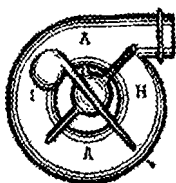


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A M E R I C A N

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A S S O C I A T I O N

Journal

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BALTIMORE 2, MARYLAND

E TOLERANCE:
even though brief
could be avoided.^{1,2}
CONCENTRATION
HAZARDOUS TO
life.

contained in siliceous
and diatomite, dia-
tal earth, kieselguhr
content varies with
material. Synthetic
size particles, are
having trade names:
Sil, HiSil, Ludox,
and Syloid.

(O₂)
)
tices
Industrial uses are:
flatteners, polish-
, and high tem-

EXPOSURES:
as silica dust may
electrostatic pre-
impinger method,
bol and water as
, and dust counts
rd light field tech-
hods for evaluat-
g from the sub-
not been devised,
rd upon weight or
micrography" seem

C. RECOMMENDED CONTROL PRO-
CEDURES: To prevent exposure to
high concentrations of amorphous silica
dust, process ventilation and/or en-
closure are the best means of control.
For some operations a dust respirator
approved by the U. S. Bureau of Mines
may be satisfactory.

IV. Specific Procedures

A. FIRST AID: None.

B. SPECIAL MEDICAL PROCEDURES:

- (1) Preplacement: Clinical and chest
radiographic examinations should be
made on all persons prior to job
assignment.
- (2) Periodic: Since there is only lim-
ited information about the harmful
effects of amorphous silica in in-
dustry, exposed personnel should
have careful periodic medical ex-
aminations, including chest x-ray.
Pulmonary function testing may be
useful.
- (3) Treatment: No satisfactory treat-
ment other than removal from ex-
posure, and therapy for any com-
plicating infection.

V. Literature References

1. COOPER, W. C., et al: Industrial Hy-
giene Foundation Transaction Bulletin
No. 30, 182-194.
2. DRINKER, P. AND HATCH, T.: Industrial
Dust. McGraw-Hill Co., Inc. New York,
1954.
3. FRASER, D. A.: *AMA Arch. of Ind. Hyg.
and Occ. Med.*, 8: 412, 1953.
4. LAMBIE, J. S.: *Ind. Med.*, 7: 470, 1938.
5. PALICARD, A. AND COLLET, A.: *AMA
Arch. of Ind. Hyg. and Occ. Med.*, 9:
389, 1954.
6. SCHEPERS, G. W. H., et al: *AMA Arch.
of Ind. Health*, 16: 125, 1957; *ibid*, 16:
203, 1957; *ibid*, 16: 280, 1957; *ibid*, 16:
363, 1957; *ibid*, 16: 499, 1957.
7. SMART, R. H. AND ANDERSON, W. M.:
Ind. Med. and Surg., 21: 509, 1952.
8. TEBBENS, B. D. AND BEARD, R. R.: *AMA
Arch. Ind. Health*, 16: 55, 1957.
9. U. S. Public Health Service; California
Department of Public Health; Nevada
State Health Department; Oregon State
Board of Health: Progress Report of
Study of Pneumoconiosis Hazards in the
Diatomite Processing Industry. 1955.

Asbestos

I. Hygienic Standards

A. RECOMMENDED MAXIMUM AT-
MOSPHERIC CONCENTRATION (8
hours): 5 million particles per cubic
foot of air (MPPCF).¹

- (1) Basis for Recommendation: Experi-
ence in industry,^{2, 4, 8, 12, 13} and ani-
mal experiments.^{5, 7}

B. SEVERITY OF HAZARDS:

- (1) Health: Long continued inhalation
of asbestos dust results in a form
of pneumoconiosis known as asbes-
tosis. The primary effect of inhala-
tion is an interstitial pulmonary
fibrosis. The disease is characterized
by asbestos bodies in the lungs and
sputum. Based on roentgenological
examinations, asbestosis can be clas-
sified as minimal, moderate, and
advanced. It is a serious disease in
some instances, but more frequently
it remains nondisabling for many
years, even without appreciable
symptoms, as long as some other
serious disease does not supervene

to cause death.² Chief symptoms of
advanced asbestosis are variable
cough, dyspnea, substernal chest
pains, decreased chest expansion,
weakness, emaciation, clubbed fin-
ger tips, and curved fingernails. Any
appreciable decrease in the amount
of asbestos dust in the breathing
atmosphere will cause a decrease
in the incidence and severity of
asbestosis. Individual susceptibility
varies.⁶ There have been reports of
an increased incidence of lung can-
cer in persons with asbestosis.³

- (2) Fire: None.

C. SHORT EXPOSURE TOLERANCE:

Not applicable:

II. Significant Properties

A fibrous magnesium calcium silicate which
occurs in various combinations as white,
greyish or greenish masses, either compact
or of long silky fibers, flax-like and readily
separated. About 95% of commercial asbes-
tos is chrysotile, which is derived from
serpentine, and is a hydrous magnesium

silicate containing from 12 to 14 per cent water of crystallization.

