

Glenn Research Center, Environmental Programs Manual

Chapter 9 - ASBESTOS

NOTE: The current version of this Chapter is maintained and approved by the Environmental Management Office (EMO). The revision date for this chapter is October 2003. If you are referencing paper copies, please verify that it is the most current version before use. The current version is maintained on the Glenn Research Center intranet at <http://osat-ext.grc.nasa.gov/emo/pub/epm/epm-contents.pdf>. Approved by: EMO Chief, Michael Blotzer {[mailto: Michael.J.Blotzer@grc.nasa.gov](mailto:Michael.J.Blotzer@grc.nasa.gov)}.

PURPOSE

This chapter establishes minimum requirements for handling, maintenance, use, removal and disposal of all asbestos containing materials (ACM) and debris, friable and non-friable at GRC.

APPLICABILITY

This chapter applies to all personnel at Glenn and Plum Brook Station, including, but not limited to, civil servants, contractors, and students.

BACKGROUND

Asbestos is a generic term applying to a number of naturally occurring mineral silicates that, when crushed or processed, separate into fibers. The most common types of asbestos are chrysotile, amosite, and crocidolite. All forms of asbestos have a tendency to break into dust of tiny fibers that suspend in the air and can be inhaled or swallowed.

Asbestos may be found in valve packing, gaskets, boiler laggings, pipe coverings, brake linings, shielding materials, insulating boards, and protective clothing. In the building industry it is used in the manufacture of asbestos cement products, heat insulating and fireproofing materials, patching and taping compounds, and floor and ceiling tiles.

Asbestos is not believed to pose a health hazard unless it gets into the air and is breathed or swallowed. Breathing asbestos fibers increases the risks of developing lung cancer (especially in active smokers), mesothelioma (a cancer of the lung lining) and chronic lung disease (asbestosis). Gastrointestinal cancers have been reported more frequently in asbestos workers, but a direct relationship between ingestion of asbestos and the development of these cancers has not been established.

Asbestos related activities are strictly regulated. Worker protection is regulated by the Occupational Safety and Health Administration (OSHA) asbestos standards, 29 CFR 1910.1001 and 1926.1101. These standards include requirements for regulated areas, employee exposure monitoring, personal protective equipment (including full body coveralls and respirators), work practices and engineering controls, competent persons, employee training, hygiene facilities, housekeeping, and medical monitoring.

Environmental protection is covered by the U.S. Environmental Protection Agency's National Emission Standards for Asbestos, 40 CFR 61.140 - 61-157. Enforced by the U.S. EPA and the Cleveland Division of Air Pollution Control (CDAPC), these regulations include requirements for regulated areas, negative pressure enclosures, worker training, and material disposal. The regulations also require notification of the EPA and the CDAPC at least 10 business days before any asbestos removal work begins. For continuing removal projects, such as asbestos-related maintenance work, a blanket notification may be used. The EPA and the CDAPC may require that they approve all work performed under the blanket notification before the work can be done. In addition, Ohio Department of Health (ODH) regulations cover training and licensing requirements of asbestos abatement contractors, supervisors, and workers and include a notification requirement as part of the license. The regulations also require notification of the ODH at least 10 business days before any asbestos removal work begins.

POLICY

It is the policy of Glenn Research Center to comply with all applicable regulations regarding asbestos management and to prevent illness to employees and damage to the environment from the use, removal, and disposal of asbestos.

The policy of Glenn Research Center with regard to asbestos is to

- Restrict contact with asbestos-containing materials to only those staff that have been properly trained and properly licensed, in accordance with [Table 9-1](#).
- Provide sufficient training and communications so that this policy is effectively implemented.
- Ensure that contact with asbestos-containing materials, whether in restricted or non-restricted areas, is conducted in accordance with GRC specifications and OSHA requirements for such work.
- Ensure that any job that may involve disturbing ACM is coordinated with Environmental Management Office (EMO).
- Prohibit the new use of ACM except in applications where there is no suitable non-asbestos material.
- Ensure that existing asbestos-containing building materials are maintained, abated, isolated from routine contact by the establishment of regulated areas.
- Ensure that staff engaged in asbestos activities, who are properly trained, equipped, and medically monitored, are not continuously exposed to asbestos fibers in excess of ½ of the OSHA exposure limits, (0.05 fibers per cubic meter of air), without personal protective equipment.
- Staff who are outside of the regulated areas of asbestos activities, whether trained or not, shall not be exposed to airborne concentrations of asbestos fibers in excess of 0.01 fibers per cubic meter (f/cc).

