

**OPERATIONS AND MAINTENANCE
PROGRAM MANUAL**

A GUIDANCE DOCUMENT FOR MANAGING ASBESTOS

AT

**THE ANN ARBOR
HOUSING COMMISSION**

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OVERVIEW OF THE OPERATIONS AND MAINTENANCE PROGRAM

This is the Operations and Maintenance Program Manual for:

THE ANN ARBOR HOUSING COMMISSION

The Operations and Maintenance Program (commonly referred to as an O & M Program) is a set of work practices and procedures designed to minimize or eliminate the exposure of building occupants to asbestos fibers. It is not presently feasible for **ANN ARBOR HOUSING COMMISSION** to remove all of the asbestos-containing materials (ACM) from our housing units. However, it is feasible to implement an O & M Program to maintain and manage the existing ACMs. It is **ANN ARBOR HOUSING COMMISSION'S** long-term plan to ultimately remove the vast majority of friable ACMs from our facilities. Until this goal can be attained, the O & M Program will be used to provide the maximum feasible level of protection to the public, tenants and workers in our buildings.

This O & M Program is a working document, with procedures and guidelines that may need to be revised or changed. As a result, the **ANN ARBOR HOUSING COMMISSION** reserves the right to make any revisions or changes to this document at any time, as deemed necessary.

A. Environmental Protection Agency Goals

The Environmental Protection Agency (EPA) has established two basic O & M Program goals as defined in EPA reference guides and training manuals. These goals are:

1. Clean up pre-existing asbestos contamination, which has occurred from past work, accidents and daily activities. This is accomplished through detailed initial cleaning procedures identified in Section I, Part 5 of this O & M Program Manual.
2. Maintain asbestos materials that remain in buildings in good condition. This is accomplished through detailed work and emergency practices identified in Section II, Parts 1 and 2 of this O & M Program Manual.

B. Occupational Safety and Health Administration (OSHA) Goals

The primary goals of the Occupational Safety and Health Administration (OSHA) are to:

1. Ensure the protection of employees from unintentional exposure to asbestos containing materials (ACM).
2. Ensure that employees who must disturb ACM are trained and protected pursuant to existing regulatory standards.

This O & M Program Manual has established procedures that attempt to meet and in certain cases exceed the EPA and OSHA goals outlined above.

C. Description of the O & M Program Manual

This O & M Program Manual is divided into Section I and Section II. Section I has 5 parts and Section II has 2 parts, as outlined in the table of contents. Both sections have summaries explaining their use, and the summaries should be consulted for a general overview of each section. While the summaries will aid in a clear understanding of each section, the manual should be read and used in its entirety for the Asbestos Program to function properly. This O & M Program Manual is divided and used as follows:

1. **Section I** covers administrative procedures that must be conducted in order for the O & M Program to function properly. Before any in-house O & M activities commence in this facility, all procedures located in Section I (excluding part 5, d & e) should be completed and/or placed into operation. Key personnel involved with the O & M Program are identified with a brief description of their responsibilities. This section serves as a type of checklist for at least minimal compliance with federal regulatory requirements.
2. **Section II** covers work practices for asbestos-containing materials. This section is the day-to-day functioning part of the O & M Program and provides step-by-step procedures for dealing with the various asbestos-containing materials, focusing on the asbestos drywall joint compound materials.

Refer to each Section as needed. Both sections are, however, extremely interrelated and should be continuously and simultaneously used. As mentioned above, each section has a summary detailing its contents and use. The summaries should be thoroughly read for a clear understanding of this O & M Program Manual. It is also important to note that if you are involved with any aspect of the O & M Program, it is essential that you read and understand the entire contents of this manual.

SECTION I

Administrative Procedures

Section I

Summary

The Federal OSHA Asbestos Standards (29CFR Part 1910 and 1926.1101) identify a wide range of employer responsibilities including, but not limited to, notification procedures, training requirements, personal protection procedures and labeling to name a few.

In order to properly implement this Operation and Maintenance (O & M) Program there are a number of administrative steps that need to be taken. These steps are delineated into five (5) distinctive parts within this section.

This section is divided into five (5) parts; all parts need to be diligently implemented for an effective O & M Program.

Part 1 - Part 1 details general administrative responsibilities and recordkeeping.

Part 2 - Part 2 details the methods in which employees are notified of asbestos related issues.

Part 3 - Part 3 details the training requirements for employees and outside contractors.

Part 4 - Part 4 details the employee protection pursuant to applicable OSHA regulations.

Part 5 - Part 5 details the procedures for surveillance and housekeeping activities within this facility.

Section I
Part 1

General Administrative Responsibilities
and
Recordkeeping

A. Administrative Responsibilities

The **Maintenance Manager** is responsible for ensuring that all asbestos-related activities are carried out in accordance with applicable with Federal, State and Local Regulations and ordinances. The following is a brief summary of a partial list of regulations that must be complied with.

Federal Regulations

EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) 40CFR Part 61

The NESHAP Regulation is a federal standard affecting all public and commercial buildings. The primary components of the law address demolition, renovation and governmental agency notification when amounts greater than 160 square feet, 260 linear feet or 35 cubic feet of friable ACM are impacted or disturbed. The standard also addresses ACM waste disposal information and procedures.

Occupational Safety and Health Administration (OSHA) General Industry & Construction

The OSHA asbestos standards are primarily focused on employee protection and training. The law addresses multi-employer worksites, regulated areas, exposure assessments/monitoring, methods of compliance, employee protection, communication of hazards, housekeeping and medical surveillance. Generally, the OSHA Construction Standard is designed to ensure that all employees who may disturb ACM are properly trained in appropriate procedures and equipped to protect themselves and other building occupants from possible asbestos exposure.

Michigan State Regulations

Public Act 135 of 1986

This State law provides for the licensing of asbestos abatement contractors. This regulation also includes air clearance samples at the completion of friable asbestos abatement projects.

Public Act 440 of 1988

This State law provides for the accreditation of certain asbestos related disciplines, such as, Inspectors, Management Planners, Project Designers, Abatement Workers and Contractor/Supervisors (Competent Person).

Rule 6601

This rule requires employers to instruct each employee in the recognition and avoidance of unsafe conditions, and the regulations applicable to his/her work environment to control or eliminate any hazards or other exposure to illness or injury. Asbestos would be one such hazard.

If you are interested in receiving copies of these laws or need clarification, contact the relevant agencies listed below:

| | |
|--------------------------|---|
| EPA NESHAP | Michigan Department of Environmental Quality (517) 373-7064 |
| EPA AHERA | EPA Region V (312) 353-9062 |
| OSHA/Michigan State Laws | Michigan Department of Licensing & Regulatory Affairs (517) 322-1320 |

The first step in implementing an O & M Program is to know what is and is not asbestos-containing material in the building(s). According to OSHA, you must assume all surfacing material, floor material and thermal system insulation in buildings constructed prior to 1980 to be asbestos-containing. Therefore, it is required to treat these materials as asbestos until samples of the materials are collected and analyzed pursuant to 1926.1101(k)(ii)(B).

Many of the **ANN ARBOR HOUSING COMMISSION** buildings have had full asbestos inspections performed. A summary of each **ANN ARBOR HOUSING COMMISSION** asbestos inspection that has been performed is located in Section III.

The second step in implementing an effective O & M Program is to designate an individual to ensure that the procedures stated in this manual are properly conducted and that the recordkeeping procedures are performed. This person will here in after be referred to as the Asbestos Administrator.

Name of Asbestos Administrator: **Mr. Lance Mitchell**
Department: **Building Maintenance**
Title: **Maintenance Manager**
Phone Number: **(734) 474-6789**

It is expected that the Asbestos Administrator become properly trained to perform the expected duties. The Asbestos Administrator shall be trained and accredited as a Contractor & Supervisor in accordance with Michigan Public Act 440 of 1988.

Section I
Part 1

B. Recordkeeping

There is extensive recordkeeping mandated by the OSHA regulation and accepted industry practices. The recordkeeping provides the basis for ensuring documented compliance with the regulation. It is vital that the recordkeeping be completed accurately and submitted in an organized manner so as to track all Class I, II and III Work.

The Asbestos Administrator will be responsible for maintaining all relevant records in an O & M Program File.

The following is a list and brief description of Recordkeeping Forms located in Appendix B of the O & M Program Manual. The Asbestos Administrator may use comparable or equivalent forms.

- Form D – 1** Class IV Asbestos Work - Miscellaneous OSHA and EPA Recordkeeping
This form is to be completed when Class IV work activities are conducted.
- Form D – 2** Class I, II and III Asbestos Work - Miscellaneous OSHA and EPA Recordkeeping
This form is to be completed each time Class I through III work activities are conducted.
- Form D – 3** Employer/Employee/Tenant Notification
This form is to be completed in order to document applicable asbestos notification.
- Form D – 4** Contractor Certification of Asbestos-Free Product Installation
This form is to be completed by outside Contractors who are installing building materials, certifying that the products being installed are non-ACM.
- Form D – 5** Proof of Asbestos Awareness Training
This form is to be completed, documenting that all custodial/maintenance employees who may contact ACM are trained in 2-Hour Asbestos Awareness.
- Form D – 6** Proof of Generic Material Training
This form is to be completed, documenting that employees conducting Class II work are trained 8 hours in that generic type of material.
- Form D – 7** Proof of O & M Training
This form is to be completed, documenting that employees who may disturb asbestos in small amounts are trained in 16 hours O & M.
- Form D – 8** Warning Label Installation
This form is to be completed in order to document warning label installation pursuant to OSHA.
- Form D – 9** Contractor Supervisor Training Program, 40-Hour Course (Class I & II Work)
Sample Form to provide a listing of the personal that have attended the Contractor Supervisor Training Program and have obtained State Accreditation.
- Form D – 10** Warning Label Installation
Sample of required label information.

Section I
Part 2

Notification Procedures

A. Employee Notification

All employees who work at the **ANN ARBOR HOUSING COMMISSION** must be notified of the presence, location and quantity of ACM/PACM within our buildings. Notification either shall be in writing or shall consist of a personal communication between the **ANN ARBOR HOUSING COMMISSION** and the employee. (See Notification Form D-3).

B. Tenant Notification

All tenants within **ANN ARBOR HOUSING COMMISSION** buildings shall be notified of the presence, location and quantity of ACM/PACM within their building and the unit that they have leased. The notification will be provided either through periodic asbestos informational seminars and presentations provided to tenants or an asbestos disclosure notice that will be provided to tenants upon leasing a unit (see Notification Form D-3).

C. Contractor Notification

All contractors who will work at the **ANN ARBOR HOUSING COMMISSION** must be notified of the presence, location and quantity of ACM/PACM within the facility, specifically those materials located within the areas where they will be working. The Contractor will be required to sign a document stating that he/she has been notified. The Contractors will have the opportunity to meet with the Asbestos Administrator to discuss how their scope-of-work may impact ACM. The Notification Form D-3, located in Appendix B, must be completed by each Contractor prior to working within the **ANN ARBOR HOUSING COMMISSION** buildings.

All products or types of products, being installed or brought into our buildings shall not contain asbestos-containing materials without prior written approval of the Asbestos Administrator. Whenever materials are used, installed, or in any way becomes a building fixture, component and/or new entity, the contractor shall sign a document stating that these materials and/or products are asbestos-free. The Contractor Certification of Asbestos-Free Product Installation, Form D-4, located in Appendix B, must be completed by each contractor prior to installing products into the **ANN ARBOR HOUSING COMMISSION** buildings.

In both of the above cases, the Asbestos Administrator will notify the contractors about these requirements and include the documentation forms within the O & M Program File.

