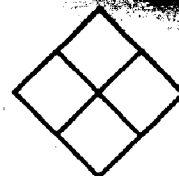




Material Safety Data



September 1, 1972

UNION CARBIDE CORPORATION • 4625 ROYAL AVENUE • NIAGARA FALLS, NEW YORK • 14302
TELEPHONE: (716) 278-3376

PRODUCT: Chrysotile Asbestos

CHEMICAL FORMULA: $Mg_3(OH)_8Si_4O_{10}$

TRADE NAMES: "Calidria" Asbestos

I. PHYSICAL DATA

BOILING POINT AND MELTING POINT: Not Pertinent

SPECIFIC GRAVITY ($H_2O = 1$): 2.45

VOLATILE CONTENT: Absorbed Water 1 – 4% By Weight. Structural Water Approximately 13% by Weight.

APPEARANCE: Pellets or Fine White Powder. No odor. Very Slight Solubility in Water.

II. HAZARDOUS INGREDIENTS

Not Applicable.

III. FIRE AND EXPLOSION HAZARD DATA

Material is not Combustible. No Fire or Explosion Hazard.

IV. REACTIVITY DATA

INERT MATERIAL: No Decomposition or Polymerization Conditions.

V. HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE TO AIRBORNE CONCENTRATION:

The current standard of the Occupational Safety and Health Act of 1970 contains the following exposure limits:

"The 8-hour time-weighted average airborne concentration of asbestos fibers to which employees are exposed shall not exceed 5 fibers per milliliter greater than 5 microns in length, as determined by the membrane filter method at 400-450X magnification (4 millimeter objective) phase contrast illumination. No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers per milliliter, longer than 5 microns." (Federal Register – Vol. 37, June 7, 1972, page 11320).

EFFECTS OF OVER EXPOSURE: Prolonged over exposure may result in lung damage.

EMERGENCY AND FIRST AID PROCEDURES: Not applicable. Material has no acute toxicity.

VI. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Avoid inhalation of dust. Remove spilled material by vacuum cleaner or by water wash.

WASTE DISPOSAL METHOD:

If reasonably foreseeable handling will not produce airborne concentrations in excess of exposure limits, no special procedures are required. When limits are likely to be exceeded, waste and scrap shall be collected and disposed of in impermeable sealed bags or other closed, impermeable containers, suitably labelled.

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VII. SPECIAL PROTECTION INFORMATION

VENTILATION:

Local exhaust for each operation is preferable. (See American National Standards Institute booklet, Z9.2 — 1971.) General area exhaust is acceptable. No special considerations.

PROTECTIVE GLOVES: None

EYE PROTECTION: None

OTHER PROTECTIVE EQUIPMENT:

If time weighted average or ceiling concentration limits are exceeded, clothing providing whole body covering shall be supplied and its use required.

RESPIRATORY PROTECTION⁽¹⁾

The current standard of the Occupational Safety and Health Act of 1970 contains the following guidelines:

AIRBORNE CONCENTRATION ⁽²⁾			
8-HOUR EXPOSURE ⁽³⁾	CEILING CONCENTRATION	REQUIRED MASK TYPE	ACCEPTABLE MODEL ⁽⁴⁾
5 maximum	10 maximum	None required.	—
50 maximum	100 maximum	U.S. Bureau of Mines Schedule 21B. Negative pressure on breathing. Covers nose and mouth.	Willson Model 1009 with R-520 Filter and M-S-A No. 86432 with Type H, Ultra Filter and others.
500 maximum	1000 maximum	U.S. Bureau of Mines Schedule 21B Powered filter positive pressure.	Personal Environment Systems, Inc. Hood 330 or 351 with 1900 Series filter.
Over 500	—	U.S. Bureau of Mines Schedule 19B Type C positive pressure, air supplied.	Willson GA2H M-S-A Lead-Foe and others.

- (1) Allowed only during the time required for installation of engineering controls, when engineering controls are not technically feasible or adequate, and in emergencies. An employee may not be assigned to tasks requiring respirator if his most recent medical examination indicates he will be unable to function normally.
- (2) Fibers per milliliter greater than 5 microns in length, as determined by the membrane filter method at 400-450X magnification (4 millimeter objective) phase contrast illumination.
- (3) 8-Hour time weighted average.
- (4) Examples of masks approved by U.S. Bureau of Mines under the appropriate schedule.

Reference — Federal Register, Volume 37, Pages 11318-11322, June 7, 1972.

VIII. SPECIAL PRECAUTIONS

If the time weighted average and ceiling concentration limits are not exceeded, no special precautions are required except:

- a) Bag damage and dusting should be minimized and dust inhalation avoided.
- b) Every place of employment where asbestos fibers are released must be monitored by December 7, 1972 to determine exposure levels.
- c) A comprehensive medical examination is required for any employee exposed to airborne fibers within 30 days of first such employment, annually thereafter and on termination of employment.

When exposure limits are exceeded, reference should be made to the regulation for details on caution signs, monitoring, change rooms, protective clothing laundering and record keeping.

ASBESTOS AND HEALTH

Asbestos, used since antiquity, has widespread and important applications in our modern technological society. Approximately 3,000 different products containing asbestos are in daily use throughout the world. Its increased use in the 20th century has lent urgency to the need to cope with occupational health problems related to the excessive inhalation of asbestos dust.