There are five categories of asbestos activity at Glenn: three involving asbestos abatement, maintenance activities, and spill response and cleanup ([Appendix 9-A](#)); housekeeping ([Appendix 9-B](#)); and motor vehicle brake and clutch maintenance and repair activities ([Appendix 9-C](#)). Each category has special regulatory controls and work practice requirements given in the appropriate Appendices.

RESPONSIBILITIES

It is the responsibility of all civil servants, tenants and support service contractors to ensure that ACM is removed or handled only by employees who are properly trained and equipped to minimize exposure to asbestos. Specific responsibilities are listed below.

Chief, Environmental Management Office (EMO)

- Tracks ongoing asbestos abatements and oversees compliance with regulatory requirements.
- Assures through program design and implementation that the health of non-asbestos workers, and the environment, is protected from the asbestos containing materials present at the Glenn Research Center.

Environmental Compliance Team (ECT)

- Provides guidance on the requirements of Federal, State, and local environmental regulations.
- Obtains and manages center wide blanket notifications.
- Maintains a tracking system of asbestos abatement projects.
- Provides guidance and oversight on the disposal of ACM and any air, water, or soil pollution issues.
- Upon request, arranges for the temporary storage and proper disposal of asbestos-containing wastes.

Industrial Hygiene Team (IHT)

- The IHT FASS Team maintains the asbestos building surveys and the asbestos bulk sample laboratory results on a computer database, and in hard copy files.
- Maintains air monitoring and air sampling exposure data.
- Provides guidance on the requirements of Federal, state, and local occupational health regulations.
- Audits COTR and contractor performance in asbestos abatement projects.

- Evaluates employee exposure and recommends employees for inclusion in a medical surveillance program.
- Manages the Asbestos Program.
- Reviews control measures in operations involving ACM.
- Manages worker exposure issues in spills of ACM.

Chemical Management Team (CMT)

- Reviews and approves purchase requests of ACM in cases where no suitable substitute can be found. Non-asbestos containing products will be used as substitutes for asbestos containing products, whenever possible.

Occupational Medical Services

- Manages and administers a medical surveillance program for civil servant employees identified by the IHT as having been significantly exposed to ACM.

Motor Pool Supervision

- Create, maintain and update an inventory of all asbestos-containing materials used during automotive brake and clutch maintenance and repair activities, done in accordance with [Appendix B](#).
- Create and maintain a log of all brake and clutch maintenance and repair activities which require the employee to use, replace or otherwise come in contact with known or suspected asbestos containing materials, done in accordance with [Appendix B](#).

Plum Brook Management Office (PBMO)

- Ensures that Plum Brook operations comply with this chapter and develops and implements an Asbestos Maintenance Program for Plum Brook Station Operations.

Users and Facility Personnel

Project managers, facility management engineers, and facility operations personnel must

- Ensure that ACM which may be disturbed in any renovation and maintenance activities is identified in the scope of work and removed only by qualified asbestos abatement or maintenance workers, in accordance with [Appendix A](#) of this chapter.
- Ensure that survey protocols are conducted in accordance with the requirements of [Appendix D](#)

Contracting Officer's Technical Representative (COTR)

The COTR's overseeing projects involving ACM must

- Notify the ECT, in advance, of the date of each step in an asbestos abatement project for tracking and monitoring purposes.
- Identify suspect asbestos containing materials not identified in the scope of work during renovation and construction activities, arrange testing of the suspect ACM for asbestos content, and ensure its removal by a qualified asbestos abatement contractor if it contains 1% or more asbestos and may be disturbed during the project.
- Ensure that asbestos related work is performed in accordance with all applicable appendices, regulations and EMO guidance.
- Provide a copy of survey results to EMO, as specified in [Appendix D](#).
- Provide a final report to EMO detailing all ACM removed during abatement and/or repair activities, to allow EMO to update the inventory.
- Assure that building occupants and employers are properly notified in advance of, during, and following the completion of asbestos work.