III. Industrial Hygiene Practice

A. RECOGNITION: The spinning and weaving of asbestos, in combination with other textiles for fire proof and heat resistant cloth, results in dust exposure. It may be used by itself or combined with other materials for valve packings, gaskets, boiler lagging and pipe covering, protective clothing, shielding materials, and as automotive brake linings. In the building industry it is used in the manufacture of asbestos cement products, heat insulating, and fire-proofing materials.

B. EVALUATION OF EXPOSURES: Asbestos dust may be sampled with the electrostatic precipitator or by the impinger method using alcohol or alcohol and water, as the collecting medium,^{4, 5} and dust counts made by the standard light field technique.⁶ The recommended maximum atmospheric concentration of 5 MPPCF is based upon the impinger sampling procedure.

C. RECOMMENDED CONTROL PROCEDURES: Prevention of asbestosis depends entirely upon preventing exposure to concentrations of dust sufficiently high to produce the characteristic reaction. Enclosure or local exhaust ventilation are the principal means of dust control. U. S. Bureau of Mines approved dust respirators may be worn as protection for some operations.

IV. Specific Procedures

A. FIRST AID: None.

B. SPECIAL MEDICAL PROCEDURES:

- (1) Preplacement: Clinical and radiographic chest examinations prior to job assignment.
- (2) Periodic: Exposed personnel should

have periodic clinical examination for signs and symptoms of asbestosis. These should include examination of the sputum for asbestosis bodies, and chest x-rays of good quality.

- (3) Treatment: No satisfactory treatment other than removal from exposure and therapy for any complicating infection.

V. Literature References

1. American Conference of Government Industrial Hygienists: *AMA Arch. of Ind. Health*, 16: 261, 1957.
2. CARTIER, PAUL: *AMA Arch. of Ind. Health*, 11: 204, 1955.
3. DOLL, R.: *Brit. J. Ind. Med.*, 12: 8, 1955.
4. DRESEN, W. C., et al: Public Health Bulletin No. 241, Supt. of Doc., Washington, D. C., 1938.
5. DRINKER, P. AND HATCH, T.: *Industrial Dust*. McGraw-Hill Book Co., Inc. New York, 1954.
6. FAIRHALL, LAWRENCE T.: *Industrial Toxicology*. The Williams & Wilkins Co., Baltimore, Md., 1957.
7. KING, E. J., et al: *Thorox I*, p. 18, 1946.
8. LYNCH, K. M.: *AMA Arch. of Ind. Health*, 11: 185, 1955.
9. MCPHEETERS, S. B.: *J. Ind. Hyg. & Tox.*, 18: 229, 1936.
10. PAGE, R. T. AND BLOOMFIELD, J. J. *Pub. Health Repts.* 52: 1713, 1937.
11. PATTY, FRANK A.: *Industrial Hygiene and Toxicology*, Vol. 1. Interscience Publishers, Inc., New York, 1948.
12. SMITH, K. W.: *AMA Arch. of Ind. Health*, 12: 198, 1955.
13. VORWALD, A. J., et al: *AMA Arch. in Hyg. and Occup. Med.* 3: 1, 1951.

Because of space limitations, it is impossible to list all methods of exposure evaluation. The selections have been made on the basis of current usage, reliability, and applicability to the usual industrial type of exposure. Any specific evaluation and/or control problem will involve professional judgment. This can best be done by professional industrial hygiene personnel.

Respiratory protective devices are commercially available. Their use, however, should be confined to emergency or intermittent exposures and not relied upon as primary means of hazard control.

A relative scale is used for rating the severity of hazards: nil, low, moderate, high, and extra hazardous.

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symptoms of asbes-
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ts: AMA Arch. of
31, 1957.

MA Arch. of Ind.
955.

Ind. Med., 12: 8,

t al: Public Health
pt. of Doc., Wash-

ATCH, T.: Industrial
l Book Co., Inc.,

ICE T.: Industrial
Williams & Wilkins
, 1957.

Thorox I, p. 188,

MA Arch. of Ind.
55.

: J. Ind. Hyg. &
i.

BLOOMFIELD, J. J.:
52: 1713, 1937.

Industrial Hygiene
ol. 1. Interscience
York, 1948.

1A Arch. of Ind.
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fed. 3: 1, 1951.

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☐ Carbon Monoxide	☐ Compounds	☐ nate
☐ Carbon Tetrachlo-	☐ Mercury	☐ Trichloroethylene
☐ ride	☐ Methyl Alcohol	☐ 1,1,1-Trichloroethane
☐ Chromic Acid	☐ Methyl Bromide	☐ Uranium (Natural)
☐ 1,2-Dichloroethane	☐ Methyl Ethyl Ketone	☐ Vanadium Pentoxide
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