Section I
Part 3

Training Procedures

All **ANN ARBOR HOUSING COMMISSION** staff or outside contractor staff that receive initial asbestos training must also receive annual refresher training in accordance with the OSHA Asbestos General Industry and Construction Standards.

A. 2-Hour Asbestos Awareness Training (Class IV)

The OSHA regulation requires all maintenance and/or custodial staff who may contact asbestos-containing materials to receive at least two hours of asbestos awareness training.

All maintenance and/or custodial staff who work at the **ANN ARBOR HOUSING COMMISSION** must have the 2-Hour Asbestos Awareness Course and receive proof of this training. The documentation must be kept available for reference upon request.

All new or temporary maintenance and/or custodial staff who are employed by the **ANN ARBOR HOUSING COMMISSION** will be trained within 60 days after commencement of employment. If an employee is transferred from one of the buildings to another and has not had the required training, the training will be completed within the same time parameters.

The Asbestos Administrator will complete the Proof of Asbestos Awareness Training, Form D-5, Located in Appendix B, for inclusion in the O & M Program File.

B. 16-Hour Operations and Maintenance Training (Class III)

The OSHA regulation requires all maintenance and/or custodial staff who conduct activities that may result in the disturbance of asbestos-containing materials receive, at a minimum, sixteen hours of asbestos training (the above-referenced 2-hour course plus an additional fourteen hours of training).

All maintenance and/or custodial staff who, in any way, may disturb asbestos-containing materials will receive this training. At this time, it is expected that all disturbance to ACM within the **ANN ARBOR HOUSING COMMISSION** buildings, including disturbances to the ACM joint compound, will be performed by qualified outside contractors.

If in-house staff do participate in the Class III Training Program, the Asbestos Administrator will complete the Proof of Operations and Maintenance Training, Form D-7, located in Appendix B, for inclusion in the O & M Program File.

C. Contractor & Supervisor Training

Although it is the present position of the **ANN ARBOR HOUSING COMMISSION** that none of our in-house staff will disturb ACM, it has been determined that certain maintenance staff will receive the highest level of abatement training, the 40 hour Contractor & Supervisor training. This will provide in-house expertise and knowledge on the asbestos regulatory standards and provide a high level of quality control on outside contractor activities.

The Asbestos Administrator will complete the Contractor & Supervisor Training, Form D-9, located in Appendix B, for inclusion in the O & M Program File.

Section I
Part 4

Employee Protection Program

A. Respirator Program

The Occupational Safety and Health Administration (OSHA) Asbestos Standard states that:

"Where respiratory protection is used, the employer shall institute a respirator program in accordance with 29, CFR 1910.134 (b), (d), (e), and (f)." OSHA, 29 CFR, 1926.1101 (h)(3)(i)

ANN ARBOR HOUSING COMMISSION has a respirator program to be used by its employees if they are either involved with an asbestos abatement project or are on-site to monitor asbestos abatement activities. This may necessitate the use of respiratory protection. The respirator program is located in Appendix A. Respirator Program documentation forms are included within the Respirator Program.

B. Medical Surveillance

The OSHA Asbestos Standard states that:

"The employer shall institute a medical surveillance program for all employees who for a combined total of 30 or more days per year are engaged in Class I, II and III work or are exposed at or above the Permissible Exposure Limit." OSHA, 29 CFR, 1926.1101 (m)(1)(i)

ANN ARBOR HOUSING COMMISSION will provide medical surveillance for those employees who will be monitoring asbestos abatement work within our buildings.

ANN ARBOR HOUSING COMMISSION shall establish at least one of the following procedures to provide necessary precautions for employees and ensure compliance with applicable regulations.

If medical surveillance is provided, then the medical examination forms located in Appendix C must be completed. These forms are:

- a. Medical/Safety Summary Form. This form will provide the examining doctor with a description of the employees job duties and provide **ANN ARBOR HOUSING COMMISSION** with documentation of the examination.
- b. Initial and Periodic Medical Questionnaires. These forms are required by the OSHA Asbestos Standard to be completed by the employee and provided to the examining doctor.

C. Exposure Monitoring

The OSHA Asbestos Standard requires employers to perform exposure monitoring to determine the concentrations of asbestos to which their employees may be exposed.

This exposure monitoring must be conducted on employees who perform Class I, II or III asbestos work.

ANN ARBOR HOUSING COMMISSION will perform initial monitoring of employees who may be exposed to asbestos-containing materials. This monitoring will be repeated for each type of asbestos-related activity, when applicable, until the Asbestos Administrator can demonstrate, by means of objective or historical data, that a specific activity cannot release airborne concentrations of asbestos exceeding the Permissible Exposure Level (0.1 f/cc). The Asbestos Administrator will ensure that exposure monitoring will be conducted in accordance with OSHA, 29 CFR, 1926.1101.

Section I
Part 5

Asbestos-Containing Materials
Surveillance

A. Labeling

Warning labels will be attached immediately adjacent to any friable and nonfriable asbestos-containing building materials and presumed ACM located in routine maintenance areas (such as boiler rooms). This labeling is designed to alert the building occupants to the locations of asbestos-containing materials and the need to avoid such materials unless properly trained and equipped to impact such materials.

The Asbestos Administrator shall make sure that these warning labels are readily visible and that they remain posted until the labeled asbestos-containing material is removed.

The warning label shall read: Danger Contains Asbestos Fibers. Avoid Creating Dust. Cancer and Lung Disease Hazard.

Following the application of these labels, the Warning Label Installation, Form D-10, located in Appendix B, shall be completed. Whether the labels are attached by in-house staff or by an outside contractor, the Asbestos Administrator will have the applicable personnel complete this form and include it in the O & M Program File.

B. Housekeeping

Pursuant to OSHA, all vacuums used on asbestos or suspected ACM must be equipped with a High Efficiency Particulate Air (HEPA) Filter. The vacuum shall be used and emptied in a manner that minimizes the re-entry of asbestos into the workplace.

C. Waste Disposal

Asbestos waste, scrap, debris, bags, containers, equipment and contaminated clothing consigned for disposal shall be collected and disposed of in sealed, labeled impermeable bags or other closed labeled impermeable containers, except during certain roofing operations.

D. Care of Asbestos-Containing Flooring Materials

All asbestos-containing vinyl and asphalt flooring material must be maintained in the following manner:

- Sanding of the flooring material is prohibited
- Stripping of finishes shall be conducted using low abrasion pads at speeds lower than 300 rpm and utilizing wet methods
- Burnishing or dry buffing may be performed only on flooring that has sufficient finish so that the pad cannot contact the flooring material.

SECTION II

Work Practices

Section II

Summary

Many different activities can disturb asbestos-containing materials and raise levels of airborne asbestos fibers. These activities may be accidental, creating a minor or major fiber release episode, or these activities may be intentional, in order to perform a Class I, II or III work. In either case, **ANN ARBOR HOUSING COMMISSION** employees involved in these situations must know the proper procedures for handling asbestos-containing materials.

This section is divided into two parts; the first part is important definitions and instructions pertaining to work on asbestos-containing materials and emergency practices. The second part outlines Class III work (work practices) for specific asbestos-containing materials.

Part 1

Part 1 defines and provides instructions for Training, Major Fiber Release Episodes, Minor Fiber Release Episodes, Class III work, Class I and II work, and Unexpected Exposures.

Part 2

Although a number of components within the **ANN ARBOR HOUSING COMMISSION** buildings have tested positive for asbestos, the drywall joint compound located on the wall and ceiling systems within many of our buildings needs particular attention due to the fact that it is located throughout the applicable units and can affect a wide variety of even minor maintenance activities such as hanging a picture.

It is important to understand that the drywall joint compound is in a non-friable state. Friability refers to the ability of the material to crumble or pulverize under hand pressure when dry. As a result of its non-friable or intact state, it does not pose a concern to the building occupants or tenants, as long as it is left undisturbed. The drywall joint compound is addressed in the same fashion that all ACM is within the **ANN ARBOR HOUSING COMMISSION** buildings:

- ***Tenants are not allowed to disturb the asbestos drywall joint compound or any asbestos within ANN ARBOR HOUSING COMMISSION buildings;***
- ***Only properly trained in-house staff or outside contractors will be allowed to disturb any asbestos within ANN ARBOR HOUSING COMMISSION buildings, including the drywall joint compound.***

Part 2 provides the specific procedures that the **ANN ARBOR HOUSING COMMISSION** has adopted in addressing the asbestos drywall joint compound.

Section II
Part 1

Work Practices
Definitions & Instructions

Section II

Part 1

Types of Asbestos Work

The OSHA Asbestos Construction Standard (29CFR Part 1926.1101) identifies four distinct types of asbestos work and corresponding training required for each class of work. The following are the four classes of asbestos work and the training required for each. Do Not Disturb Asbestos without the Proper Training and Equipment.

Class I Asbestos Work - 32 Hour Asbestos Abatement Worker Training

Defined as activities involving the removal of thermal system insulation (TSI) and surfacing ACM.

Class II Asbestos Work - 32 Hour Asbestos Abatement Worker Training or 8 Hours of Training in One Generic Category of Work (such as flooring material)

Defined as activities involving the removal of ACM that is not TSI or surfacing material. This includes, but is not limited to, the removal of asbestos containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III Asbestos Work - 16 Hour O&M Training

Defined as repair and maintenance operations where ACM including TSI and surfacing ACM may be disturbed. (Disturbance must be limited to that which can be contained in a single 60"x 60" waste bag.

Class IV Asbestos Work - 2 Hour Asbestos Awareness Training

Defined as maintenance and custodial activities during which employees contact but do not disturb ACM and activities to clean up dust, waste and debris resulting from Class I, II, III and IV work activities.

Class I & II Asbestos Supervisors – 40 Hour Asbestos Contractor & Supervisor Training

This training provides the ability of not only conducting asbestos abatement but also meets the requirements of Competent Persons under the OSHA Asbestos Construction Standard.

Note: Annual refresher training is required for all classes of asbestos work.

Required Methods of Compliance

OSHA requires that the following three Methods for Compliance be used on **ALL** asbestos disturbances regardless of levels of airborne exposure:

1. HEPA Vacuums
2. Wet Methods
3. Prompt clean up and disposal of waste and debris

Air Sampling:

Depending on the Class of work being conducted and who is performing asbestos disturbance, air sampling, including but not limited to, personal, baseline, background, contiguous and clearance sampling and analysis may be performed. **ANN ARBOR HOUSING COMMISSION** will ensure that, at a minimum, air sampling will be performed in accordance with applicable regulatory standards including the OSHA Asbestos Construction Standard and Michigan Public Act 135 of 1986.

MAJOR FIBER RELEASE EPISODE

A MAJOR FIBER RELEASE EPISODE IS THE FALLING OR DISLODGING OF ASBESTOS CONTAINING MATERIAL IN EXCESS OF AN AMOUNT WHICH CAN BE FIT INTO A 60" X 60" BAG. IF A MAJOR FIBER RELEASE EPISODE OCCURS, FOLLOW THE PROCEDURES LISTED BELOW:

Training needed for Isolation: Minimum of Class III 16 hours O & M Training.

Equipment Needed:

Disposable coveralls (including booties and hood), disposable gloves, assigned respirator, warning signs, duct tape, and polyethylene sheeting.

