

Safety



Bulletin

PLAINTIFF'S EXHIBIT

SH-1612



February 8, 1982

BREATHING AIRBORNE CHEMICALS

Inhalation is the most common type of chemical exposure. Chemicals may be inhaled with the air we breathe. If chemical exposure occurs above acceptable airborne concentrations, immediate physical effects may occur, or for some chemicals, may occur only after many years of exposure.

Some materials are highly irritating. Gases such as chlorine and ammonia irritate eyes, nose and throat and in sufficient concentrations may cause permanent injury. The same is true for dusts or mists of sulfuric acid and caustic. Hydrocarbon solvents such as gasoline, toluene, xylene, methyl ethyl ketone (MEK), and methyl isobutyl ketone (MIBK) may at sufficient concentrations also be irritating to breathe. Other materials such as mercaptans have an offensive odor which can become intolerable.

Some gases and vapors which reach the lungs can be absorbed into the blood stream. As a result, asphyxiation from gases like hydrogen sulfide and carbon monoxide can occur. Virtually all hydrocarbon solvents and chlorinated hydrocarbons can affect the central nervous system, and produce such symptoms as dizziness, loss of coordination, headaches, and nausea. Generally, these symptoms will only be present during the period of exposure and will gradually subside once the individual is removed to clean air.

Of special importance are those materials which may cause gradual damage to health over a long period of time. Materials in this group include cancer suspect agents such as vinyl chloride and asbestos. Other materials such as allyl chloride, epichlorohydrin, D-D₂, ethylene dichloride, and benzene can produce permanent injury to the liver, kidneys, lungs or other organs. Because the potential for injury is generally not immediate, these materials have to be handled according to specific procedures and their exposures carefully controlled. These materials can present a unique problem. At times, the individual may not realize the exposure represents a health hazard. That is, the exposure may be quite tolerable, neither irritating to breathe nor bothersome to smell. But through proper training and attention to working procedures and conditions, individuals can avoid even the subtlest of unsafe exposures.

Permissible Exposure Limits (PELs) have been adopted by Shell for controlling employee chemical exposure. Some of the PELs are based on those established by the Occupational Safety and Health Administration (OSHA). These limits are expressed in terms of the material's concentration in air, and have been set to prevent health effects from occurring when working with a material day after day, year after year. By maintaining concentrations below these limits, we can be assured that chemical exposures will not cause health effects. The PELs vary with each chemical depending on its potential health effects. For example, the PEL for benzene is 10 parts per million (ppm) while the limit for vinyl chloride is 1.0 ppm.

Information on each chemical found at the Shell Manufacturing Complex can be found in the Material Safety Data Sheet (MSDS) on that chemical. MSDSs for the chemicals in each work area are typically located in control rooms. Special questions concerning a material's toxicity can be answered by contacting Industrial Hygiene (ext. 7375).

DPMC-00881

LAM 007386

D R A F T

ASBESTOS

Asbestos is a mineral silicate occurring naturally as a variously colored fiber. It is non-combustible, non-conducting, and resistant to deterioration and chemical attack. Because of these properties, it has found widespread use in thermal insulation, asbestos floor tile, roofing and transite materials, gaskets, coatings, plastics, and brake linings. Because of its fibrous nature, it can be woven into cloth, or used to add strength to other materials. Prior to 1973, asbestos was used here at DPMC for thermal insulation of equipment.

Asbestos fibers are a longterm health hazard when inhaled in excessive amounts. The asbestos fibers are associated with a variety of diseases, including (1) Asbestosis - a non-malignant lining of the lungs; (2) Bronchogenic Carcinoma - a malignancy (cancer) of the lung; (3) mesothelioma - a malignancy of the lining of the chest cavity; and (4) cancer of the stomach, colon and rectum. These diseases develop slowly, and usually do not become evident until many years after initial exposure. Asbestos fibers can enter the system via the respiratory system or via eating/drinking. The lightweight, small asbestos fibers are easily "airborne" and can contaminate the work area if special precautions are not taken.

The permitted exposure level for asbestos fibers, as established by the existing OSHA Health Standard, is 2 fibers per cubic centimeter of air, as an eight-hour time-weighted average; and a ceiling limitation of 10 fibers per cubic centimeter, as determined by a fifteen-minute sample.

Asbestos is most frequently encountered within the Complex as insulation on pipes and structures. While purchase of new insulation containing asbestos

has been discontinued, asbestos insulation will be encountered in older units for many years to come.

In general, asbestos-containing materials should be handled in a wet state which will minimize concentrations of airborne fibers as a precautionary measure, respirators are also to be worn for all tasks which involve disturbance of materials containing asbestos. Coveralls are also required when working with asbestos. Asbestos waste shall be collected and disposed of in sealed plastic bags. These bags are to be labeled as containing asbestos. Bags, tags and ties are available in both tool rooms. Annual medical examinations are provided for insulators and other Shell personnel who work with asbestos and are routinely exposed to airborne concentrations of asbestos. The Asbestos Safety Order (Chemical S-35) and (Refinery S-125) cover all of the precautionary workpractices, handling and disposal requirements for asbestos containing materials.

In the absence of specific knowledge to the contrary, all insulation is to be handled as if it was asbestos. In planning for maintenance work, the Inspection Department should be contacted for assistance - a test for asbestos content can be made by Rick Connors, Ext. 7214 (Chemical) or Ernie Collins, Ext. 6643 (Refinery)