PLAINTIFF'S EXHIBIT
MON-1868

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

[redacted]



CBY 3102503
C 000162
LAM022072

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 30175, Washington, D.C. 20014.

MINERAL DUSTS

Substance	
SILICA, SiO_2	
Crystalline	
Quartz	TLV in mppcf[i]: $\frac{300^{j}}{\%\ \text{quartz} + 10}$ TLV for respirable dust in mg/m³: $\frac{10\ \text{mg/m}^3{}^{k}}{\%\ \text{Respirable quartz} + 2}$ TLV for "total dust," respirable and nonrespirable: $\frac{30\ \text{mg/m}^3}{\%\ \text{quartz} + 3}$
Cristobalite	Use one-half the value calculated from the count or mass formulae for quartz.
Tridymite	Use one-half the value calculated from formulae for quartz.
Silica, fused	Use quartz formulae.
Tripoli	Use respirable[e] mass quartz formula
**Amorphous*	20 mppcf[i]

**See Notice of Intended Changes.

SILICATES (< 1% quartz)	
Asbestos, all forms†	5 fibers/cc > 5μm in length[e]; A1a
Graphite (natural)	15 mppcf
Mica	20 mppcf
Mineral wool fiber	10 mg/m³
Perlite	30 mppcf
Portland Cement	30 mppcf
Soapstone	20 mppcf
Talc (nonasbestiform)	20 mppcf
Talc (fibrous), use Asbestos limit.	
Tremolite, see Asbestos.	

COAL DUST

2 mg/m³ (respirable dust fraction < 5% quartz).
If > 5% quartz, use respirable mass formula.

NUISANCE PARTICULATES

(see Appendix E)

30 mppcf or 10 mg/m³[i]
of total dust < 1% quartz, or, 5 mg/m³ respirable dust.

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 technics.

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 passing a size-selector with the following characteristics:

†A more stringent TLV for crocidolite may be required.

i), n) See p. 34.

C 000183

CBY 3102504

LAM022073

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for

[redacted]



C 000164

CBY 3102505

LAM022074

Cristobalite	Use one-half the value calculated from the count or mass formulae for quartz.
Tridymite	Use one-half the value calculated from formulae for quartz.
Silica, fused	Use quartz formulae.
Tripoli	Use respirable[o] mass quartz formula

**Amorphous ..... (20 mppcf[h])

SILICATES (< 1% quartz)

**Asbestos, all forms	(5 fibers/cc> 5μm in length[m]; A1a)
Mica	20 mppcf
Mineral wool fiber	10 mg/m³
Perlite	30 mppcf
Portland Cement	30 mppcf
Soapstone	20 mppcf
Talc (nonasbestiform)	20 mppcf

**Talc (fibrous), use Asbestos limit.
**Tremolite, see Asbestos.

COAL DUST

2 mg/m³ (respirable dust fraction < 5% quartz). If > 5% quartz, use respirable mass formula.

NUISANCE PARTICULATES
(see Appendix E)

30 mppcf or 10 mg/m³[k,l]
of total dust < 1% quartz, or, 5 mg/m³ respirable dust.

Conversion factors:
mppcf × 35.3 = Million particles per cubic meter
= particles per cc

h) Millions of particles per cubic foot of air, based on impinger samples counted by light-field technics.
i) 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.
j) 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 (μm) (unit density sphere)	% passing selector
≥ 2	90
2.5	75
3.5	50
5.0	25
10	0

k) containing <1% quartz; if quartz content > 1%, use formulae for quartz.
l) Lint-free dust as measured by the vertical-elutriator, cotton-dust sampler described in the Transactions of the National Conference on Cotton Dust, J. R. Lynch, pg. 33, May 2, 1970.
m) As determined by the membrane filter method at 400–450X magnification (4 mm objective) phase contrast illumination.
n) Based on "high volume" sampling.
o) "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, AHIA J. *31:* 2, 1970, p. 133.

NOTICE OF INTENDED CHANGES (for 1978)

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.

**See Notice of Intended Changes

C 000165
CBY 3102506
LAM022075