Step-by-Step Procedures:

1. Restrict entry into the area and post signs to prevent entry into the area. The signs must be posted at all possible entrances to the area.
2. Shut off or temporarily modify the air handling system to prevent the distribution of fibers to other areas in the building. Cover all vents with polyethylene sheeting where necessary. If entry into the area is required, protective clothing and respirators must be worn.
3. Contact the Asbestos Administrator and inform him/her of the fiber release episode and what procedures have been taken. *

***DO NOT PROCEED ANY FURTHER!** A response action for any major fiber release episode must be designed and conducted by accredited personal (Asbestos Abatement Contractor).

Following clean-up of the major fiber release episode the Asbestos Administrator will complete the Miscellaneous OSHA and EPA Recordkeeping Form D-2, located in Appendix B, to be included in the O & M Program File.

MINOR FIBER RELEASE EPISODE

A MINOR FIBER RELEASE EPISODE IS THE FALLING OR DISLODGING OF ASBESTOS CONTAINING MATERIAL AN AMOUNT WHICH CAN BE FIT INTO A 60" X 60" BAG. IF A MINOR FIBER RELEASE EPISODE OCCURS, COMPLETE THE PROCEDURES LISTED BELOW:

Training needed: Minimum of Class III 16 hours O & M Training.

Equipment Needed:

Disposable coveralls (including booties and hood), disposable gloves, assigned respirator, warning signs, duct tape, polyethylene sheeting, asbestos disposal bags, HEPA vacuum, airless water sprayer, cleaning rags/mops, (glove bag for pipe insulation fiber release, mini-enclosure and repair equipment, if applicable).

Step-by-Step Procedures:

1. Post signs to prevent entry by unauthorized personnel. Signs must be posted at all possible entrances to the area.
2. Shut off or temporarily modify the air handling system and restrict other sources of air movement. Cover all vents with polyethylene sheeting where necessary.
3. Put on personal protective equipment including assigned respirator.
4. All gross visible debris shall be wetted and carefully disposed of in asbestos disposal bags.
5. Any small amount of asbestos that needs to be removed due to the fiber release episode shall be conducted at this time. Pipe insulation shall be removed using appropriate methods, e.g., glove bag or mini-enclosure. If asbestos-containing materials need repairs due to the fiber release episode, then this shall also be conducted at this time.
6. All horizontal and any vertical surfaces that may have been contaminated from the fiber release episode shall be wet-wiped and/or HEPA vacuumed.
7. All fixtures that may have been contaminated from the fiber release episode shall be wet-wiped and/or HEPA vacuumed.
8. Any additional cleaning shall consist of vacuuming with a HEPA equipped vacuum cleaner and wet-wiping where necessary. All rags, towels, mop heads, or other items used to wet-wipe surfaces shall be disposed of as asbestos waste.
9. Complete the Miscellaneous OSHA and EPA Recordkeeping Form D-2, located in Appendix B, and turn it into the Asbestos Administrator for inclusion into the O & M Program File.

CLASS III WORK ACTIVITIES

REPAIR AND MAINTENANCE OPERATIONS WHERE ACM, INCLUDING THERMAL SYSTEM INSULATION AND SURFACING MAY BE DISTURBED. (THOSE THAT CAN FIT INTO A 60" X 60" BAG)

Training needed: Minimum of Class III 16 hours O & M Training.

Note: An activity is **not** considered Class III work when the removal of asbestos-containing materials is the primary goal of the job.

Equipment Needed:

The type of equipment needed varies depending on the type of project and material. See the step-by-step procedures below for further instructions.

Step-by-Step Procedures:

At this point, if you wish to perform a Class III work activity which involves removal or repair of asbestos-containing material, turn to Part 2 and find the material on which you are working. Once you have located the material, you will find the list of equipment needed and step-by-step procedures. It must be remembered that often Class III work may encompass more than one type of material. While the general procedures required for one material may well be in whole, or in part, the same as those for another, each section, for each material, should be consulted and read completely before work is instituted for the given project.

Note: Contact the Asbestos Administrator if the asbestos-containing material requiring maintenance is not within Part 2.

CLASS I AND II WORK ACTIVITIES

ACTIVITIES INVOLVING THE DISTURBANCE/REMOVAL OF IN EXCESS OF THAT WHICH CAN FIT INTO A 60" X 60" BAG.

Equipment Needed:

Shall be conducted by a Michigan Licensed Asbestos Abatement Contractor

Step-by-Step Procedures:

Shall be conducted by a Michigan Licensed Asbestos Abatement Contractor

If unscheduled large-scale activities need to take place, contact the Asbestos Administrator and discuss the situation.

If a Class I or II work activity is conducted, then following this activity the Asbestos Administrator will complete the Miscellaneous OSHA and EPA Recordkeeping Form D-2, located in Appendix B, to be included in the O & M Program File.

UNEXPECTED EXPOSURE

IN A BUILDING THAT HAS ASBESTOS-CONTAINING MATERIAL THERE IS ALWAYS THE POTENTIAL FOR SOMEONE TO HAVE DIRECT CONTACT TO ASBESTOS DEBRIS. IF THIS OCCURS, COMPLETE THE FOLLOWING PROCEDURES:

Step-by-Step Procedures:

1. The individual must immediately put clothes in an asbestos disposal bag.
2. The bag must be sealed using duct tape.
3. The individual should proceed to the shower and clean his/her entire body.
4. DO NOT PUT ON THE SAME CLOTHES. Have clean clothes brought in and/or temporarily wear a disposable coverall.
5. Another person should visually check to see if a major or minor fiber release episode has occurred at the site where asbestos was disturbed. (Major & minor fiber release episodes are defined in this section just prior to these procedures.)
6. Accredited personnel must carry out the instructions of the major fiber release episode cleanup including but not limited to all procedures and documentation required by prior applicable sections of this O & M Program Manual.

Note: Contaminated clothing must be disposed of as asbestos contaminated waste or laundered in accordance with OSHA, 29 CFR, 1926.1101 (i)(2).

Prohibited Activities

In Accordance with OSHA, 29 CFR Part 1910.1001 (k), certain maintenance/custodial activities are prohibited when asbestos - containing materials are involved. These activities as described by the OSHA General Industry Standard are:

1. Not to drill holes in asbestos containing materials.
2. Not to hang plants or pictures on structures covered with asbestos-containing materials.
3. Not to sand asbestos-containing floor tile.
4. Not to damage asbestos-containing materials while moving furniture or other objects.
5. Not to install curtains, drapes, or dividers in such a way that they damage asbestos-containing materials.
6. Not to dust floors, ceilings, moldings or other surfaces in asbestos-contaminated environments with a dry brush or sweep with a dry broom.
7. Not to use an ordinary vacuum to clean up asbestos-containing debris.
8. Not to remove ceiling tiles below asbestos-containing materials without wearing the proper respiratory protection, clearing the area of other people, and observing asbestos removal waste procedures.
9. Not to remove ventilation system filters dry.
10. Not to shake ventilation system filters.

In accordance with OSHA, 29CFR Part 1926.1101 (g)(3), the following prohibitions are in effect. When disturbing asbestos, it is illegal to use the following:

1. High-speed abrasive disc saws unless equipped with HEPA filtered system.
2. Compressed air used to remove asbestos.
3. Dry sweeping, shoveling or other cleanup of asbestos dust/debris.
4. Employee rotation as a means to reduce employee exposure to asbestos.

Section II
Part 2

Addressing the Asbestos Drywall Joint Compound

Section II

Part 2

Addressing the Asbestos Drywall Joint Compound

Tenant Responsibilities:

It is the policy of the **ANN ARBOR HOUSING COMMISSION** that no tenants disturb the asbestos drywall joint compound in any manner. This includes, but is not limited to, the prohibition of the use of screws or nails to hang pictures, shelving, window dressings, etc. on asbestos drywall walls or ceilings.

If a tenant wants to hang pictures on an asbestos drywall wall, they are allowed to use hanging strips that will not penetrate into the wall surface. These hanging strips are available, at no cost to tenants, by visiting the **ANN ARBOR HOUSING COMMISSION** office.

Tenants are not allowed to hire, contract or utilize any outside entity to perform renovation, modification, repair, alteration or asbestos drywall joint compound disturbances without written approval of the landlord and this approval will be based upon the acceptance of a written plan of protection from potential asbestos disturbance.

Any damage to asbestos shall be reported to the **ANN ARBOR HOUSING COMMISSION** office by calling the work order line at (734) 794-6720.

Untrained In-House Staff Responsibilities:

Untrained in-house staff is defined as **ANN ARBOR HOUSING COMMISSION** employees who have not received a minimum of Class III training. Staff that have had asbestos awareness training are still considered untrained since they do not possess the necessary training to disturb asbestos.

The untrained in-house staff shall not disturb any asbestos including the asbestos drywall joint compound.

If the untrained in-house staff notice that any asbestos including the asbestos drywall joint compound is either improperly disturbed or damaged, they shall contact the Asbestos Administrator immediately.

Properly Trained In-House Staff Responsibilities:

Properly trained in-house staff is defined as **ANN ARBOR HOUSING COMMISSION** employees who have received a minimum of the 16 Hour Class III Training. As stated previously, it is the present position of the **ANN ARBOR HOUSING COMMISSION** that even properly trained in-house staff not disturb asbestos, including the applicable drywall joint compound. The intent of providing asbestos training to key **ANN ARBOR HOUSING COMMISSION** support staff is to ensure that they are familiar with the applicable asbestos regulations, have a full understanding of the necessary procedures involved with asbestos disturbance and ensure that outside contractors conduct their work activities in accordance with best industry practices.

Asbestos Abatement Contractors:

It is the present position of the **ANN ARBOR HOUSING COMMISSION** that only Michigan Licensed Asbestos Abatement Contractors will be able to conduct disturbance to asbestos within our buildings, including asbestos drywall joint compound. The Contractors who work within the **ANN ARBOR HOUSING COMMISSION** buildings will ensure that they not only follow the protocols provided within this section but also all applicable Federal and Michigan State regulatory standards.

Procedures for Asbestos Drywall Joint Compound Disturbance

The following procedures shall be used by all entities, including outside contractors and, if applicable, properly trained ANN ARBOR HOUSING COMMISSION when disturbing the asbestos drywall joint compound:

Although only the joint compound within applicable ANN ARBOR HOUSING COMMISSION buildings tested positive for asbestos, all drywall walls and ceilings within these buildings shall be treated as asbestos.

Class III Disturbances:

Class III asbestos joint compound disturbance is defined as the removal or disturbance of drywall in an amount limited to that which can fit into a 60" x 60" bag. This includes, but is not limited to, drilling or coring holes, cutting out smaller sections of drywall, etc.

Equipment Necessary:

Warning signs, barrier tape, airless sprayer or garden mister, HEPA vacuum, containment (drill shroud, mini-enclosure), small air filtration device, disposal bags, polyethylene, respirator, disposable coveralls.

Class III Work Procedures:

1. Ensure that the Asbestos Administrator is notified of intended work activities and that the tenant(s) have been notified.
2. Isolate applicable room. Develop regulated area.
3. Lay drop cloth below intended work area.
4. Fully contain the location of drywall to be disturbed. This may be through the use of a shrouded drill or a mini-enclosure. The intent of the containment is to ensure that ALL dust and debris generated is fully contained.
5. Ensure that containment is under proper negative pressure. This may be through the use of a HEPA vacuum attached onto a drill shroud or an air filtration device attached onto a mini-enclosure.
6. Don personal protective equipment.
7. Wet the area of drywall to be disturbed. Ensure that water does not infiltrate drywall that will not be removed so that it does not become a conducive site for mold growth.
8. Conduct the intended disturbance.
9. Clean the applicable areas including the drop cloth inside of the containment. Use wet method cleaning and the HEPA vacuum.
10. Remove containment and drop cloth. Place applicable debris into the asbestos disposal bag.
11. Seal the disposal bag and remove the sign and barrier tape.
12. Demobilize.