- Provide the results of air samples taken during Class I, II, and III work to employers of employees in contiguous areas within 10 days, (including IHT).

Researchers

- Identify the use of ACM on safety permit applications and contact the IHT for operations involving ACM not subject to a safety permit.

Managers

- Ensure that COTR's and others in their organization with responsibility for projects involving asbestos abatement activities are accountable for compliance with this policy via performance appraisals and/or other means.
- Notify the IHT of operations involving ACM.
- Ensure that employees working with ACM receive the training specified in Table 9-1 and use the engineering and work practice controls and personal protective equipment specified for their operations.

Employees are responsible for properly using engineering and work practice controls and personal protective equipment specified for their operations.

Table 9-1 Training Requirements 1

Training (Initial with Annual Refresher)	COTR	EMO 2	Competent Person 1910.1001	Competent Person 1926.1100	Asbestos Worker 4	Air Monitoring 4	Air Monitoring 3	Custodial Staff	Other Site Employees
Specialist Evaluation	Yes	Yes	-	Yes	-	-	-	-	-
Specialist Project	Yes	Yes	Yes	Yes	-	-	-	-	-
Designer Asbestos	-		-	-	Yes	-	-	-	-
Asbestos Worker	-		-	-	-	Yes	-	-	-
Monitoring	-	-	-	-	-	Yes	-	-	-
2 hours	-	-	-	-	-	-	-	Yes (Class IV)	Brake & Clutch
8 hour	-	-	-	-	Roofing, Flooring Materials, Siding, Ceiling, Tiles, Transite panels	-	-	-	-

1. All training courses must comply with the State of Ohio Department of Health regulations and the U.S. EPA AHERA regulations.
2. Training for EMO personnel with asbestos abatement or asbestos maintenance program responsibilities.

3. Clearance air sampling and environmental monitoring can also be performed by persons with American Board of Industrial Hygiene certification as a Certified Associate Industrial Hygienist (CAIH) or a Certified Industrial Hygienist (CIH), or persons with an Ohio Department of Health (ODH) certification as an Asbestos Hazard Evaluation Specialist. Persons with ODH certification as an Asbestos Hazard Abatement Specialist may only take personal samples as required by OSHA.
4. Training for Asbestos Workers or 8 hour specialized training for abatement work involving one of the specified activities in Table 9.1, 8 hour training.

Class I Workers -

EPA Asbestos Abatement Worker Training or equivalent (32 hours), with annual refresher training (8 hours).

Class II Workers-

EPA Asbestos Abatement Worker Training or equivalent (32 hours), with 8 hours annual refresher training. The curriculum must include hands on training session applicable to the type of asbestos abatement activities the worker will be performing on the job. If the worker is to abate only one type of Class II material, (example - floor tile) the 32-hour worker training may be waived in favor of an 8-hour course. This training must include hands on session for the specific abatement activity, which the worker will perform. For each additional type of Class II material, which the worker is expected to abate, individual 8-hour training sessions are required.

Class III Workers-

EPA Operations and Maintenance Training or equivalent (16 hours), with 4 hours annual refresher training. A Competent Person (as defined by EPA and OSHA) must review the curriculum and confirm that it properly prepares the workers for their expected duties. If the course does not meet the criteria, a separate 4-hour course, which adequately covers specific methods of operation and controls for each Class II activity, is required.

Class IV Workers-

2 hours of awareness training annually.

REFERENCES

U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926.1101 and 29 CFR 1910.1001, Asbestos.

