

Subject: Motor Vehicle Maintenance - Protection Against
Exposure to Asbestos Fibers

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to: Plant Staff Heads and Assistant Vice Presidents Operations Staff
Copies to Corporate Medical Directors and Safety Coordinators

from: Director - Outside Plant, Safety and Supplies
Medical Director - Research

synopsis: Transmits further recommendations and procedures for protecting
employees from excessive exposure to airborne asbestos fibers while
performing maintenance operations on brakes and clutches in Company-
owned motor vehicles.

PLAINTIFF'S EXHIBIT

SWB-203

G.L. 77-07-024 transmitted procedures which were to be followed in
all Telephone Company Garages to assure that employees are not
exposed to possible airborne asbestos fibers.

This letter provides further recommendations and procedures for
protecting employees from excessive exposure to airborne asbestos
fibers while they are performing routine maintenance operations
on brakes and clutches in Company-owned motor vehicles. These
recommendations and procedures have been reviewed by the Bell
System Occupational Health Working Group, and are based on field
measurements and evaluations performed by the Environmental Safety
and Health Staff of Bell Telephone Laboratories.

The present standard promulgated by the Occupational Safety and
Health Administration (OSHA) for exposure to airborne asbestos fibers
is 2 fibers per cubic centimeter based on an 8-hour time weighted
average. However, these procedures have been designed to limit the
employees' exposure to airborne asbestos fibers to less than 0.1
fibers per cubic centimeter, a level now under consideration by the
National Institute for Occupational Safety and Health (NIOSH).

The history of asbestos as a proven carcinogen, the strictness of
the OSHA standard, and the difficulty of controlling airborne asbestos
fibers freed during normal brake and clutch maintenance operations
strongly suggest that this work be contracted to an outside supplier
where at all possible. The contract should ensure that all brake
and clutch maintenance activity, including inspections to determine
whether brake shoe replacement is necessary, is performed on the
contractor's premises. This procedure eliminates all danger of
exposing telephone company employees to airborne asbestos fibers
arising from this source.

NOTICE

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Bell System except under written agreement.

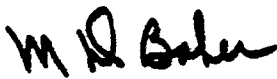
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Where economic considerations or other conditions justify using telephone company employees for this work, the following procedures must be followed to protect them from excessive exposure to airborne asbestos fibers:

1. Pending the completion of further studies, the general shop procedures attached to this letter must be instituted in all work locations where brake and clutch maintenance operations are performed.
2. The medical surveillance program transmitted to Operating Company Medical Directors by the Corporate Medical Director on July 11, 1977, copy attached, must be instituted immediately for all employees assigned regularly to this work, as well as for those who are incidentally exposed because of close proximity to brake and clutch work operations.

The Environmental Health and Safety staff at Bell Telephone Laboratories will continue to investigate and evaluate new methods for controlling the exposures to asbestos fibers. The Laboratories are also planning an intensive study to validate the effectiveness of the new shop procedures as they are implemented by the Operating Companies. We will select an appropriate work location at a later date.

In the meantime, if you or your staff have any questions about the shop procedures, please call J.M. Degen (201) 221-3283, or R.G. Danfels (201) 221-3289. Dr. R.W. Stone (201) 221-2462 will be happy to answer questions regarding the medical surveillance program.



M.D. Baker
Director - Outside Plant,
Safety and Supplies



R.W. Stone, M.D.
Medical Director - Research

Attachments

ASBESTOS FIBER PROTECTION

GENERAL SHOP PROCEDURES

General shop procedure to be followed when working with brakes and clutches and associated components on Company-owned fleet vehicles.

GENERAL

Special Attention: Towels, Cloths, Rags

Shop towels, rags and keyback towels used in brake and clutch service work shall not be mixed with normal use shop service towels. All cloths, rags and towels contaminated with asbestos fiber dust and material shall be placed in a separate plastic container bag. The bag holding contaminated material shall be plainly identified as holding asbestos-fiber-contaminated contents. The contaminated material bag shall be sealed and placed in a designated area for disposal.

Rented towels and material shall be identified as contaminated and placed for the rental service person to handle.

Throw-away material, i.e., rags, "baled type", keyback type towels, paper types, etc., shall also be bagged, identified and placed in a designated disposal area for the trash hauler.

EQUIPMENT

Vacuum Cleaners

The following industrial hygiene specifications are recommended for vacuum cleaners used for brake and clutch work operations in the Bell System. Such vacuum cleaners:

1. Shall be an industrial type equipped with a high efficiency filter system (99% efficiency for 0.3 mm diameter aerosols). Plastic disposal bags, with asbestos warning labels attached, shall be provided with each set of vacuum cleaner filters. An approved National Institute for Occupational Safety and Health (NIOSH) single use, disposal respirator for asbestos dust shall also be provided with each set of filters. At present the following are recommended: 3M Co. #8710 and American Optical R1050.
2. Shall be equipped with a heavy duty U/L approved motor rated at a minimum of 50 inches of suction (water gauge) and a minimum flow rate of 100 cubic feet per minute.

3. Shall be equipped with an eight foot minimum length plastic hose with connector and crevice tool. (No duster brushes shall be included.)
4. Shall have adequate seals and gaskets to prevent any air leaks. Filter bags shall be easily changed without violating seals.