Class II Disturbances:

Class II asbestos joint compound disturbance is defined as the removal or disturbance of drywall in an amount which exceeds that which can fit into a 60" x 60" bag. This includes, but is not limited to, the pole sanding or the removal of larger areas of drywall, etc.

Equipment Necessary:

Warning signs, barrier tape, airless sprayer or garden mister, HEPA vacuum, containment (such as a mini-enclosure or enclosure), equipment area, air filtration device, disposal bags, polyethylene, respirator, disposable coveralls.

Class II Work Procedures:

1. Ensure that the Asbestos Administrator is notified of intended work activities and that the tenant(s) have been notified.
2. Isolate applicable room(s). Develop regulated area.
3. Lay drop cloth below intended work area.
4. Fully contain the location of drywall to be disturbed. Incorporate an air filtration device onto the containment.
5. Develop an adjacent equipment area with a drop cloth in accordance with OSHA Part 602(j)(2).

6. Don personal protective equipment. Ensure that workers enter and exit the work area through the equipment area.
7. Wet the area of drywall to be disturbed. Ensure that water does not infiltrate drywall that will not be removed so that it does not become a conducive site for mold growth.
8. Conduct the intended disturbance. Place all debris into disposal bags.
9. Thoroughly clean inside the containment, including the drop cloth. Use wet method cleaning and the HEPA vacuum.
10. Use the equipment area to clean equipment, supplies and clothing, using a HEPA vacuum.
11. Remove containment, equipment area and drop cloths.
12. Place all remaining debris, such as drop cloths into disposal bags and seal.
13. Take down containment, warning signs and barrier tape.
14. Demobilize.

Section III

Summary of Asbestos Inspections Ann Arbor Housing Commission Buildings

Executive Summary

American Environmental Consultants, LLC (AEC) was contracted by ERG to perform an Asbestos Containing Materials (ACM) Survey at Green Baxter Court in Ann Arbor, MI. The survey was completed on May 13 & 15, 2013.

The following is a summary of the asbestos containing materials identified in the building which will require special handling during any renovation or demolition activities.

- *100,000 SF of Joint Compound-Throughout*
- *160 SF of Heat Shield- Asbestos Board-Basements*
- *Suspected ACM in Multi Layer Flooring*
- *Suspected ACM in Roof Materials*

Introduction

Jef Fox (Inspector #26737) of AEC, gained access to the property on 5/13 & 5/15, 2013. AEC was to complete an asbestos containing materials survey of accessible areas of the subject property. The subject property is scheduled for renovation AEC visually identified and sampled suspect asbestos containing materials.

AEC was allowed access to all interior/exterior areas of the building. AEC attempted to inspect for hidden asbestos containing materials without disturbing the structure or integrity of the subject property. The roof was not accessed during the survey.

Observations

AEC inspected all of the areas of the subject property. The interior finishing components were drywall, (12x12) floor tile, linoleum, door and window caulk, and ceiling tile. The subject property was built of wood frame construction. AEC has attached site pictures in Appendix C depicting the site conditions.

Methodology

The survey was completed in accordance with the regulations stated in the Asbestos Hazard Emergency Response Act (AHERA) and the National Emission Standards For Hazardous Air Pollutants (NESHAP). A modified triplicate random sampling method of homogeneous area materials was utilized for the sampling procedure. The modified sampling procedure performed was 3-7 samples for surfacing materials, 3 samples for thermal systems insulation, and 3 samples for miscellaneous materials. The samples were collected in a manner to prevent release of fibers while sampling the suspect asbestos containing materials (SACM). Utensils were cleaned after

The friable and non-friable classification in the table describes how easily the material can be broken apart. A friable material is a material that can be crushed/ pulverized by human pressure. A non-friable material is a material that cannot be crushed/ pulverized by human pressure. The condition is a classification of the physical state that the material is in at the time of the sampling. There are three physical condition assessments that are applied to the condition of the material: good condition, damaged condition, and severely damaged condition. A material in good condition has no visible damage or deterioration. A material in a damaged condition has damage or deterioration on less than ten percent of the surface. A material that is severely damaged has damage or deterioration on ten percent or more of the surface area.

Asbestos Containing Materials

The following table describes the ACM that was identified as a result of the sampling.

**Table 2
Green Baxter Court
Asbestos Containing Materials**

| Asbestos Containing Material | Locations | Quantity* |
|------------------------------|--|------------|
| Joint Compound | 1701, 1703, 1705, 1707, 1709, 1711, 1713, 1715, 1717, 1719, 1721, 1723, 1725, 1727, 1729, 1731, 1733, 1735, 1737, 1739, 1741, 1743, 1745, 1747 | 100,000 SF |
| Heat Shield- Asbestos Board | 1713, 1701, 1705, 1703, 1715, 1709, 1723, 1721, 1725, 1727, 1735, 1733, 1737, 1739, 1745, 1747, | 160 SF |
| Roof Materials | Exterior | 20,000 SF |
| Multi Layer Flooring | Units | Unknown |

*Quantities are estimated

The joint compound along with the heat shield-asbestos board was both found to contain asbestos and is deemed asbestos containing materials. AEC also observed multiple layers of flooring that were unable to be sampled. AEC thinks that it is a high probability that some of these layers contain asbestos. AEC also suspects the roof material to contain asbestos.

Executive Summary

American Environmental Consultants, LLC (AEC) was contracted by the ERG to perform an Asbestos Containing Materials (ACM) Survey at 727 Miller Ave. in Ann Arbor, Michigan. The survey was completed on April 24th, 25th and 26th of 2013.

The following is a summary of the asbestos containing materials identified in the building which will require special handling during any renovation or demolition activities.

- *Approx. 125000 SF of joint compound throughout property.*
- *Approx. 9075 SF of mastic under 12"x 12" white with blue floor tile throughout kitchen and bathrooms.*
- *Approx. 3970 SF of 12"x 12" white with splotch floor tile and mastic throughout kitchen and bathrooms.*
- *Approx. 910 SF of sink glazing throughout property.*
- *Approx. 2000 LF of grey cement caulk on exterior porches and expansion joint.*
- *Approx. 400 SF of 2' x 4' pinhole fissured ceiling tile in the office near the kitchen.*
- *Approx. 20000 SF Suspect ACM roofing material*

Introduction

Jef Fox (Inspector #A34641) of AEC, gained access to the property on April 24th, 25th and 26th of 2013. AEC was to complete an asbestos containing materials survey of accessible areas of the subject property. The subject property is scheduled for rehabilitation. AEC visually identified and sampled suspect asbestos containing materials.

AEC was allowed access to all interior/exterior areas of the building. AEC attempted to inspect for hidden asbestos containing materials without disturbing the structure or integrity of the subject property.

Observations

AEC inspected all of the areas of the subject property. The interior finishing components were drywall systems, floor tile (12x12, (9x9), linoleum, ceiling tiles, and baseboards. The subject property was built of brick construction. AEC has attached site pictures In Appendix C depicting the site conditions.

Methodology

The survey was completed in accordance with the regulations stated in the Asbestos Hazard Emergency Response Act (AHERA) and the National Emission Standards for Hazardous Air

| Sample Number | Material Description and General Location | Asbestos Present (Y/N)- % Type |
|---------------|---|--------------------------------|
| 158 | Joint compound-Apt. 516-Kitchen | Not Analyzed |
| 159 | Joint compound-Apt. 516-Living Room | Not Analyzed |
| 160 | Joint compound-Apt. 516-Living Room | Not Analyzed |
| 161 | Joint compound-Apt. 516-Bedroom | Not Analyzed |
| 162 | Joint compound-Apt. 516-Bathroom | Not Analyzed |
| 163 | Joint compound-Apt. 507-Kitchen | Not Analyzed |
| 164 | Joint compound-Apt. 507-Living Room | Not Analyzed |
| 165 | Joint compound-Apt. 507-Living Room | Not Analyzed |
| 166 | Joint compound-Apt. 507-Bedroom | Not Analyzed |
| 167 | Joint compound-Apt. 507-Bathroom | Not Analyzed |

Asbestos Containing Materials

The following table describes the ACM that was identified as a result of the sampling.

**Table 2
727 Miller Ave., Ann Arbor, MI
Asbestos Containing Materials**

| Asbestos Containing Material | Locations | Quantity* |
|---|---|-----------|
| The mastic under the 12" x 12" White with Blue Floor Tile | 110 Kitchen, 310 Kitchen, 201 Kitchen and Bathroom, 202 Kitchen and Bathroom, 205 Kitchen and Bathroom, 210 Kitchen, 214 Kitchen, 305 Kitchen and Bathroom, 309 Kitchen and Bathroom, | 9075 SF |

| Asbestos Containing Material | Locations | Quantity* |
|------------------------------|--|-----------|
| | 313 Kitchen, 314 Kitchen, 315 Kitchen and Bathroom, 401 Kitchen and Bathroom, 412 Kitchen and Bathroom, 416 Kitchen and Bathroom, 503 Kitchen and Bathroom, 505 Kitchen and Bathroom, 506 Kitchen and Bathroom, 509 Kitchen and Bathroom, 510 Kitchen and Bathroom, 514 Kitchen and Bathroom, 515 Kitchen, 517 Kitchen, 602 Kitchen and Bathroom, 606 Kitchen and Bathroom, 607 Kitchen and Bathroom, 609 Kitchen and Bathroom, 610 Kitchen and Bathroom , 612 Kitchen and Bathroom, 614 Kitchen and Bathroom, 616 Kitchen and Bathroom, 701 Kitchen and Bathroom, 702 Kitchen and Bathroom, 705 Kitchen and Bathroom, 708 Kitchen and Bathroom, 711 Kitchen and Bathroom, 714 Kitchen and Bathroom, 717 Kitchen and Bathroom, 114 Kitchen, 303 Kitchen, 207 Kitchen and Bathroom, 208- Kitchen and Bathroom, 215 Kitchen and Bathroom, 216 Kitchen and Bathroom, 301 Kitchen and Bathroom, 306 Kitchen and Bathroom, 307 Kitchen and Bathroom, 317 Kitchen and Bathroom, 402 Kitchen and Bathroom, 405 Kitchen and Bathroom, 407 Kitchen and Bathroom, 409 Kitchen and Bathroom, 410 Kitchen and Bathroom, 417 Kitchen and Bathroom, 512 Kitchen and Bathroom, 501 Kitchen and Bathroom, 507 Kitchen and Bathroom, 502 Kitchen and Bathroom, | |



| Asbestos Containing Material | Locations | Quantity* |
|---|--|-----------|
| | 604 Kitchen and Bathroom, 611 Kitchen and Bathroom, 615 Kitchen and Bathroom, 713 Kitchen and Bathroom, 706 Kitchen and Bathroom | |
| Joint Compound | Throughout | 125000 SF |
| 12" x 12" Floor Tile and Mastic- White with Spotch | 112- Bathroom, 113- Bathroom, 110- Bathroom, 210- Bathroom, 209- Kitchen and Bathroom, 302-Kitchen and Bathroom, 310- Kitchen and Bathroom, 312- Kitchen and Bathroom, 406- Kitchen and Bathroom, 408- Kitchen and Bathroom, 411- Bathroom, 513- Bathroom, 605- Kitchen and Bathroom, 601- Kitchen and Bathroom, 114, 303, 316- Kitchen and Bathroom, 417- Bathroom, 603-Kitchen and Bathroom, 115, 116, 303, 715, 706, 707, 704 | 3970 SF |
| Sink Glazing | 201, 202, 203, 205, 206, 209, 210, 214, 302, 305, 308, 309, 310, 312, 313, 314, 315, 406, 401, 411, 408, 412, 414, 413, 416, 503, 505, 506, 509, 510, 513, 514, 515, 602, 605, 606, 607, 601, 609, 610, 612, 614, 616, 617, 701, 702, 705, 708, 710, 715, 716, 717, 114, 204, 207, 208, 211, 212, 213, 215, 216, 301, 303, 306, 307, 316, 317, 402, 403, 407, 409, 410, 417, 603, 512, 511, 501, 508, 507, 502, 504, 604, 611, 613, 713, 712, 710, 706, 707, 703, 704 | 910 SF |

| Asbestos Containing Material | Locations | Quantity* |
|---------------------------------------|---------------------------------------|------------------|
| Grey Cement Caulk | Exterior Porches and Expansion Joints | 2000 LF |
| 2' x 4' Pinhole Fissured Ceiling Tile | Office by Kitchen | 400 SF |
| Roofing Material | Exterior | 20,000 SF |

*Quantities are estimated

The joint compound throughout the property, the mastic under the 12"x 12" white with blue floor tile in most of the kitchens and bathrooms throughout the property, the 12"x 12" white with splotch floor tile and mastic in kitchens and bathrooms, the sink glazing throughout property, the grey cement caulk on exterior porches and expansion joints and also the 2'x 4' pinhole fissured ceiling tile in the office near the kitchen were found to contain asbestos and are deemed an asbestos containing material.

