PLAINTIFF'S EXHIBIT

DOW-1876

HEALTH AND SAFETY

Only in recent years have we become fully aware of the health hazards involved in working with asbestos-containing materials. In 1969 the Environmental Research Laboratory made a thorough study of air borne dust with relation to our coverers. As a result of this study and with strong support from the Medical Department, a program was initiated whereby we would (1) reduce drastically the purchase of all asbestos-containing insulating materials, and (2) wear approved respiratory protection when working with asbestos. Since then the purchase of asbestos-containing materials has been reduced to almost zero, and our Medical Department has instituted a very rigorous program of surveillance. See Medical Information on page

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In general, our dust problem can be divided into two categories, namely asbestos dust and nuisance dust. We have thousands of feet of lines still covered with asbestos insulation. These lines are continually being uncovered and recovered. It is mandatory that respiratory protection be worn when these operations are taking place. Whenever possible the materials should be wetted down to reduce the dust. Nuisance dusts, while not as potentially dangerous as asbestos, can still be a very real source of irritation and respiratory protection is highly recommended. Rarely is a demolition job accomplished without a lot of dust. Wear your respirator.

Good housekeeping is essential in reducing the dust level in a working area. Always pick up torn off insulation and deposit in a dempster promptly. Do not cut insulation or mix up cement in a confined area and wear clean, loose-fitting clothing.

Two types of U. S. Bureau of Mines approved respirators are carried in stock. They are Dustfoe #66 and #67, and Sure-Guard #R2090. These pieces of equipment, properly fitted and kept in good condition, will afford

adequate protection. It is very important that the outer edges of the face piece form a perfect seal with the face. This should be checked frequently.

Coverers are frequently called upon to work on hot vessels and lines and to remove insulation that has been saturated with chemicals. This calls for alertness and caution. In other respects the safety habits of coverers should be no different than any other maintenance personnel. Remember, "Safety must be a first consideration and basic responsibility of every Midland Division employee."

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MEDICAL INFORMATION

The Medical Department is concerned about the hazards of excessive asbestos exposure not only because of the possibility of developing asbestosis, a permanent scarring condition of the lungs, but also because of the increased risk of developing lung cancer. We know that cigarette smoking along with exposure to asbestos dusts increases the risk of developing lung cancer about 80 times. Therefore, it is against your best general interest to smoke from a health standpoint--more so, if you are a pipe coverer.

Always wear the proper protective equipment when working with asbestos containing insulation materials.

The Medical Department maintains surveillance of all pipe coverers through periodic chest x-rays, measurements of breathing ability and health screening examinations. After an initial series of chest x-rays are taken, if you are under 40 years of age or have been pipe covering less than 10 years, follow up x-rays will be taken every year. If you are over 40 years of age or have been pipe covering more than 10 years, follow up chest x-rays will be taken every 6 months.

In recent years we have markedly reduced the use of asbestos in the Midland Plant. Our long range plans call for complete elimination of asbestos; however, until this is possible through the substitution of other materials, you are urged to use extreme caution when working with asbestos containing insulation.

Should you have any question relating to your health in regard to the handling of these materials, please contact the Medical Department at 6-2243.

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GENERAL THEORY AND PRACTICE

Heat Transfer

The function of thermal insulation is to retard heat flow. We can best accomplish this by knowing how heat is transferred. Heat has two methods of transfer, namely, conduction and radiation. Convection, in the strict sense of the word, is not a method of heat transfer even though it is commonly used as such. Definitions are as follows:

> Conduction is energy (heat) transferred from one body to another through actual physical contact. Example: heat traveling through a metal wire.
>
> Radiation is energy (heat) transmitted through space from a hotter to a colder body. Example: the sun's heat on the earth.
>
> Convection is the movement of a mass (air) from one location to another. Example: the movement of air from one part of a room to another.

One of the important measurements of an insulation's value is its thermal conductivity or "k" factor. This is defined as the amount of heat in Btu which will travel through a square foot of insulation one inch thick in one hour. The lower the "k" factor the better the insulation. Another way of saying the same thing would be to state that a good insulating material is a poor heat conductor. One of the big reasons for this is that insulating materials contain a large number of air spaces, and dry, immobile air is a very poor conductor.

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