

ARCHIVES COPY  
= TLVs® =

Threshold Limit Values  
for  
Chemical Substances  
and  
Physical Agents  
in the  
Workroom Environment  
with  
Intended Changes  
for  
1974



DO NOT SELL

LAM021580

B003188

6113  
18437

| Substance                                       | ppm <sup>a)</sup> | mg/m <sup>3b)</sup> |
|-------------------------------------------------|-------------------|---------------------|
| Vanadium (V <sub>2</sub> O <sub>5</sub> ), as V |                   |                     |
| Dust.....                                       | —                 | 0.5                 |
| C Fume.....                                     | —                 | 0.05                |
| Vinyl acetate.....                              | 10                | 30                  |
| Vinyl benzene, see Styrene.....                 | —                 | —                   |
| Vinyl bromide.....                              | 250               | 1,100               |
| ** Vinyl chloride.....                          | —                 | —                   |
| Vinylcyanide, see Acrylonitrile.....            | —                 | —                   |
| Vinyl toluene.....                              | 100               | 480                 |
| Warfarin.....                                   | —                 | 0.1                 |
| Wood dust (nonallergenic).....                  | —                 | 5                   |
| Xylene (xylol) — Skin..                         | 100               | 435                 |
| Xylidine — Skin.....                            | 5                 | 25                  |
| Yttrium.....                                    | —                 | 1                   |
| Zinc chloride fume.....                         | —                 | 1                   |
| Zinc oxide fume.....                            | —                 | 5                   |
| * Zinc stearate.....                            | —                 | E                   |
| Zirconium compounds (as Zr).....                | —                 | 5                   |

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

b) Approximate milligrams of substance per cubic meter of air.

d) An atmospheric concentration of not more than 0.02 ppm, or personal protection may be necessary to avoid headache.

e) <7 µm in diameter.

f) As sampled by method that does not collect vapor.

Capital letters refer to Appendices.

\*1974 Addition.

\*\*See Notice of Intended Changes.

g) According to analytically determined composition.

h) For control of general room air, biologic monitoring is essential for personnel control.

**Radioactivity:** For permissible concentrations of radioisotopes in air, see U.S. Department of Commerce, National Bureau of Standards Handbook 69, "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," June 5, 1969. Also, see U.S. Department of Commerce National Bureau of Standards, Handbook 59, "Permissible Dose from External Sources of Ionizing Radiation," September 24, 1954, and addendum of April 15, 1958. A report, Basic Radiation Protection Criteria, published by the National Committee on Radiation Protection, revises and modernizes the concept of the NCRP standards of 1954, 1957 and 1958; obtainable as NCRP Rept. No. 39, P.O. Box 4867, Washington, D.C. 20008.

## MINERAL DUSTS

### Substance

#### SILICA, SiO<sub>2</sub>

##### Crystalline

##### Quartz

TLV in mppcf:  
300<sup>c)</sup>

% quartz + 10

TLV for respirable dust  
in mg/m<sup>3</sup>:

10 mg/m<sup>3d)</sup>

% Respirable quartz + 2

B003189

TLV for "total dust," res-  
pirable and nonrespirable:

$$\frac{30 \text{ mg/m}^3}{\% \text{ quartz} + 3}$$

|                   |                                                                                       |
|-------------------|---------------------------------------------------------------------------------------|
| Cristobalite..... | Use one-half the value cal-<br>culated from the count or<br>mass formulae for quartz. |
| Tridymite         | Use one-half the value<br>calculated from formulae<br>for quartz.                     |
| Silica, fused     | Use quartz formulae.                                                                  |
| Amorphous.....    | 20 mppcf <sup>a)</sup>                                                                |

#### SILICATES (< 1% quartz)

|                                        |                                                                   |
|----------------------------------------|-------------------------------------------------------------------|
| *Asbestos, all formst                  | 5 fibers/cc ><br>5μm in<br>length <sup>b)</sup> ; A <sup>1a</sup> |
| Graphite (natural)                     | 15 mppcf                                                          |
| Mica                                   | 20 mppcf                                                          |
| *Mineral wool fiber                    | 10 mg/m <sup>3</sup>                                              |
| Perlite                                | 30 mppcf                                                          |
| Portland Cement                        | 30 mppcf                                                          |
| Soapstone                              | 20 mppcf                                                          |
| Talc (nonasbestiform)                  | 20 mppcf                                                          |
| Talc (fibrous) use Asbestos limit.     |                                                                   |
| Tremolite, see Asbestos.               |                                                                   |
| *Tripoli, use respirable <sup>b)</sup> | mass quartz<br>formula                                            |

#### COAL DUST

(bituminous). 2 mg/m<sup>3</sup> (respirable dust frac-  
tion < 5% quartz).  
If > 5% quartz use respirable  
mass formula.