U.S. Environmental Protection Agency, 40 CFR 61.140 - 61.157, National Emission Standards for Hazardous Air Pollutants; National Emission Standards for Asbestos.

Ohio Department of Health, chapter 3701-34 Ohio Administrative Code, Asbestos Abatement Hazard Rules.

USEPA, National Emission Standards for Hazardous Air Pollutants; Amendments to Asbestos Standard; Final Rule (49FR13661; April 5, 1984).

USEPA, Toxic Substances; Asbestos Abatement Projects; Final Rule (51FR62044A; April 25, 1986).

RECORDS

The EMO and IHT maintains the following records:

- Hazard Assessments
- Asbestos Survey Records (Database & Hardcopy)
- Industrial Hygiene Monitoring Data
- Asbestos Blanket Permit Data

The Center Motor Pool maintains the following records:

- Automotive ACM Inventory
- Automotive ACM Log

APPENDIX 9-A - ASBESTOS ABATEMENT and MAINTENANCE PROGRAMS

NASA GLENN RESEARCH CENTER

CLEVELAND FACILITY

Environmental Management Office (EMO)

Introduction

The Occupational Safety and Health Administration's (OSHA) Asbestos Construction Standard requires that each facility engaging in asbestos abatement work perform that work in accordance with OSHA's requirements. This document describes the NASA GRC Asbestos Abatement and Maintenance Program. It describes the OSHA asbestos work classifications that apply to abatement and maintenance activities, the implementation of requirements for workers in restricted areas (whether performing abatement or not), and for employers and employees adjacent to restricted areas.

OSHA Asbestos Work Classifications for Abatement and Maintenance Activities

There are three OSHA categories of asbestos activity performed at Glenn that apply to abatement and maintenance activity. Below is a brief explanation of each:

1. Asbestos abatement is the removal, enclosure, or encapsulation of ACM to minimize the risk of asbestos-related illness. Abatements are classified by OSHA as Class I and Class II asbestos activities.
2. Asbestos-related maintenance tasks involving the likely or intentional disturbance of ACM meets the OSHA definition of a Class III asbestos activity. All asbestos-related maintenance activities at Glenn must be performed in accordance with this Appendix A. Asbestos-related maintenance at Plum Brook will be performed in accordance with the Plum Brook Station Asbestos Maintenance Program.
3. Asbestos spill response and cleanup is the act of responding to and cleaning up releases of ACM. This work must be performed in accordance with the spill response and cleanup procedures described in this appendix A, as well as with the requirements of an OSHA Class IV asbestos activity.

Inventory of Asbestos Containing Building Materials (ACBM)

An inventory of asbestos-containing building materials is maintained by the EMO. The inventory has been provided to each building manager, and is available on computer disks. The inventory is upgraded by reports from FED and FOD following their actions to further identify and remove asbestos-containing materials.

Handling of Asbestos-Containing Materials (ACM)

This appendix regulates asbestos exposure in all work as defined in 29 CFR 1910.12(b), including but not limited to the following:

- Demolition or salvage of structures where asbestos is present;
- Removal or encapsulation of materials containing asbestos;
- Construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain asbestos;
- Installation of products containing asbestos;

Asbestos spill/emergency cleanup; and

Transportation, disposal, storage, containment of and housekeeping activities involving asbestos or products containing asbestos, on the site or location at which construction activities are performed.

Responsibility of the NASA Responsible Person

The individual planning asbestos abatement tasks (typically, the COTR) must develop OSHA-compliant written procedures specific for the tasks and submit them to IHT for review. The Industrial Hygiene Team may be consulted for assistance in developing the procedures. The Industrial Hygiene Team shall approve the procedures prior to initiating work. IHT's review will include:

- Compliance with applicable OSHA requirements.
- The initial exposure assessment.
- Provisions for notifying affected employers of employees in adjacent areas of the asbestos related work.
- Details of control methods that will be used to minimize the release of asbestos fibers into the air and that will be used to decontaminate equipment and workers.
- Procedures for proper disposal of all ACM.

