

PLAINTIFF'S EXHIBIT

NSC-25

Accident Prevention Manual

FOR INDUSTRIAL OPERATIONS

3d EDITION

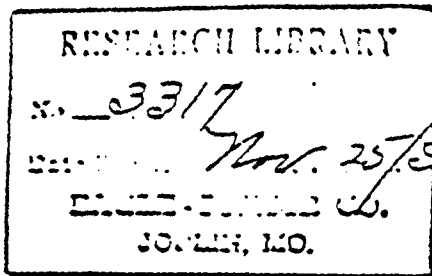
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NATIONAL SAFETY COUNCIL

CHICAGO • U. S. A.

**DEPOSITION
EXHIBIT**

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ing material which of the stomach and hemoglobin, and However, cases of ing are rare.

solid compounds of a husky voice and the nasal septum, is of hair and nails, skin cancers which and not very malignable are all severe: practically never

ing. cumulative poison, the tissues of the ities are found in There are also con- the hair and nails detected about two of exposure and- is and sometimes is terminated.

to a consider- days and can be this a few hours of re and for a long nit of 0.5 mg/m' is accumulation of a arsenic in the body. (2, 3-dithio-prop- as an antidote for It is effective in g from otherwise enic compounds in ament of existing

ute industrial poi- likely to be the sine, produced scri- has been generated rial which contains en reported in the tes, in the handling ht metals plant, in s which have held acids, in the clear- contaminated with ation of cadmium in other circum-

the red cells. After - signs are there some time the - damaged red ark or blood

urine. The kidneys may then become too clogged to operate at all.

The possibility of arsine formation should always be considered when there is hydrogen formation around the active metals or around ores of the heavy metals, since arsenic is widely distributed in small amounts and only a trace of it is required to produce enough arsine to be troublesome.

One of the more common sources of arsine incidents in recent years has been the handling of dross from the aluminum refining of metals.* Probably the most significant observation about these cases, aside from the fact that the moisture in the atmosphere is enough to form arsine, is the fact that the people involved in them have not been aware of the garlic-like odor which is supposed to be a warning of the presence of arsine.

The extremely high acute toxicity is reflected in the threshold concentration of 0.05 ppm. Arsine, in very small amounts, is also capable of producing a chronic type of poisoning, but it is more typically a source of acute episodes.

Asbestos is a hydrated magnesium silicate found in the minerals chrysotile, amianthus, actinolite and tremolite. Practically all the commercial asbestos is either chrysotile or amianthus, and about 90 per cent of that used in this country is chrysotile. It is used almost exclusively for heat insulation or for textiles which must resist high temperature, such as heat-resistant clothing and brake linings.

Inhalation of excessive quantities of asbestos fiber can produce a fibrosis in the lungs similar to that found in silicosis but somewhat milder and usually not so rapidly progressive. Like silicosis, the condition develops slowly and advances slowly and is equally resistant to treatment.

Prevention is essentially dust control. A maximum dust concentration of 5 million particles per cubic foot has been suggested, precisely as for pure free silica.

Barium, in the form of its soluble salts, is both toxic on ingestion and inhalation and highly caustic when applied to the skin. The carbonate and sulfide are sufficiently

soluble to be toxic, although not very caustic. The sulfate, which is used as a contrast medium in X-ray work, is too insoluble to show any toxicity, and soluble sulfates are specific antidotes for ingested barium salts.

Since these salts produce violent stimulation of all muscle, upon ingestion they produce severe disturbances of the digestive system. After absorption, the barium salts produce an increase of blood pressure by constriction of the arterial muscle, a slow heart beat by an action similar to that of digitalis on the heart, and first excitation and then paralysis of the central nervous system. In spite of the high inherent toxicity, there are few cases of industrial poisoning with barium.

Barium is a heavy metal, and the dust of the insoluble salts will collect in the lungs and give rise to the condition known as baritosis. Its nodular appearance on X-ray film may be mistaken for that of silicosis. Men showing the sign of baritosis are apparently not disabled or inconvenienced in any way.

Benzene is a colorless, flammable, volatile liquid with a rather pleasant aromatic odor. Its fire hazard is between that of ethyl alcohol and that of ether. The greatest hazard is that of chronic poisoning by inhalation of comparatively small amounts over a long period of time. It is one of the two or three most dangerous organic solvents in commercial use.

The action is primarily on the blood-forming organs, producing severe anemia, bleeding under the skin, and great reduction in the ability of the blood to clot.

The extent of chronic exposure to benzene may be determined qualitatively by measurement of the ratio of organic to inorganic sulfates in the urine. The most convenient measurement of damage is given by a blood count.

People who may be exposed to benzene vapor should have blood counts at regular intervals. Consistent change in the blood count should be closely investigated. Particularly significant changes are diminution in the total numbers of red cells, platelets, or white cells.

Headaches, dizziness, fatigue, loss of appetite, irritability, nervousness, nosebleed, and other signs of abnormalities of the blood may or may not be present in chronic poisoning.

*"Arsine. Poisoning. Epidemiologic Studies of an Outbreak Following Exposure to Gases from Metallic Dross," Louis W. Spolyar, R. N. Harger, *Archives of Industrial Hygiene and Occupational Medicine*, 8:419-436 (1950).