any 3 hrs.                              |
| Methylene Chloride: See § 1919.52.  |                              |                                  |  |  |
| Organo (alkyl) mercury (Z37.30-1969) .....  | 0.01 mg/m <sup>3</sup> ..... | 0.04 mg/m <sup>3</sup> .         |  |  |
| Styrene (Z37.15-1969) .....   | 100 ppm .....                | 200 ppm .....                    | 600 ppm .....  | 5 mins. in any 3 hrs.                              |
| Tetrachloroethylene (Z37.22-1967) .....   | 100 ppm .....                | 200 ppm .....                    | 300 ppm .....  | 5 mins. 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 mins. in any 2 hrs.                              |

<sup>a</sup> 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.

<sup>b</sup> This standard applies to any operations or sectors for which the Cadmium standard, 1910.1027, is stayed or otherwise not in effect.

<sup>c</sup> This standard applies to any operations or sectors for which the exposure limit in the Chromium (VI) standard, § 1910.1026, is stayed or is otherwise not in effect.

TABLE Z-3—MINERAL DUSTS

| Substance   | mppcf <sup>a</sup>   | mg/m <sup>3</sup>                  |
|---|----------------------|------------------------------------|
| Silica:   |                      |                                    |
| Crystalline   |                      |                                    |
| Quartz (Respirable) .....   | 250 <sup>b</sup>     | 10 mg/m <sup>3</sup> <sup>e</sup>  |
|   | %SiO <sub>2</sub> +5 | % SiO <sub>2</sub> + 2             |
| Quartz (Total Dust) .....   |                      | 30 mg/m <sup>3</sup>               |
|   |                      | % SiO <sub>2</sub> + 2             |
| Cristobalite: Use ½ the value calculated from the count or mass formulae for quartz |                      |                                    |
| Tridymite: Use ½ the value calculated from the formulae for quartz                  |                      |                                    |
|   |                      | 80 mg/m <sup>3</sup>               |
| Amorphous, including natural diatomaceous earth .....                               | 20                   | %SiO <sub>2</sub>                  |
| Silicates (less than 1% crystalline silica):  |                      |                                    |
| Mica .....  | 20                   |                                    |
| Soapstone .....   | 20                   |                                    |
| Talc (not containing asbestos) .....  | 20 <sup>c</sup>      |                                    |
| Talc (containing asbestos) Use asbestos limit.                                      |                      |                                    |
| Tremolite, asbestiform (see 29 CFR 1910.1001).                                      |                      |                                    |
| Portland cement .....   | 50                   |                                    |
| Graphite (Natural) .....  | 15                   |                                    |
| Coal Dust:  |                      |                                    |
| Respirable fraction less than 5% SiO <sub>2</sub> .....                             |                      | 2.4 mg/m <sup>3</sup> <sup>e</sup> |

TABLE Z-3—MINERAL DUSTS—Continued

| Substance  | mppcf <sup>a</sup> | mg/m <sup>3</sup>                 |
|--|--------------------|-----------------------------------|
| Respirable fraction greater than 5% SiO <sub>2</sub> ..... |                    | 10 mg/m <sup>3</sup> <sup>e</sup> |
|  |                    | %SiO <sub>2</sub> +2              |
| Inert or Nuisance Dust: <sup>d</sup>                       |                    |                                   |
| Respirable fraction .....                                  | 15                 | 5 mg/m <sup>3</sup>               |
| Total dust .....   | 50                 | 15 mg/m <sup>3</sup>              |

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

<sup>a</sup> Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.

<sup>b</sup> The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable.

<sup>c</sup> Containing less than 1% quartz; if 1% quartz or more, use quartz limit.

<sup>d</sup> All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by this limit, which is the same as the Particulates Not Otherwise Regulated (PNOR) limit in Table Z-1.

<sup>e</sup> Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics:

| Aerodynamic diameter (unit density sphere) | Percent passing selector |
|--|--------------------------|
| 2 .....                                    | 90                       |
| 2.5 .....                                  | 75                       |
| 3.5 .....                                  | 50                       |
| 5.0 .....                                  | 25                       |
| 10 .....                                   | 0                        |

The measurements under this note refer to the use of an AEC (now NRC) instrument. The respirable fraction of coal dust is determined with an MRE; the figure corresponding to that of 2.4 mg/m<sup>3</sup> in the table for coal dust is 4.5 mg/m<sup>3K</sup>.

[58 FR 35340, June 30, 1993; 58 FR 40191, July 27, 1993, as amended at 61 FR 56831, Nov. 4, 1996; 62 FR 1600, Jan. 10, 1997; 62 FR 42018, Aug. 4, 1997; 71 FR 10373, Feb. 28, 2006; 71 FR 16673, Apr. 3, 2006; 71 FR 36008, June 23, 2006]

### § 1910.1001 Asbestos.

(a) *Scope and application.* (1) This section applies to all occupational exposures to asbestos in all industries covered by the Occupational Safety and Health Act, except as provided in paragraph (a)(2) and (3) of this section.

(2) This section does not apply to construction work as defined in 29 CFR 1910.12(b). (Exposure to asbestos in construction work is covered by 29 CFR 1926.1101).

(3) This section does not apply to ship repairing, shipbuilding and shipbreaking employments and related employments as defined in 29 CFR 1915.4. (Exposure to asbestos in these employments is covered by 29 CFR 1915.1001).

(b) *Definitions.* *Asbestos* includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

*Asbestos-containing material (ACM)* means any material containing more than 1% asbestos.

*Assistant Secretary* means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

*Authorized person* means any person authorized by the employer and required by work duties to be present in regulated areas.

*Building/facility owner* is the legal entity, including a lessee, which exercises control over management and record keeping functions relating to a building and/or facility in which activities covered by this standard take place.

*Certified industrial hygienist (CIH)* means one certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.

*Director* means the Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

*Employee exposure* means that exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

*Fiber* means a particulate form of asbestos 5 micrometers or longer, with a