A copy of the written procedures will be maintained in the IHT along with a copy of the initial exposure assessment, and the Asbestos Abatement and Maintenance Program.

The competent person and COTR are accountable for ensuring that the work is performed in accordance with established procedures and all applicable EPA, ODH, and OSHA regulations.

If using a control method modified from OSHA requirements, ensure that a Professional Engineer or Certified Industrial Hygienist approves the control method.

EMO has developed a review checklist that may be used as guidance.

Provide copies of plans for renovation and maintenance to EMO for review, prior to conducting the activity.

The individual planning asbestos abatement tasks (typically, the COTR) must also notify ECT of all asbestos abatement activities at least 30 days in advance so that the activity may be tracked. This period is also needed to review control procedures and notify the appropriate government agencies where applicable. If the project does not permit 30-day advance notice (i.e., in an emergency) the ECT must be notified as soon as possible, but no later than the filing of the EPA/OSHA notifications. The ECT will:

- If using a control method modified from OSHA requirements for Class I work, notify OSHA in writing, on the required NESHAPS reporting form, 10 days in advance of project start-up.
- If performing Class III work for which OSHA has specified a negative pressure work practice, and for which an alternate control method is contemplated, notify OSHA, on the required NESHAPS reporting form, 10 days in advance of project start-up.

Provide information on the location and quantity of ACM/PACM present in a work area to potential bidders on construction work in the area.

Responsibility of Others

- Employers of employees adjacent to construction activities in restricted areas shall be responsible for notifying and protecting their employees under the requirements of the OSHA standard (29 CFR 1926.1101).

Notification

- The COTR shall be responsible to inform building staff and their employers of asbestos-related activities covered by this rule.

The COTR shall post warning signs at each regulated area.

Employers of employees working in and contiguous to regulated areas shall ensure that the employees comprehend the warning signs. Glenn Research Center shall assist employers by providing annual training for site employees (see Additional Information below).

Additional Information

Any questions concerning asbestos or this asbestos abatement program should be directed to EMO at 3-3770

REFERENCES

U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926.58 and 29 CFR 1910.1001, Asbestos.

U.S. Environmental Protection Agency, 40 CFR 61.140 - 61.157, National Emission Standards for Hazardous Air Pollutants; National Emission Standards for Asbestos,. Ohio Department of Health, chapter 3701-34 Ohio Administrative Code, Asbestos Abatement Hazard Rules.

APPENDIX 9-B - ASBESTOS HOUSEKEEPING PROGRAM

NASA GLENN RESEARCH CENTER

CLEVELAND FACILITY

Environmental Management Office

Introduction

The Occupational Safety and Health Administration's General Industry Asbestos Standard (29 CFR 1910.1001) places certain notification and action requirements on employers and their employees who work in areas where ACM and/or PACM is present. The applicable requirements for workers in non-restricted areas are the subject of this program.

Acting under the requirements of the regulations, selected areas in each building may be restricted. These are areas in which GRC has not determined that exposure to airborne asbestos can be maintained below applicable standards.

Housekeeping activities in areas where damaged ACM or damaged suspect ACM is present may be conducted under the procedures outlined in this Appendix B of the Glenn Asbestos Housekeeping Program. If not conducted in accordance with this Appendix B, they shall be conducted in accordance with the stricter standards of [Appendix A](#).

Inventory of Asbestos-Containing Building Materials (ACBM)

An inventory of asbestos-containing materials is maintained by the EMO. The inventory has been provided to each building manager, and is available from EMO. The inventory is upgraded by reports from FTED and the EMO FASS Team following their actions to further identify and remove asbestos-containing materials.

Housekeeping of Asbestos-Containing Materials (ACM)

Reporting and Management of Asbestos Spills

Asbestos spill prevention is key to preventing unnecessary employee exposure to asbestos. There are two primary strategies for effective spill prevention: periodic inspection of ACM with prompt repair of any ACM in a deteriorated condition and careful planning to prevent damage to ACM.