Removal Options, Recommendations

Floor Tile

If the flooring is to be disturbed, it must be by a licensed asbestos contractor utilizing approved fiber release controls with properly trained personnel. The flooring must be handled as ACM waste and sent to an appropriate landfill.

Mastic

If the mastic is disturbed during renovation activities then, mastic shall be removed in a properly constructed negative pressure containment with personnel wearing proper PPE.

Joint Compound

If the joint compound is disturbed during renovation activities then, joint compound shall be removed in properly constructed negative pressure containment with personnel wearing proper PPE.

Executive Summary

American Environmental Consultants, LLC (AEC) was contracted by ERG to perform an Asbestos Containing Materials (ACM) Survey at 2702-2760 Hikone in Ann Arbor, MI. The survey was completed on May 20- May 22, 2013.

The following is a summary of the asbestos containing materials identified in the building which will require special handling during any renovation or demolition activities.

- *100,000 SF of Joint Compound-Throughout*
- *200 SF of Asbestos Board-Basements*
- *Floor Tile/ Under Layment Suspected to be ACM- Throughout Units*
- *Suspected Roof Materials to be ACM*

Introduction

Jef Fox (Inspector #A26737) of AEC, gained access to the property on 5/20-5/22/2013. AEC was to complete an asbestos containing materials survey of accessible areas of the subject property. The subject property is scheduled for renovation. AEC visually identified and sampled suspect asbestos containing materials. The roof was not accessed as part of this inspection.

AEC was allowed access to all interior/exterior areas of the building. AEC attempted to inspect for hidden asbestos containing materials without disturbing the structure or integrity of the subject property.

Observations

AEC inspected all of the areas of the subject property. The interior finishing components were drywall, (12x12) floor tile, and linoleum. The subject property was built of wood frame construction. AEC has attached site pictures in Appendix C depicting the site conditions.

Methodology

The survey was completed in accordance with the regulations stated in the Asbestos Hazard Emergency Response Act (AHERA) and the National Emission Standards For Hazardous Air Pollutants (NESHAP). A modified triplicate random sampling method of homogeneous area materials was utilized for the sampling procedure. The modified sampling procedure performed was 3-7 samples for surfacing materials, 3 samples for thermal systems insulation, and 3 samples for miscellaneous materials. The samples were collected in a manner to prevent release of fibers while sampling the suspect asbestos containing materials (SACM). Utensils were cleaned after each sample was collected to prevent cross contamination of samples. AEC personnel took

| Sample Number | Material Description | Asbestos Present (Y/N)- % Type |
|-------------------|----------------------|--------------------------------|
| 181-2760-Bathroom | Joint Compound | Not Analyzed |
| 182-2760-Bedroom | Joint Compound | Not Analyzed |
| 183-2760-Bedroom | Joint Compound | Not Analyzed |
| 184-2760-Bedroom | Joint Compound | Not Analyzed |

Asbestos Containing Materials

The following table describes the ACM that was identified as a result of the sampling.

**Table 2
2702-2760 Hikone
Asbestos Containing Materials**

| Asbestos Containing Material | Locations | Quantity* |
|------------------------------|---|-----------------------------|
| Joint Compound | 2702, 2704, 2706, 2708, 2710, 2714, 2718, 2716, 2720, 2712, 2724, 2722, 2726, 2728, 2730, 2732, 2734, 2736, 2738, 2740, 2742, 2744, 2746, 2750, 2756, 2760, 2752, 2754, 2758 | 100,000 SF |
| Asbestos Board | 2702, 2706, 2708, 2716, 2712, 2726, 2728, 2736, 2738, 2740, 2746, 2748, 2750, 2760, 2752, 2760, 2752, 2758 | 200 SF |
| Floor Tile- Under Layment | 2718 Floor Tile Under Kitchen Layment, 2720 Floor Tile Under Layment, 2728 Under Layer From Kitchen, 2736 Under Layer From Kitchen, 2750 Under Layer From Kitchen, 2750 Under Layer on 2 nd Floor, 2756 Under Layer on 2 nd Floor | Assumed to be in all units. |

| Asbestos Containing Material | Locations | Quantity* |
|------------------------------|-----------|-----------|
| Roof Materials | Exterior | 20,000 SF |

*Quantities are estimated

The joint compound, asbestos board, and floor tile were found to contain asbestos and are deemed asbestos containing materials. AEC assumes that all apartments have multiple layers of flooring. Although the visible layers don't all contain asbestos, it appears that atleast some of the hidden layers likely do. AEC also suspects the roof materials to be ACM.

Removal Options, Recommendations

Joint Compound

If the joint compound is disturbed during renovation activities then, joint compound shall be removed in properly constructed negative pressure containment with personnel wearing proper PPE.

Asbestos Board

If the asbestos board is disturbed during renovation activities then, asbestos board shall be removed in properly constructed negative pressure containment with personnel wearing proper

Floor Tile

If the floor tile is disturbed during renovation activities then, floor tile shall be removed in properly constructed negative pressure containment with personnel wearing proper PPE.

Roof Flashing

If the roof flashing is disturbed during renovation activities then, roof flashing shall be removed intact with wetting, drop cloths with personnel wearing proper PPE.

Executive Summary

American Environmental Consultants, LLC (AEC) was contracted by ERG to perform an Asbestos Containing Materials (ACM) Survey at S. Maple Meadows in Ann Arbor, MI. The survey was completed on May 30 & June 3, 2013.

The following is a summary of the asbestos containing materials identified in the building which will require special handling during any renovation or demolition activities.

- *100,000SF of Joint Compound-Throughout*
- *190 SF of Asbestos Board-Basements*
- *Suspected ACM in Multi Layer Flooring-Throughout*
- *Suspected ACM in Roof Material-Throughout*

Introduction

Jef Fox (Inspector #A26737) of AEC, gained access to the property on May 30 & June 3, 2013. AEC was to complete an asbestos containing materials survey of accessible areas of the subject property. The subject property is scheduled for renovation. AEC visually identified and sampled suspect asbestos containing materials.

AEC was allowed access to interior/exterior areas of the building. AEC attempted to inspect for hidden asbestos containing materials without disturbing the structure or integrity of the subject property. The roof was not inspected during inspection.

Observations

AEC inspected all of the areas of the subject property. The interior finishing components were drywall, (12x12) floor tile, linoleum, caulk, and ceiling tile. The subject property was built of wood frame construction. AEC has attached site pictures in Appendix C depicting the site conditions.

Methodology

The survey was completed in accordance with the regulations stated in the Asbestos Hazard Emergency Response Act (AHERA) and the National Emission Standards For Hazardous Air Pollutants (NESHAP). A modified triplicate random sampling method of homogeneous area materials was utilized for the sampling procedure. The modified sampling procedure performed was 3-7 samples for surfacing materials, 3 samples for thermal systems insulation, and 3 samples for miscellaneous materials. The samples were collected in a manner to prevent release of fibers while sampling the suspect asbestos containing materials (SACM). Utensils were cleaned after

The friable and non-friable classification in the table describes how easily the material can be broken apart. A friable material is a material that can be crushed/ pulverized by human pressure. A non-friable material is a material that cannot be crushed/ pulverized by human pressure. The condition is a classification of the physical state that the material is in at the time of the sampling. There are three physical condition assessments that are applied to the condition of the material: good condition, damaged condition, and severely damaged condition. A material in good condition has no visible damage or deterioration. A material in a damaged condition has damage or deterioration on less than ten percent of the surface. A material that is severely damaged has damage or deterioration on ten percent or more of the surface area.

Asbestos Containing Materials

The following table describes the ACM that was identified as a result of the sampling.

**Table 2
S. Maple Meadows
Asbestos Containing Materials**

| Asbestos Containing Material | Locations | Quantity* |
|------------------------------|--|------------|
| Joint Compound | 830, 826, 828, 824, 822, 820, 840, 844, 846, 848, 842, 850, 860, 862, 866, 868, 870, 880, 882, 884, 886, 888, 890, 800, 802, 804, 806, 810 | 100,000 SF |
| Asbestos Board | 830, 828, 822, 820, 840, 844, 846, 842, 848, 850, 860, 868, 870, 880, 882, 888, 800, 802, 810 | 190 SF |
| Suspect-Roof Material | Exterior | 20,000 SF |
| Suspect-Multi Layer Flooring | Units | Unknown |

*Quantities are estimated

The joint compounds along with the asbestos board were both found to contain asbestos and are deemed asbestos containing materials. AEC also observed multiple layers of flooring that were unable to be sampled. AEC thinks that it is a high probability that these flooring materials contain asbestos. The roof materials are also suspected to contain asbestos.

Executive Summary

American Environmental Consultants, LLC (AEC) was contracted by ERG to perform an Asbestos Containing Materials (ACM) Survey at Baker Commons in Ann Arbor, MI. The survey was completed on April 17-18, 2013.

The following is a summary of the asbestos containing materials identified in the building which will require special handling during any renovation or demolition activities.

- *380 SF of Sink Glazing*

Introduction

Matt Rodgers (Inspector #A-34641) of AEC, gained access to the property on 4/17 and 4/18/2013. AEC was to complete an asbestos containing materials survey of accessible areas of the subject property. The subject property is scheduled for renovation. AEC visually identified and sampled suspect asbestos containing materials.

AEC was allowed access to all interior/exterior areas of the building. AEC attempted to inspect for hidden asbestos containing materials without disturbing the structure or integrity of the subject property.

Observations

AEC inspected all of the areas of the subject property. The interior finishing components were drywall, (12x12) floor tile, linoleum, door and window caulk, and ceiling tiles. AEC has attached site pictures in Appendix C depicting the site conditions.

Methodology

The survey was completed in accordance with the regulations stated in the Asbestos Hazard Emergency Response Act (AHERA) and the National Emission Standards For Hazardous Air Pollutants (NESHAP). A modified triplicate random sampling method of homogeneous area materials was utilized for the sampling procedure. The modified sampling procedure performed was 3-7 samples for surfacing materials, 3 samples for thermal systems insulation, and 3 samples for miscellaneous materials. The samples were collected in a manner to prevent release of fibers while sampling the suspect asbestos containing materials (SACM). Utensils were cleaned after each sample was collected to prevent cross contamination of samples. AEC personnel took personal protective measures. The individual samples were placed into airtight leak proof labeled containers to be transported to the laboratory.

good condition has no visible damage or deterioration. A material in a damaged condition has damage or deterioration on less than ten percent of the surface. A material that is severely damaged has damage or deterioration on ten percent or more of the surface area.