In addition, when performing brake work operations, it is recommended that a brake assembly cleaner be used in conjunction with the vacuum cleaner.

This cleaner mounts over the brake assembly and has a hose attached to the vacuum cleaner. High pressure air is connected to the cleaner. The air blows the dust from the brake assembly and the vacuum cleaner will accumulate the dust.

The following vacuum systems are suitable.

- A. Pullman Model MJ75AV Asbestos Vacmobile. Approximate price \$380.00. Pullman Industrial Park, 123-153 Medford Street, Malden, Massachusetts 02148, (617) 324-7300.
- B. Tempo Model AB7515 Brake and Clutch Service Vacuum. Approximate price \$500.00. Tempo Products Company, 6200 Cochran Road, Cleveland, Ohio 44139, (216) 248-1450.
- C. Nilfisk GA73 Vacuum Cleaner. Approximate price \$420.00. Nilfisk of America, 201 King Manor Drive, King of Prussia, Pennsylvania 19406, (215) 277-3900.

The following brake assembly cleaners are suitable.

- A. Brake-Vac Brake Assembly Cleaner. Approximate price range \$100.00-\$150.00. Per-Lux, Inc., 804 East Edna Place, Covina, California 91723, (213) 331-4801.
- B. Asbesto-Clene Brake Cone System. Approximate price range \$395.00-\$680.00. Nilfisk of America, Inc., 201 King Manor Drive, King of Prussia, Pennsylvania 19406, (215) 277-3900.

WORK OPERATIONS

Vehicle Position

Place vehicle in position on shop floor for elevation, i.e., hoist unit for elevation or floor surface for jacking operation. Raise vehicle to effective working height. This will depend on method of hoisting selection.

When vehicle is positioned (follow recommended shop safety practices), the following outlined procedures must be followed. (DO NOT USE AIR PRESSURE TO REMOVE OR DISLODGE DUST.)

Front Axle - Drum Brakes:

Remove wheel covers and wheels from selected points of work function. Place wheels in an unused and safe space. Use the vacuum to remove loose brake dust and particles accumulated externally.

1. Remove spindle dust cover, cotter pin and nut lock (if used), retaining nut and tongued washer. Place these items in the wheel covers adjacent to the work operation.
2. Rock hub and brake drum assembly, grasping top and bottom portions, slightly to loosen the outer wheel bearing. Remove bearing and place in the dust cover removed in step 1.
3. Lift the hub and drum assembly carefully from the spindle unit.

NOTE: Avoid dragging this assembly on the spindle.

DO NOT DROP OR BOUNCE THIS ASSEMBLY ON THE FLOOR.

4. Wheel, hub and brake drum assembly may be removed as one unit, if care is exercised, or a dolly is used for removing heavy wheels. In addition, exposed areas should be vacuumed prior to removal.
5. Place the hub and drum assembly, or wheel, hub and drum, on the floor surface with the inner bearing, seal and open drum area facing up. A clean shop towel should be placed over the inner bearing to reduce contamination.

Remove accumulated brake dust and other foreign contaminating particles from the drum assembly with an approved industrial type vacuum cleaner equipped with a high efficiency system. Do Not use a standard type industrial vacuum unit. (See recommendations under Vacuum Cleaners preceding.)

Front Axle - Disc Brakes:

1. When vehicle has been placed in working position, use a high efficiency industrial type vacuum cleaner to remove loose brake dust and other loose particles from both front wheels. This must be done prior to removal of wheel covers and wheels from each hub assembly.

2. Remove wheel cover and wheels for further inspection.
3. Place wheel and wheel cover in a safe storage space and proceed to vacuum the balance of brake dust and other loose particles from the hub, caliper and caliper housing.

Other work steps applicable may be followed in their entirety for pad replacement.

Rear Axle:

1. Use approved type industrial vacuum cleaner to remove loose particles of brake dust, etc., from exterior surface of the drums prior to removal. Following approved shop procedures, remove rear brake drums and place them on the floor with open area facing up. Do not strike or drop units.
2. Vacuum all accumulated brake dust and other foreign substances from inner area of each drum assembly.

Backing Plates and Brake Shoes:

1. Vacuum loose brake dust and other particles of accumulated material from each unit opened for maintenance and service.
2. Vacuum each backing plate and the component items (springs, clips, pins, shoes, etc.) in conjunction with a brake assembly cleaner unit (see recommendations under Vacuum Cleaners preceding). Follow the manufacturers instructions for the brake assembly cleaner. Care must be taken to fit the brake assembly over each wheel (9 inch, 10 inch and 11 inch adapters must be available) before compressed air is used to blow dust and dirt from the brake assembly. A vacuum funnel adapter must fit any 1½ inch vacuum cleaner hose.
3. If the brake shoes are to be removed and exchanged for new shoes, do so at this point. Remove brake shoes from backing plate in the normal manner. Use care when this is done to prevent dust and dirt from being dislodged from the old shoes.

Clutch Maintenance:

When performing any type of maintenance where asbestos type dust may be encountered, it is mandatory that extreme caution be used.

Do Not use air pressure to clean area of maintenance.

Use the special vacuum cleaner to clean components during disassembly and assembly.

Dispose of contaminated material (rags, parts, etc.) as described in the Special Attention notation preceding.