An inspection of the condition of suspect ACM should be included in an organization's periodic safety inspections. Anyone seeing deteriorated suspect ACM should report the damage. Housekeeping staff is especially encouraged to report such deterioration.

Anyone seeing spilled material from deteriorated suspect material should immediately leave the area, close any doors to prevent others from entering the area and dial 911 to report the spill. Please tell the person answering your call that you are reporting an asbestos spill, give the location of the spill, and your name and telephone number. Areas involved in an asbestos spill will be barricaded and isolated by the spill responders in accordance with the Glenn Safety Manual to prevent employee exposure and the spread of asbestos contamination to other areas. The spill will then be cleaned up in accordance with applicable standards. Do not enter a barricaded area!

These barricaded areas are restricted areas, as defined by OSHA. If essential work must be done inside a barricaded area, contact EMO at 3-3770 so that procedures can be implemented to ensure the work is done safely.

Asbestos Spill Cleanup and Disposal

Any spill response work proposed to be done by support service contractor, outside contractor, NASA employees, or any other group or organization must be approved by EMO.

The individual planning spill cleanup tasks (typically, the COTR) must develop OSHA-compliant specific written procedures for the tasks and submit them to IHT for review. The IHT may be consulted for assistance in developing the procedures. The IHT shall approve the procedures prior to initiating work. IHT's review will include:

- Compliance with applicable EPA, ODH, and OSHA requirements.
- The initial exposure assessment. IHT requires an initial exposure assessment be completed and submitted for work practice and control approval before the activity starts.
- Provisions for notifying affected employers of employees of the asbestos related work.
- Details of control methods that will be used to minimize the release of asbestos fibers into the air and that will be used to decontaminate equipment and workers.
- Procedures for proper disposal of all ACM.

A copy of the written procedures will be maintained by the IHT.

The competent person and COTR are accountable for ensuring that the work is performed in accordance with established procedures and all applicable EPA, ODH, and OSHA regulations.

EMO has developed a review checklist that is available for preparation guidance.

Only adequately trained personnel will perform spill response tasks. An individual meeting the competent person requirements of the OSHA Asbestos Standard must supervise the work. Workers must be provided training, exposure monitoring, respiratory protection, and medical surveillance programs that meet OSHA Asbestos Construction Standard requirements.

While the EMO will provide oversight, the competent person and COTR are accountable for ensuring that the work is performed in accordance with established procedures and OSHA standards.

Housekeeping in Areas with Asbestos-Containing Spills

By definition, dust and debris in areas that have damaged materials that are OSHA-presumed asbestos must be treated as asbestos containing. For this reason, areas with significant damage have been made inaccessible.

Accessible areas that have been and are routinely maintained present an opportunity for management by housekeeping staff that have received two to four hours of specialized training, and who have appropriate equipment. Specifically, EMO has determined that:

- Housekeeping in areas where no damage is present is not an asbestos-related task.
- Housekeeping in areas with damaged ACM or PACM shall not be allowed. Housekeeping staff shall report the damage and cease housekeeping in the area until the damage is assessed, repaired, and cleaned up, or until the material is determined to be asbestos free.

Care of Asbestos-Containing Flooring Material

- Sanding of asbestos-containing floor material is prohibited.
- Stripping of finishes shall be conducted using low abrasion pads at speeds lower than 300 rpm and wet methods.
- Burnishing or dry buffing may be performed only on asbestos-containing flooring that has sufficient finish so that the pad cannot contact the asbestos-containing material.
- Waste and debris and accompanying dust in areas containing accessible asbestos-containing material and/or presumed asbestos-containing material, shall not be dusted or swept dry, or vacuumed without using a HEPA filter. Housekeeping staff shall report the waste, debris, and accompanying dust to EMO and cease housekeeping in the area until the damage can be assessed, repaired, and cleaned up or until the material is determined to be asbestos free.

