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RECOMMENDED WORK PRACTICES

FOR HANDLING

ASBESTOS-CONTAINING FRICTION MATERIALS

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DRAFT - MARCH 13, 1978

INTRODUCTION

The purpose of this booklet is to provide practical guidelines for brake and clutch service mechanics in the handling and processing of asbestos containing friction materials and in the maintenance and repair of brake and clutch assemblies on which the materials are installed.

Adherence to the recommended work practices will reduce employee exposure to airborne concentrations of asbestos dust and will assist employers in complying with government regulations,

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ASBESTOS AND FRICTION MATERIALS

Most molded friction materials contain 40% to 60% asbestos - some woven materials over 90%. In molded materials, resin binders prevent the release of asbestos fibers during normal handling. Woven friction materials, normally used only in construction and industrial applications, must be handled with care to avoid creating dust as the asbestos fibers are less firmly bound into the product.

Potentially hazardous airborne concentrations of asbestos dust can be created by improper cleaning and handling of worn brake and clutch assemblies, uncontrolled machining operations and poor housekeeping.

Inhalation of excessive quantities of asbestos fiber can cause respiratory disease and cancer. Smoking greatly increases the risk of lung cancer among asbestos workers. Prevention of asbestos dust exposure is the only known method of eliminating asbestos-related disease among those working with asbestos containing products.

Proper work practices offer the best assurance of providing exposure safeguards for workers removing, installing and machining asbestos containing friction materials.

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SUMMARY OF OSHA ASBESTOS STANDARD

EFFECTIVE JULY 1, 1976

Under the current standard, it is the employer's responsibility to assure that exposure of employees does not exceed the following permissible exposure levels.

a. Eight hour time weighted average: Two fibers, longer than five micrometers, per cubic centimeter.

b. Ceiling concentrations: Ten fibers, longer than 5 micrometers, per cubic centimeter.

Engineering controls such as isolation, enclosure, exhaust ventilation and dust collection are the preferred methods for meeting the prescribed exposure limits.

Respiratory protection is required whenever airborne fiber concentrations exceed either the permissible time weighted average level or the permissible ceiling concentration and protective clothing is required whenever airborne fiber concentrations exceed the permissible ceiling level.

The standard requires that all workplaces where asbestos fibers may be released shall be monitored to determine exposure levels.

Caution signs must be displayed at each workplace where asbestos fiber concentrations exceed permissible exposure limits and all external surfaces, machinery and equipment must be maintained free of asbestos fiber accumulation.

Employers must maintain records of monitoring required by the standard and must provide or make available medical examinations for employees exposed to airborne concentrations of asbestos fibers.

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Refer to the Appendix for availability of the full text of the OSHA Asbestos Standard.

HANDLING NEW FRICTION MATERIALS

Handling new disc brake assemblies, lined brake shoes, clutch facings and brake blocks purchased in individual boxed sets is unlikely to create significant airborne concentrations of asbestos dust. If the parts are purchased in bulk quantities, abrasion during shipment may result in the accumulation of dust in shipping containers. Such dust should be removed by vacuuming or cleaning with a damp cloth.

REMOVING WORN FRICTION MATERIALS

Asbestos fibers in disc brake linings, drum brake linings, blocks and dry clutch facings are locked into the product with resin binders which prevent the release of asbestos fiber during normal handling. Heat and abrasion during normal use of brakes and clutches will create asbestos containing dust. Some dust will accumulate in drum brake assemblies and to a lesser extent in dry clutch assemblies. Because they are open to the air, very little dust will adhere to disc brake assemblies.

When removing worn friction materials, remove the accumulated dust in the assemblies with an industrial vacuum cleaner equipped with a high efficiency filter system. If such equipment is not available, dust may be removed with a damp cloth.

Do not use compressed air or dry brushing for cleaning.

Dispose of vacuum cleaner waste and asbestos contaminated cleaning materials in plastic bags or other sealed containers.

Use a NIOSH approved air purifying respirator when removing worn friction materials, cleaning brake or clutch assemblies and when disposing of vacuum cleaner waste.

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MACHINING FRICTION MATERIALS

There is an increasing trend for manufacturers and rebuilders to provide brake lining and clutch facings pre-drilled and pre-ground in final assembly form. In the case of truck brake blocks, various oversize thicknesses are available. However, there are some instances where field machining is necessary. This is particularly true for construction and industrial equipment applications which may require machining of blocks, slab stock or roll lining.

Dust Collection Methods

When asbestos-containing friction materials are machined, i.e., drilled, ground, grooved, cut or beveled, the dust created contains asbestos fibers which may become airborne unless adequate dust controls are employed. The preferred method for minimizing airborne dust from machining operations is local exhaust ventilation. A local exhaust ventilation system consists of dust collection hoods or enclosures connected by duct work or piping to a dust collection filter and a suction source.

The two operations that offer the greatest potential for generation of excessive amounts of airborne asbestos fiber are arc grinding and beveling of lined brake shoes and linings or brake blocks. Grinding machines used for these operations must be provided with exhaust ventilation to maintain worker exposures below permissible levels.

In many cases effective control can be achieved by removing the dust bags furnished as standard equipment with some arc grinders and connecting the grinder to the hose of a heavy-duty industrial vacuum cleaner equipped with high efficiency dust filters.

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For large volume machining operations that operate on a continuous basis, the preferred dust collection device is a fabric filter or baghouse, with a heavy-duty exhaust fan as the suction source. The dust collector must meet the air-cleaning requirements of the Federal Environmental Protection Agency Emission Standard for Asbestos. Approval must be obtained from EPA for installation and operation of each system. Sources of information on EPA requirements and on design and operation of local exhaust systems are listed in the Appendix.

Other Methods of Minimizing Dust Exposure

Whenever possible friction materials should be cut to length with a shear or press brake rather than with a saw or abrasive cut-off wheel.

Dust generation can be minimized or eliminated during arcing of brake blocks by lathe turning at low speed rather than grinding.

Whenever possible machining and repair operations should be isolated from other work areas to prevent unnecessary exposure of other workers.

Good housekeeping is essential in a workplace where asbestos containing materials are handled. High efficiency industrial vacuum cleaners equipped with double or triple filtration units should be used for removing accumulations of asbestos dust and waste. See Appendix for information on suppliers of vacuum cleaners designed for use with asbestos dust.

Never use compressed air or dry sweeping for cleaning. Water or other dust suppressants should be applied when brooms are used. Dispose of asbestos dust and asbestos-contaminated waste in plastic bags or other sealed containers

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Good personal hygiene practices are important in minimizing asbestos dust exposure. Do not smoke, wash before eating and shower after work. Change to work clothes upon arrival at work and change from work clothes at conclusion of work. If work clothing is taken home, carry in an impermeable bag and wash separately from other clothing.

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