<sup>a)</sup>1974 Addition.

<sup>b)</sup>A more stringent TLV for crocidolite may be  
required.

#### NUISANCE PARTICULATES

(see Appendix E)

30 m.p.p.c.f. or 10 mg/m<sup>3</sup>  
of total dust < 1% quartz

#### Conversion factors

mppcf × 35.3 = million particles per  
cubic meter  
= particles per c.c.

- i) Millions of particles per cubic foot of air,  
based on impinger samples counted by  
light-field techniques.
- j) The percentage of quartz in the formula  
is the amount determined from airborne  
samples, except in those instances in  
which other methods have been shown  
to be applicable.
- k) Both concentration and percent quartz  
for the application of this limit are to  
be determined from the fraction pass-  
ing a size-selector with the following  
characteristics:

| Aerodynamic<br>Diameter (μm)<br>(unit density sphere) | % passing<br>selector |
|-------------------------------------------------------|-----------------------|
| ≥ 2                                                   | 90                    |
| 2.5                                                   | 75                    |
| 3.5                                                   | 50                    |
| 5.0                                                   | 25                    |
| 10                                                    | 0                     |

- l) containing <1% quartz; if quartz con-  
tent > 1%, use formulae for quartz.
- m) Lint free dust as measured by the vertical-  
elutriator, cotton-dust sampler described  
in the Transactions of the National Con-  
ference on Cotton Dust, J. R. Lynch,  
pg. 33, May 2, 1970.

B003190

LAM021582

6113  
18439

- n) As determined by the membrane filter method at 400-450 X magnification (4 mm objective) phase contrast illumination.
- o) Based on "high volume" sampling.
- p) "Respirable" dust as defined by the British Medical Research Council Criteria (1) and as sampled by a device producing equivalent results (2).
  - (1) Hatch, T. E. and Gross, P., Pulmonary Deposition and Retention of Inhaled Aerosols, p. 149. Academic Press, New York, New York, 1964.
  - (2) Interim Guide for Respirable Mass Sampling, AIHA Aerosol Technology Committee, AIHA J. 31: 2, 1970, p. 133.

#### NOTICE OF INTENDED CHANGES (for 1974)

These substances, with their corresponding values, comprise those for which either a limit has been proposed for the first time, or for which a change in the "Adopted" listing has been proposed. In both cases, the proposed limits should be considered trial limits that will remain in the listing for a period of at least two years. If, after two years no evidence comes to light that questions the appropriateness of the values herein, the values will be reconsidered for the "Adopted" list. Documentation is available for each of these substances.

| Substance                                   | ppm <sup>a)</sup> | mg/m <sup>3b)</sup> |
|---------------------------------------------|-------------------|---------------------|
| + Arsenic, inorganic compounds (as As)..... | —                 | 0.25                |
| + Benzene—Skin.....                         | 10                | 30                  |
| + Butane.....                               | 600               | 1,450               |
| + n-Butyl alcohol.....                      | 50                | 150                 |
| + n-Butyl lactate.....                      | 5                 | 25                  |
| + Cadmium dusts & salts...                  | —                 | 0.05                |
| C Cadmium oxide fume....                    | —                 | 0.05                |
| + Calcium cyanamide.....                    | —                 | 0.5                 |
| + Calcium hydroxide.....                    | —                 | 2                   |
| + Captan.....                               | —                 | 5                   |
| + Carbofuran.....                           | —                 | 0.10                |
| Carbon tetrabromide.....                    | 0.1               | 1.4                 |
| Catechol (Pyrocatechol)...                  | 1                 | 4.5                 |
| Cesium hydroxide.....                       | —                 | 2                   |
| Chlorodifluoromethane...                    | 1000              | 3500                |
| Chlorpyrifos (Dursban®)                     |                   |                     |
| —Skin.....                                  | —                 | 0.2                 |
| o-Chlorostyrene.....                        | 50                | 285                 |

Capital letters refer to Appendices.  
+ 1974 Revision or Addition.

BCC3191

LAM021583

6113  
18440