Such problems are not unique to the asbestos industry. Many substances and materials in common use today can be detrimental to the health and safety of industrial workers under uncontrolled conditions. A vital and widely used raw material, asbestos is but one of a number of potentially harmful substances used by industry.

Basically, the known facts about asbestos-related disease can be summed up as follows:

First, asbestos-related health risks today are almost exclusively confined to the occupational setting.

Second, the effects of excessive inhalation of asbestos are both time and dose related. This means that asbestos-related diseases may develop, generally, only after the inhalation of substantial amounts of asbestos dust over a substantial period of time. Thus, there are levels of exposure that will not result in any increased risk of disease.

Third, there is presently no evidence of risk to the general public from exposure to the minute amounts of asbestos that have been found in community air.

Fourth, because of the long latent period of asbestos-related disease, the disease being found today among some long-term industry employees is not an indication of present day conditions, but is a result of conditions existing decades ago, at a time when neither the industry, government, or the medical profession knew very much about the health effects of asbestos and even less about the proper means for their control.

These facts are well recognized by the asbestos manufacturing industry, which has made substantial progress over the years in protecting those who work with asbestos and in eliminating emissions of free asbestos fiber into the community air.

Known and Suspected Occupational Risks

There are three primary diseases known to be caused or exacerbated by prolonged and heavy inhalation of asbestos fibers. They are asbestosis, bronchogenic (lung) cancer, and mesothelioma. Prolonged heavy exposure does not necessarily result in disease and death—but there is little question that risks are significantly increased.

Asbestosis

This is an occupational disease characterized by lung scarring, and is one of the lung diseases called pneumoconioses. It is the most common of the three asbestos related illnesses and is found only among those who have worked regularly and continuously with asbestos under inadequately controlled conditions. The average time span from first exposure to the first clinical signs of asbestosis is 17 years, although some cases have been reported in as few as ten years.

Asbestosis is neither malignant nor necessarily fatal. Many asbestos workers with minor cases can and do continue to work and lead normal lives without difficulties. The asbestos

there are other causes of mesothelioma besides asbestos. Unfortunately, what those other causes might be is still unknown. Until these and other equally important factors are thoroughly investigated, the mesothelioma question will remain unresolved.

Other Tumors

Some researchers have reported higher-than-normal rates of gastrointestinal cancer among some heavily exposed industry groups. Other researchers have reported no increase of this type of cancer. The consensus of medical opinion is that the evidence is too scanty for a definitive conclusion.

Asbestos and the General Public

Medical reports of excess asbestos-related disease among occupationally exposed populations have been frequently cited by some writers, environmentalists, politicians and others as "proof" that the health of the general public is endangered by the minute amounts of asbestos dust being found in community air. "Neighborhood" and "household" cases of mesothelioma are cited extensively in this regard, as are the frequent reports of the findings of free asbestos fibers and so-called ferruginous bodies (which sometimes contain asbestos) in the lungs of some city dwellers at autopsy.

The truth is, however, that there is no evidence—either from experience or from scientific research—that anyone in the general public has ever contracted any asbestos-related disease from exposure to these minute amounts of airborne asbestos, which are many times lower than levels which have been demonstrated to result in no excess of disease in occupationally exposed populations.

This conclusion is supported by both the Asbestos Panel of the National Academy of Sciences' Committee on Biologic Effects of Atmospheric Pollutants, and the 33 member Advisory Committee on Asbestos Cancers of the International Agency for Research on Cancer, a division of the World Health Organization.

In its 1971 booklet, entitled "Asbestos: The Need For And Feasibility of Air Pollution Controls," the NAS Asbestos Panel, which consisted of seven of the nation's top experts on asbestos and health, stated that "there is no evidence that persons in the general population—without occupational, household or neighborhood exposures—have any increased risk of neoplasm, even though there may be ferruginous bodies or fibers in their lungs."

Warning against conclusions of the type frequently reached by the uninformed with regard to asbestos, the report further stated: "One cannot extrapolate from the mortality experience of, on the one hand, those who are directly and indirectly exposed to asbestos in their employment to, on the other hand, the general public, who have had moderate or slight exposures from ambient air."

The report concluded with the statement that "there is no evidence that the small numbers of fibers found in most members of the general population affect health or longevity."

The report of the IARC Advisory Committee represents the consensus of present world medical opinion on all aspects of the asbestos-health problem. Meeting immediately after the October 1972 Lyon Conference on the Biological Effects of Asbestos, the Committee, with representation from ten different countries, drafted the following opinions on asbestos-related disease and the general public:

- Asbestosis:** "There is at present no evidence of lung damage by asbestos to the general public. The amount of asbestos in the lungs of members of the general public is very small, compared to those occupationally exposed."
- Lung Cancer:** "The evidence . . . suggests that an excess lung carcinoma risk is not detectable when the occupational exposure has been low. These low occupa-

sponsoring a study at the Harvard School of Public Health on chest auscultation (breathing sounds) as an early detection device in the diagnosis of asbestos-related disease. While this needed additional information and data is being developed, the industry will take all steps necessary to assure a safe working environment for its employees and for applicators and fabricators of asbestos-containing products.

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