Asbestos Containing Materials

The following table describes the ACM that was identified as a result of the sampling.

**Table 2
Baker Commons
Asbestos Containing Materials**

| Asbestos Containing Material | Locations | Quantity* |
|------------------------------|-----------|-----------|
| Sink Glazing-White | Kitchens | 380 SF |

*Quantities are estimated

The white sink glazing was found to contain asbestos and is deemed an asbestos containing material.

Removal Options, Recommendations

Sink Glaze

If the sink glaze is disturbed during renovation activities then, sink glaze shall be removed in properly constructed negative pressure containment with personnel wearing proper PPE. However, if the entire component is removed with the sink glaze intact, the component may be removed, double wrapped, tagged and disposed of accordingly.

Conclusion

Asbestos containing materials were identified at the subject property and will require special handling and disposal if disturbed during renovation activities. The white sink glaze was found to contain asbestos. Proper precautions and abatement must be used if disturbed.

Limitations

The information and opinions obtained in this report are for the exclusive use of AEC's Client. No distribution to or reliance by other parties may occur without the express written permission

APPENDIX A
Respirator Program

APPENDIX A

Respirator Program

Purpose

This Respirator Program has been developed and instituted to provide for the safety of the maintenance and/or custodial employees who work in **ANN ARBOR HOUSING COMMISSION** buildings, and comply with the OSHA Asbestos Standards. The program is designed to motivate and train employees to wear their respirators, if applicable and to provide building owners/operators controls to ensure that these objectives are met. Since the respirator is the principal article of safety equipment in the building, employees are expected to fully comply with the tenets of this document.

**ANN ARBOR HOUSING COMMISSION
404 NORTH ASHLEY
ANN ARBOR, MICHIGAN 48103**

Respirator Program Director – Maintenance Manager

Respirator Program Director

The program shall be evaluated and revised annually by the Respirator Program Director (hereafter referred to as the Director) in consultation with all concerned parties. Approval of revisions will be determined annually after discussions between all affected parties, but the Director's determination shall be final and binding. Interim changes deemed necessary by the Director shall become policy immediately and shall be deemed incorporated upon promulgation.

Furthermore, any changes in regulatory requirements shall be incorporated into this document as such changes are promulgated and become effective.

Disciplinary Action

This program is of no use if employees do not comply with its procedures. As stated in the previous sections, respirators will only protect against the hazard of asbestos exposure if they are worn at all times during potential exposure.

The health and safety of employees is of the foremost concern. Therefore, any time an employee fails to comply with proper respirator usage when required, immediate disciplinary action shall commence. Disciplinary action will be at the discretion of the Director.

Respirator Types & Regulation Standards

Half-face dual cartridge respirators and/or full-face air-purifying respirators will be assigned to maintenance and/or custodial employees who may disturb asbestos-containing materials. Other employees whose job description may cause them to encounter asbestos-containing materials will also be assigned half-face and/or full-face respirators. Respirators must also be used in any situation where airborne asbestos fiber concentrations are determined to be present. These respirators must be worn whenever conducting a Class I, II, III and IV activity or cleaning up a minor fiber release episode as directed in Section II, Part 2 of this O & M Program Manual.

The OSHA Asbestos Standards allow for the use of a half-face respirator whenever airborne concentrations of asbestos are below 0.1 fibers per cubic centimeter of air. If airborne concentrations of asbestos exceed 0.1 fibers per cubic centimeter of air, but are not in excess of 10 fibers per cubic centimeter of air, the full - face air-purifying respirator must be used. Other respirators are required at higher concentrations of airborne asbestos, but these levels should never be reached when conducting O & M activities.

All respirators that are issued to employees must be approved for use in asbestos atmospheres by the Mine Safety & Health Administration and the National Institute for Occupational Safety & Health (NIOSH). The cartridges used should also be approved for use with your assigned respirator by the manufacturer and be suitable for dusts, fumes, mists, and radionuclides.

This Respirator Program specifically addresses asbestos related activities. Should a job involve employees entering an atmosphere with oxygen deficiency, chemical contaminants, radioactive contaminants, or any other breathing hazard, the Director will either obtain the proper respirator and/or cartridges for the job, or the activity will not be performed. The cartridges approved for use in asbestos atmospheres are not appropriate for use in atmospheres contaminated by organic vapors.

Use

As stated in the above section, respirators shall be worn by all individuals conducting Class I, II, III and IV activities or cleaning minor fiber release episodes as directed in the O & M Program Manual. All employees in this category will be assigned respirators only upon proper training on the use and maintenance of respirators.

The following is required of all employees using respirators:

1. Respirators shall be worn whenever maintenance and/or custodial staff are conducting a Class I, II, III and IV activity, minor fiber release episode cleaning, or at any time the O & M Program Manual calls for their usage.
2. Respirators shall be worn during situations where maintenance and/or custodial employees may be in the presence of airborne asbestos.
3. Respirators shall be worn whenever collecting bulk asbestos samples.
4. Respirators shall be worn whenever any employee is allowed inside an enclosure at an asbestos abatement site.
5. Whenever wearing a respirator, employees are not permitted to chew gum and/or tobacco. Food and drink, as well as smoking are not allowed when wearing a respirator. At no time should the respirator be stretched away from the face to talk, eat, drink, smoke, chew or participate in any similar activity.
6. An employee will not be allowed to wear a half-face respirator without properly shaving, or while wearing a beard.
7. Respirators shall be properly cleaned, maintained and stored according to this Respirator Program as described in later sections.

As stated in the Disciplinary Action Section, any employee violating these requirements or any other parts of this Respirator Program is subject to disciplinary action as deemed necessary by the Director.

Training

All employees assigned respirators will receive some or all training concerning the following:

1. The hazard that asbestos poses, and its relation to human health.
2. Administrative and engineering controls used in addition to respirators.
3. How the Respirator Program fits into the Operations & Maintenance Program, specifically the respirators use and necessity during small- scale, short-duration activities and minor or major fiber release episodes.
4. Respirator-specific information including:
 - a. Why the respirator is used
 - b. Limitations of the respirator
 - c. Self-fit-testing
 - d. How to inspect, clean & properly wear respirators
 - e. Respirator maintenance & storage
5. A fit-test of the specific respirator(s) may be conducted at the time of this training or at such other date as deemed proper.

Qualitative Fit-Test Protection

When and if negative pressure respirators are used, employees required to wear said respirators will follow mandatory procedures outlined in the OSHA Asbestos Standards. These protocols define procedures used to determine which respirator fits the user adequately to allow for appropriate protection from potentially contaminated work atmospheres. Three protocols are defined in the applicable OSHA regulation, of which a minimum of one must be followed for appropriate fit-testing of employees. These fit-testing protocols are: Isoamyl Acetate, Saccharin Solution Aerosol, and Irritant Fume. The procedures for the Irritant Fume Protocol have been chosen for the building/facility and have been excerpted from the OSHA Asbestos Standard for use in proper fit-testing. At any time, the other protocols or newly approved protocols may be substituted in accordance with the applicable OSHA regulations.

Note: There are no specific training requirements for conducting an OSHA fit-test, thus anyone can conduct a fit-test as long as the outlined procedures (including the OSHA Asbestos Standard) are followed.

A. Respirator Selection

Each employee required to wear a respirator will go through a series of steps enabling him/her to choose a comfortable, adequate and properly fitting respirator. The following steps are in accordance with the OSHA regulation regarding appropriate respirator selection:

1. The test subject shall be allowed to pick the most comfortable respirator from a selection including respirators of various sizes from different manufacturers. The selection shall include at least five sizes of elastomeric half face pieces, from at least two manufacturers.
2. The selection process shall be conducted in a room separate from the fit-test chamber to prevent odor fatigue. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine a "comfortable" respirator. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, as it is only a review.
3. The test subject should understand that the employee is being asked to select the respirator that provides the most comfortable fit. Each respirator represents a different size and shape and if fit properly and used properly will provide adequate protection.
4. The test subject holds each face piece up to the face and eliminates those that obviously do not give a comfortable fit. Normally, selection will begin with a half-mask and if a good fit cannot be found, the subject will be asked to test the full face piece respirators. (A small percentage of users will not be able to wear any half-mask.)

5. The more comfortable face pieces are noted: the most comfortable mask is donned and worn at least five minutes to assess comfort. All donning and adjustments of the face piece shall be performed by the test subject without assistance from the test conductor or other person. Assistance in assessing comfort can be given by discussing the points in #6 below. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
6. Assessment of comfort shall include reviewing the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
 - a. Positioning of mask on nose
 - b. Room for eye protection
 - c. Room to talk
 - d. Positioning mask on face and cheeks
7. The following criteria shall be used to help determine the adequacy of the respirator fit:
 - a. Chin properly placed
 - b. Strap tension
 - c. Fit across nose bridge
 - d. Distance from nose to chin
 - e. Tendency to slip
 - f. Self-observation in mirror
8. The test subject shall conduct the conventional negative and positive-pressure fit checks (e.g. see ANSI Z88.2-1980). Before conducting the negative or positive-pressure test the subject shall be told to "seat" the mask by rapidly moving the head from side-to-side and up and down, while taking a few deep breaths.
9. The test subject is now ready for fit-testing.
10. After passing the fit-test, the test subject shall be questioned again regarding the comfort of the respirator. If it has become uncomfortable, another model of respirator shall be tried.
11. The employee shall be given the opportunity to select a different face piece and be re-tested if the chosen face piece becomes increasingly uncomfortable at any time.

B. Fit-Test

No employee shall be issued a respirator without first undergoing a fit-test prior to its usage. As previously stated, the Irritant Fume Protocol has been selected as the first choice when conducting fit-tests and is described below from the OSHA regulation. Keep in mind that the OSHA regulation allows for two other protocols that can also be used in place of the Irritant Fume as outlined in this regulation. OSHA's Irritant Fume Protocol fit-test is:

1. The test subject shall be allowed to smell a weak concentration of the irritant smoke to familiarize the subject with the characteristic odor.
2. The test subject should properly don the respirator selected as above, and wear it for at least 10 minutes before starting the fit-test.
3. The test conductor shall review this protocol with the test subject before testing.
4. The test subject shall perform the conventional positive pressure and negative pressure fit checks (See ANSI Z88.2 1980). Failure of either check shall be cause to select an alternative respirator.
5. Break both ends of a ventilation smoke tube containing stannic oxychloride, such as the MSA Part #5645, or equivalent. Attach a short length of tubing to one end of the smoke tube. Attach the other end of the smoke tube to a low pressure air pump set to deliver 200 milliliters per minute.
6. Advise the test subject that the smoke can be irritating to the eyes and instruct the subject to keep the eyes closed while the test is performed.
7. The test conductor shall direct the stream of irritant smoke from the tube towards the face-seal area of the test subject. The person conducting the test shall begin with the tube at least 12 inches from the face piece and gradually move to within 1 inch, moving around the whole perimeter of the mask.
8. The test subject shall be instructed to do the following exercises while the respirator is being challenged by the smoke. Each exercise shall be performed for one minute.
 - a. Breathe normally.
 - b. Breathe deeply. Be certain breaths are deep and regular.
 - c. Turn head all the way from one side to the other. Be certain movement is complete. Inhale on each side. Do not bump the respirator against the shoulders.
 - d. Nod head up-and-down. Be certain motions are complete and made every second. Inhale when head is in the full up position (looking toward ceiling). Do not bump the respirator against the chest.
 - e. Talking. Talk aloud and slowly for several minutes. The following paragraph is called the Rainbow Passage. Reading it will result in a wide range of facial movements, and thus may be useful to satisfy this requirement. Alternative passages that serve the same purpose may also be used.