Notification

- Building managers shall inform building staff and their employers, and COTR's shall notify housekeeping staff and their employers, of the presence and location of ACM and PACM. The EMO shall provide the inventory (see Housekeeping in Areas with Asbestos-Containing Spills).
- Building managers shall post warning signs at each regulated area. EMO shall provide such signs for posting.
- Employers of employees working in and contiguous to regulated areas shall ensure that the employees comprehend the warning signs.

Additional Information

Any questions concerning asbestos or this asbestos maintenance program should be directed to the Environmental Management Office, at 3-3770.

APPENDIX 9-C - ASBESTOS BRAKE AND CLUTCH REPAIR PROGRAMS

NASA GLENN RESEARCH CENTER

CLEVELAND FACILITY

Environmental Management Office

Introduction

The Occupational Safety and Health Administration's General Industry Asbestos Standard mandates specific preferred or equivalent work practices and engineering control methods which must be implemented during automotive brake and clutch activities where employees may be exposed to elevated levels of airborne asbestos fibers.

While the continued use of asbestos in brake pads and linings has been reduced over the last decade there are still circumstances where no adequate substitute is available. Therefore, during automotive maintenance and repair work on brake and clutch systems exposure to airborne asbestos is still possible.

Policy

This Appendix C of this Chapter 9, details work practices and control methods, which must be implemented by automotive maintenance and repair management, and staff to protect against an eight-hour time weighted average personal exposures to airborne asbestos in excess of 0.05 fibers/cubic centimeter of air.

Inventory of Asbestos Containing Automotive Maintenance and Repair Materials

This inventory of all asbestos containing materials, as specified in Chapter 9 under Motor pool supervision responsibilities, must be updated when, new materials are received or identified which contain asbestos, parts in which asbestos content has been eliminated, or when the use of a asbestos containing part has been discontinued. For assistance in obtaining information about a products asbestos content contact the Chemical Management Team (CMT) at 3-8689 or the IHT at 3-3770.

The log of brake and clutch maintenance and repair activities, as specified in Chapter 9 under Motor pool supervision responsibilities, will be used to determine the required asbestos control methods which will be employed for these activities (see Control Method for Brake and Clutch Activities). If asbestos content in any suspect part cannot be positively confirmed it must be assumed to be present until a through evaluation is completed. In cases where the presence of asbestos in parts cannot be assured, control methods as specified in Control Method for Brake and Clutch Activities must be followed.

Control Method for Brake and Clutch Activities

For facilities that can prove, through documented repair and maintenance records, that there are never more than five pairs of brakes or five clutches which are inspected, disassembled, reassembled and/or repaired per week, a Wet Method control procedure as specified by OSHA is acceptable. Requirements are:

1. A spray bottle, hose nozzle, or other implement capable of delivering a fine mist of water or amended water or other delivery system capable of delivering water at low pressure, shall be used to first thoroughly wet the brake and clutch parts. Brake and clutch components shall be wiped clean with a cloth.
2. The cloth shall be placed in an impermeable container and properly marked or labeled as asbestos containing waste. After this is accomplished, notify the Waste Management Team (WMT) at 3-5109 for proper disposal.
3. If a vacuum is to be used during this operation it must be equipped with HEPA filters. The filters, when full, shall be first wetted with a fine mist of water, then removed and placed immediately in an impermeable container. The container must be properly marked or labeled as an asbestos containing waste and WMT must be notified for proper disposal, at 3-5109.
4. Any spills of aqueous solutions or any asbestos containing waste mater shall be cleaned up immediately and put in a properly labeled container. After this is accomplished, notify WMT at 3-5109 for proper disposal.
5. The use of dry brushing during the wet method operations is prohibited.
6. The use of compressed air to clean dust and debris from surfaces during brake and clutch repair is prohibited.
7. Before attempts are made to dislodge a frozen brake drum, the drum must be thoroughly wetted.