Rainbow Passage

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond his reach, his friends say he's looking for the pot of gold at the end of the rainbow.

- f. Jogging in place.
- g. Breathe normally.

9. The test subject shall indicate to the test conductor if the irritant smoke is detected. If smoke is detected, the test conductor shall stop the test. In this case, the tested respirator is rejected and another respirator shall be selected.
10. Each test subject passing the smoke test (i.e. without detecting the smoke) shall be given a sensitivity check of smoke from the same tube to determine if the test subject reacts to the smoke. Failure to evoke a response shall void the fit-test.
11. Steps B4, B9, B10 of this fit-test protocol shall be performed in a location with exhaust ventilation sufficient to prevent general contamination of the testing area by the test agents.
12. At least two face pieces shall be selected by the above described test protocol. The test subject shall be given the opportunity to wear them for one week to choose the one that is more comfortable to wear.
13. Respirators successfully tested by the protocol may be used in contaminated atmospheres up to ten times the PEL of asbestos.
14. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.
15. If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed so as to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as powered air-purifying respirators, supplied air respirator, or self-contained breathing apparatus.
16. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician trained in respiratory diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing her or his duties.
17. Qualitative fit-testing shall be repeated at least every six months.
18. In addition, because the sealing of the respirator may be affected, qualitative fit- testing shall be repeated immediately when the test subject has a:
 - a. Weight change of 20 pounds or more.
 - b. Significant facial scarring in the area of the face piece seal.
 - c. Significant dental changes: e.g., multiple extractions without prosthesis, or acquiring dentures.
 - d. Reconstructive or cosmetic surgery, or
 - e. Any other condition that may interfere with face piece sealing.

Should another protocol be selected for fit-testing, please note that certain screening tests must be conducted to determine if the protocol is sufficient to accurately fit-test each employee. It is possible that Isoamyl Acetate and Saccharin Solution Aerosol are not detectable to the test subject.

C. Recordkeeping

The OSHA regulation also requires certain recordkeeping concerning each employee's qualitative fit-test. This recordkeeping shall be as described below in accordance with the OSHA Asbestos Standard. A form has been developed to track this information and is attached to this program (use the attached Qualitative Respirator Fit-Test Summary Form, for recordkeeping).

A summary of all test results shall be maintained (in the Director's office) for 3 years. The summary shall include:

1. Name of test subject
2. Date of testing
3. Name of test conductor
4. Respirators selected (indicate manufacturer, model, size and approval number)
5. Testing agent

Inspection and Cleaning

Each employee will be responsible for the inspection and cleaning of his/her own respirator. Each respirator must be cleaned, inspected, and disinfected at the end of each day that the respirator was used. Furthermore, each respirator will be visually inspected by the user prior to use. The respirator will be disinfected (using Lensacide brand, or equivalent), in accordance with the manufacturer's instructions and pursuant to procedures outlined during respirator training.

Maintenance

Each employee will be responsible for the maintenance of his/her own respirator, though the company will supply all necessary replacement parts (see the Director). Each employee will change the cartridges on his/her respirator after approximately each four hours of cumulative use. Records will be kept of every date the cartridges were changed (use the attached Respirator Inspection Checklist, Form R-2, for recordkeeping). Every time the cartridges are changed, whomever changes them will mark the date on the new cartridge with a felt tip marker. Interchanging parts between different brands of respirators is prohibited. Finally, no employee will be permitted to alter the assigned respirator.

Storage

Respirators will be stored in an appropriately marked location at the employee's work place. They will be stored in sealed plastic bags in such a manner as to prevent them from becoming warped or otherwise damaged. No other objects may be stored with the respirator; they could fall over or be jumbled so as to fall on top of the respirators and cause them to warp. Cartridges designed for purposes other than asbestos (e.g., organic vapor cartridges) will be clearly labeled as such and stored on a different shelf or location than the asbestos cartridges.

Medical Examinations

The employer will provide a medical examination on an annual basis for each employee who is assigned a negative pressure respirator. In addition, employees who are assigned negative pressure respirators will receive an examination within thirty days of employment or discharge. The employee shall not be charged for the examination. Records of the examination will be kept indefinitely. The examination will consist of, at a minimum:

1. Elicitation of medical history
2. A chest roentgenogram
3. Pulmonary function tests, including forced vital capacity and forced expiratory volume at one second

For additional information on medical examinations, review the Medical Surveillance Section located within the Operations & Maintenance Program Manual.

Air Quality Standards

Should supplied air respirators (class "C") ever be used by the employees, the air used will be of such quality as to meet the qualifications of the Compressed Gas Commodity Specification G- 7.1-1966. All other applicable regulations and guidelines will be followed.

APPENDIX B

Documentation Forms

**CLASS IV ASBESTOS WORK
MISCELLANEOUS OSHA AND EPA RECORDKEEPING**

Class IV Maintenance and Custodial activities during which employees contact ACM and PACM and activities to clean up waste and debris containing ACM and PACM.

Name of building: _____

Project Area(s): _____

CLASSIFICATION

1. OSHA Classification:

- Class IV Maintenance and Custodial activities during which employees contact ACM and PACM
- Class IV Activities to clean up waste and debris containing ACM and PACM

2. Regulated Area:

- Yes see Form D-2
- No

3. Schedule:

Starting Date: _____

Completion Date: _____

4. Type of material contacted:

- TSI (Thermal System insulation) Describe _____
- Surfacing Describe _____
- Material Other than TSI or Surfacing Describe _____
- Waste/Debris Source _____

5. Personnel performing activity: See attached sheet

| Name: | Accreditation #: | Type of Respirator/Clothing: (if applicable) |
|-------|------------------|---|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

6. Competent Person: - if applicable

Name: _____

Accreditation #. _____

TRANSPORTATION/STORAGE/DISPOSAL - IF APPLICABLE

1. Name and location of transportation company(s) from generator to disposal:

Contractor from Generator to Contractor storage site Transport Co. from Generator to disposal site

Transport Co. from Contractor to disposal site Contractor from Generator to disposal site

2. Name and location of disposal site of asbestos-containing material:

EXPOSURE MONITORING INFORMATION - IF APPLICABLE

1. Objective Data used exempting Exposure Monitoring:

Yes see Objective Data Documentation

No

2. Exposure Monitoring air sample(s) collected:

Yes

No

3. Method of Sampling:

Initial Exposure Assessment Monitoring Yes No

Excursion Sampling Yes No

Time Weighed Average (TWA) Monitoring Yes No

4. Results of Exposure Monitoring air sample(s) collected:

(see attached sheets)

5. Method of analysis:

Phase Contrast Microscopy (PCM)

Transmission Electron Microscopy (TEM)

6. Date(s) Exposure Monitoring air samples collected: _____

CONTRACTOR INFORMATION

1. Name and address of Asbestos Abatement Contractor who performed abatement activity:

Name _____

Street _____ City _____ State _____ Zip _____

Phone _____

2. License Number: _____

State: _____

3. Competent Person on-site: _____

Accreditation #: _____

4. Abatement Workers: See attached sheet

| Name: | Accreditation #: | Type of Respirator/Clothing: (if applicable) |
|-------|------------------|---|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

TRANSPORTATION/STORAGE/DISPOSAL - IF APPLICABLE

1. Name and location of transportation company(s) from generator to disposal:

- Contractor from Generator to Contractor storage site Transport Co. from Generator to disposal site
 Transport Co. from Contractor to disposal site Contractor from Generator to disposal site

2. Name and location of disposal site of asbestos-containing material:

11. Name and address of laboratory analyzing samples:

Name

Street City State Zip

12. Name and signature of person performing air sample analysis:

Print Name Signature Date

13. Statement of Exposure Monitoring laboratory's qualifications:

NOTE: Further documentation regarding air sample analysis required under 40 CFR, 1926.1101 c (1)(2) may be located on results sheets submitted for this project.

CLEARANCE INFORMATION

1. Post Abatement Clearance air sample(s) collected:

Yes []

No []

2. Locations and Results of Clearance air sample(s) collected:

(see attached sheets)

3. Amount of ACM abated:

[] NA Non-Friable

[] Equal or less than 10 sq ft or 15 ln ft

[] More than 10 sq ft or 15 ln ft and less than or equal 160 sq ft or 260 ln ft or 35 cu ft

[] more than 160 sq ft or 260 ln ft or 35 cu ft

4. Method of Clearance air sampling analysis:

Phase Contrast Microscopy (PCM) []

Transmission Electron Microscopy (TEM) []

5. Date(s) air samples collected: _____

6. Name and address of company performing Clearance air sample collection:

[] Same as Exposure Monitoring

Name

Street City State Zip

7. Name(s) and signature(s) of Clearance air sample collector(s):

| | | |
|------------|-----------|-------|
| _____ | _____ | _____ |
| Print Name | Signature | Date |
| _____ | _____ | _____ |
| Print Name | Signature | Date |

8. Date(s) of analysis: _____

9. Clearance sampling analysis conducted:

On-site []
Other [] specify where _____

10. Name and address of Clearance laboratory analyzing samples:

[] Same as Exposure Monitoring

| | | | |
|--------|------|-------|-----|
| _____ | | | |
| Name | | | |
| _____ | | | |
| Street | City | State | Zip |

11. Name and signature of person performing Clearance air sample analysis:

[] Same as Exposure Monitoring

| | | |
|------------|-----------|-------|
| _____ | _____ | _____ |
| Print Name | Signature | Date |

12. Statement of laboratory's qualifications:

[] Same as Exposure Monitoring

NOTE: Further documentation regarding air sample analysis required under 40 CFR, 1926.1101 c (1)(2) may be located on results sheets submitted for this project.

Employer/Employee/Tenant Notification

As required by the OSHA Regulation building and/or facility owners shall notify the following persons of the presence, location and quantity of ACM or PACM, at the work sites in their buildings and facilities. Notification either shall be in writing or shall consist of a personal communication between the owner and the person to whom notification must be given or their authorized representative:

- A. Prospective employers applying or bidding for work whose employees reasonably can be expected to work in adjacent to areas containing such material;
- B. Employees of the owner who will work in or adjacent to areas containing such materials;
- C. On Multi-employer worksites, all employers of employees who will be performing work within or adjacent to areas containing such material;
- D. Tenants who will occupy areas containing such materials.

Please complete this form and return it to: _____

I _____, representing and having authority for _____(company), hereby indicate and agree that a representative of the _____ building/facility, _____(name), (title) has provided me information regarding the specific locations and materials that are asbestos-containing and which may be encountered or have the potential of being encountered during the course of activities involving _____ (project name and/or number) in the above-mentioned building.

I expressly agree that neither I, nor any of my employees, agents, sub-contractors or other individuals or entities over whom I have any responsibility or control, will disturb asbestos-containing materials for the above mentioned building. I further understand and agree that should I, my employees, agents, sub-contractors or other individuals or entities over whom I have control, encounter any material(s) suspected of containing asbestos, said material(s) shall not be disturbed without first notifying the office of the building/facility owner, and receiving written approval that such material(s) may be disturbed.