For shops which perform more than five brake or clutch repair or maintenance activities per week, OSHA specifies, and GRC adopts, a Low Pressure/Wet Cleaning Method" to control airborne levels of asbestos during automotive brake and clutch repair and maintenance activities. Requirements for this type of control method includes:

1. A catch basin must be placed under the brake assembly, positioned to avoid splashes and spills.
2. The reservoir shall contain water containing a wetting agent. The flow of liquid shall be controlled such that the brake assembly is gently flooded to prevent the asbestos containing brake dust from becoming airborne.
3. The aqueous solution shall be allowed to flow between the brake drum and brake support before the drum is removed.
4. After removing the brake drum, the wheel hub and back of the brake assembly shall be thoroughly wetted to suppress dust.
5. The brake support plate, brake shoes and brake components used to attach the brake plate shall be thoroughly washed before removing the old shoes.

6. If a vacuum is to be used during this operation it must be equipped with HEPA filters. The filters, when full, shall be first wetted with a fine mist of water, then removed and placed immediately in an impermeable container.
7. The container must be properly marked or labeled as an asbestos containing waste and WMT must be notified for proper disposal, at 3-5109.
8. Any spill of aqueous solutions or any asbestos containing waste material shall be cleaned up immediately and put in a properly labeled impermeable container. After this is accomplished, notify WMT at 3-5109 for proper disposal.
9. The use of dry brushing during low pressure/wet cleaning operations is prohibited.
10. The use of compressed air to clean dust from surfaces during brake and clutch repair is prohibited.
11. Before attempts are made to dislodge a frozen brake drum, the drum must be thoroughly wetted.

Training

All persons who may be required to handle asbestos containing materials will receive initial training as required by OSHA and EPA regulations. See the section on Training and licensing requirements in this chapter.

Additional Information

Any questions concerning asbestos or this asbestos maintenance program should be directed to the IHT, at 3-3770.

APPENDIX 9-D - ASBESTOS RECORDS PROGRAM

NASA GLENN RESEARCH CENTER

CLEVELAND FACILITY

Environmental Management Office

Introduction

The Occupational Safety and Health Administration's Asbestos Standards require NASA to know the presence, extent, and condition of asbestos containing materials in the workplace. Significant efforts have gone into developing an inventory of asbestos containing building materials. This document describes the steps to be taken to maintain a coordinated asbestos inventory.

Inventory of Asbestos-Containing Building Materials (ACBM)

An inventory of asbestos-containing materials is being developed and maintained by EMO. The inventory is located on the Facilities Asbestos Survey Software (FASS) and currently 80 buildings on the lab have been surveyed. In addition, a web site has been developed that will provide employees with access to information from the FASS regarding the location of ACM in their offices/work areas. The inventory is updated by EMO using reports from FTED that identify where ACM has been removed.

Bulk Sampling Requirements

The existing inventory of bulk samples, air samples, and building materials is maintained by IHT, and will be made available on hard copy and electronically. Maintenance of the inventory requires cooperation and support by everyone who samples and/or abates asbestos-containing materials.

In support of this need, those conducting sampling are required to consult the inventory prior to sampling, to ascertain the known condition of the homogeneous area(s) to be sampled, and the extent of the homogeneous areas, in order to plan a sampling program that is cost effective for attainment of long-term goals.

- All bulk-sampling results of building materials collected for analysis of asbestos shall be reported to EMO on the attached form.

- Samples collected to document a negative finding of asbestos shall, at a minimum, include three samples of randomly selected locations of the homogenous area. The bulk sample submittal shall note the homogeneous area, sample location, analysis method and results.
- Sample locations shall be marked, photographed, and the materials tagged, as Asbestos should the results show a positive finding in at least one sample.
- A NVLAP accredited laboratory must do all analysis.

Approval of Asbestos Sampling Plan

Before the commencement of any remediation or abatement activities, the COTR shall submit a copy of the contractor's asbestos sampling plan, (bulk and air) for approval by EMO/IHT.

Coordination of Abatement Results

The COTR of any abatement activity shall forward a copy of the final abatement report to EMO/IHT. This report will document the location and extent of abatement work. The report shall be sufficiently detailed to allow update of the asbestos inventory.

Safety and Assurance Directorate ([SAAD](#))

Environmental Management Office Chief: Michael Blotzer

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Asbestos Program

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