Print Name

Signature

Company

Position

Date

**Contractor Certification of Asbestos-Free
Product Installation**

Name of building: _____

1. Contractor name and address:

Name

Street City State Zip

2. Brief scope of contracted activities:

3. Certification statement:

I _____, representing and having authority for _____
(company), hereby certify that any and all products/materials which will be and/or have been installed or introduced into the
above-mentioned building, _____ (project name and/or number) are asbestos free (or less than
1% asbestos by weight).

Print Name

Signature

Company

Position

Date

Proof of Asbestos Awareness Training
2-Hour Course (Class IV Work)

The intent of this form is to provide documentation that you have witnessed the 2-hour Asbestos Awareness Course. This form will be kept in your personal file.

I, _____, hereby verify and confirm that I have witnessed the 2-hour Asbestos Awareness training course on this date of _____. I further understand that if I have any questions regarding the course or need information regarding the locations of asbestos-containing materials in the buildings, I may contact _____, the building/facility owner/operator.

Print Name

Signature

Date

Title or Position

Proof of Asbestos Generic Material Training
8-Hour Course (Class II Work)

The intent of this form is to provide documentation that you have witnessed the 8-Hour Asbestos Generic Material Training Course. This form will be kept in your personal file.

I, _____, hereby verify and confirm that I have witnessed the 8-Hour Asbestos Generic Material training course specific for _____ on this date of _____.

I further understand that if I have any questions regarding the course or need information regarding the locations of asbestos-containing materials in the buildings, I may contact _____, the building/facility owner/operator.

Print Name

Signature

Date

Title or Position

**Proof of Operations and Maintenance Training Program
16-Hour Course (Class III Work)**

The intent of this form is to provide documentation that you have attended a 16-Hr Operations & Maintenance Program training course. This form will be kept in your personal file.

I, _____, hereby verify and confirm that I have witnessed the 16-Hour Operations & Maintenance Program training course on this date of _____. I further understand that if I have any questions regarding the course and/or need information regarding the locations of asbestos-containing materials in the buildings as well as questions regarding handling of asbestos-containing materials, I may contact _____, the building/facility owner/operator.

Print Name

Signature

Date

Title or Position

Asbestos Worker Training Program
32-Hour Course (Class I and II Work)

The intent of this form is to provide a listing of the personnel who have attended the Asbestos Worker Training Program and have obtained State Accreditation.

| Name | Training Course | Course Date | Expiration Date | State Accreditation Number | Expiration Date |
|------|-----------------|-------------|-----------------|----------------------------|-----------------|
|------|-----------------|-------------|-----------------|----------------------------|-----------------|

Contractor Supervisor Training Program

40-Hour Course

The intent of this form is to provide a listing of the personnel who have attended the Contractor Supervisor Training Program and have obtained State Accreditation.

| Name | Training Course | Course Date | Expiration Date | State Accreditation Number | Expiration Date |
|------|-----------------|-------------|-----------------|----------------------------|-----------------|
|------|-----------------|-------------|-----------------|----------------------------|-----------------|

Warning Label Installation

At the entrance to mechanical rooms/areas in which the employees reasonably can be expected to enter and which contain thermal system insulation and surfacing ACM/PACM, the building owner shall post signs which identify the material which is present, its location, and appropriate work practices which if followed, will ensure that ACM and or PACM will not be disturbed. In addition to above required information, labels must state:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

Name of building: _____

I, _____, of _____ Company hereby verify
that I have installed warning labels in this building in accordance with 40 CFR, 1926.1101, of the OSHA Regulation on
_____ (date).

Print Name

Signature

Date

Employer

APPENDIX C

Medical Surveillance Forms

MEDICAL SURVEILLANCE

(In accordance with OSHA, 29 CFR, 1926.1101, m(3))

Provided to physician: 1. OSHA Standard 29 CFR, 1926.1101; Appendices D, E, G and I.

To Whom It May Concern:

The following is a description of our employee's duties as they relate to the employee's exposure to airborne asbestos.

_____ is a _____ in our building/facility department. His/Her primary asbestos-related job duties include the following:

- Class I Asbestos Work Activities
- Class II Asbestos Work Activities
- Class III Asbestos Work Activities
- Class IV Asbestos Work Activities
- Asbestos Abatement Project Management
- Air sample Collection and Analysis
- Asbestos Inspections/Bulk Sample Collection/Project Design

Class I Asbestos Work Activities

During activities involving removal of TSI and surfacing ACM and PACM, **(Name)** will participate in the gross removal and clean-up of materials. The anticipated exposure levels while in the regulated area is rarely above 5 fibers per cubic centimeter (f/cc), based on an 8-hour time weighted average (TWA). **(Name)** is required by **(employer)** policy to wear a negative pressure respirator(PAPR above 2 f/cc TWA) and disposal coveralls at the minimum during this process.

Class II Asbestos Work Activities

During activities involving removal of ACM which is not thermal system insulation or surfacing material, **(Name)** will participate in the gross removal and clean-up of materials. The anticipated exposure levels while in the regulated area is rarely above 2 fibers per cubic centimeter (f/cc), based on an 8-hour time weighted average (TWA). **(Name)** is required by **(employer)** policy to wear a negative pressure respirator (PAPR above 2 f/cc TWA) and disposal coveralls at the minimum during this process.

Class III Asbestos Work Activities

During activities involving repair and maintenance operations where ACM including thermal system insulation and surfacing material is likely to be disturbed, **(Name)** will participate in the gross removal and clean-up of materials. The anticipated exposure levels while in the regulated area is rarely above 1 fibers per cubic centimeter (f/cc), based on an 8-hour time weighted average (TWA). **(Name)** is required by **(employer)** policy to wear a negative pressure respirator (PAPR above 2 f/cc TWA) and disposal coveralls at the minimum during this process.

Class IV Asbestos Work Activities

During maintenance and custodial activities during which employees contact ACM and PACM and activities to clean up waste and debris containing ACM and PACM, **(Name)** will participate in the clean-up of materials. The anticipated exposure levels while in the unregulated area is rarely above .1 fibers per cubic centimeter (f/cc), based on an 8-hour time weighted average (TWA) and the anticipated exposure levels while in the regulated area is rarely above 1 fibers per cubic centimeter (f/cc), based on an 8-hour time weighted average (TWA).

(Name) is required by (employer) policy to wear a negative pressure respirator and disposal coveralls above _____ f/cc at the minimum during this process.

Asbestos Abatement Project Management:

During asbestos abatement, (Name) will be on site to ensure that the job specifications are adhered to by the asbestos abatement contractor. (Name) may enter the regulated area to observe the contractor's abatement techniques. The anticipated exposure levels while in the regulated area is rarely above 1 fiber per cubic centimeter (f/cc), based on an 8-hour time weighted average (TWA). (Name) is required by (employer) policy to wear a negative pressure respirator and disposal coveralls at the minimum during this process.

Air Sample Collection and Analysis:

During asbestos abatement activities, (Name) may also perform air sample collection and analysis in accordance to OSHA regulations. This process may require (Name) to enter the regulated area to set air pumps. The anticipated exposure levels while in the regulated area is rarely above 1 f/cc, based on an 8-hour TWA. (Name) is required by (employer) policy to wear a negative pressure respirator and disposable coveralls at the minimum while conducting air samples.

Asbestos Inspection/Bulk Sample Collection/Project Design:

(Name) may also conduct building inspections to locate asbestos containing materials (ACM's). During these inspections, (Name) will collect bulk samples of suspected ACM's for subsequent analysis. The anticipated exposure levels while performing the sample collection is rarely above .5 f/cc, based on an 8-hour TWA. (Name) is required by (employer) policy to wear a negative pressure respirator and disposable coveralls at the minimum during this process.

[] Information from previous examinations of _____ (Name) is not available at this time.

[] If information from previous medical examinations of _____ (Name) is available, this information will have been brought to this exam with the employee.

Important note to physician: In accordance with OSHA, 29 CFR, 1926.1101 (m)(4)(D)(ii), the physician should not reveal in the written opinion given to the employer, specific findings or diagnoses unrelated to occupational exposure to asbestos, tremolite, anthophyllite, or actinolite.

If you have any questions or concerns regarding this information, please contact me at the below address or phone:

()

DOCUMENTATION

Signature of Employee

Date

Name of Clinic

Address

Signature of Clinic Representative

Date

MEDICAL SURVEILLANCE II

PHYSICIANS WRITTEN OPINION FORM

ASBESTOS

THIS SECTION IS TO BE FILLED OUT BY EMPLOYER

Employee Name: _____

Employee's Social Security No. _____

Location of Examination: _____

THIS SECTION TO BE FILLED OUT BY EXAMINING PHYSICIAN

1. This employee ___has___ does not have any detected medical conditions that would place the employee at an increased risk of material health impairment from exposure to asbestos, tremolite, anthophyllite, or actinolite.

2. The following limitations on this employee or on the use of personal protective equipment such as respirators are recommended:

_____ (If none, check here <__>)

3. This employee has been informed of the results of the medical examination and of any medical conditions that may result from asbestos, tremolite, anthophyllite, or actinolite exposure

4. This employee has been informed by the physician of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.

5. Results of the medical examination are as follows: (If attachments are used, please list.)

6. Other Comments:

Date of Examination: _____

Examining Physician's Signature: _____

Part 1
INITIAL MEDICAL QUESTIONNAIRE

1. NAME _____
2. SOCIAL SECURITY # _____
3. CLOCK NUMBER _____
4. PRESENT OCCUPATION _____
5. PLANT _____
6. ADDRESS _____
7. _____
8. TELEPHONE NUMBER _____ (Zip Code)
9. INTERVIEWER _____
10. DATE _____
11. Date of Birth _____
Month Day Year
12. Place of Birth _____
13. Sex 1. Male _____ 2. Female _____
14. What is your marital status? 1. Single _____ 2. Married _____ 3. Widowed _____ 4. Separated/Divorced _____
15. Race 1. White _____ 2. Black _____ 3. Asian _____ 4. Hispanic _____ 5. Indian _____ 6. Other _____
16. What is the highest grade completed in school (For example 12 years is completion of high school)? _____

OCCUPATIONAL HISTORY

- 17A. Have you ever worked full time (30 hours per week of more) for 6 months or more? 1. Yes _____ 2. No _____
- IF YES TO 17A:
- B. Have you ever worked for a year or more in any dusty job? 1. Yes _____ 2. No _____ 3. Does not apply _____
- Specify job/industry _____ Total years worked _____
- Was dust exposure: 1. Mild _____ 2. Moderate _____ 3. Severe _____
- C. Have you ever been exposed to gas or chemical fumes in your work? 1. Yes _____ 2. No _____
- Specify job/industry _____ Total years worked _____
- Was exposure: 1. Mild _____ 2. Moderate _____ 3. Severe _____
- D. What has been your usual occupation or job - the one you have worked at the longest?

1. Job occupation _____
2. Number of years employed in this occupation _____
3. Position/Job Title _____
4. Business, field or industry _____

(Record on lines the years in which you have worked in any of these industries, e.g. 1960-1969)

Have you ever worked:

| | Yes | No |
|------------------------------------|-----|-----|
| E. In a mine? | ___ | ___ |
| F. In a quarry? | ___ | ___ |
| G. In a foundry? | ___ | ___ |
| H. In a pottery? | ___ | ___ |
| I. In a cotton, flax or hemp mill? | ___ | ___ |
| J. With asbestos? | ___ | ___ |

18. PAST MEDICAL HISTORY

| | Yes | No |
|---|-----|-----|
| A. Do you consider yourself to be in good health? | ___ | ___ |
| If "NO" state reason _____ | | |
| B. Have you any defect of vision? | ___ | ___ |
| If "YES" state reason _____ | | |
| C. Have you any hearing defect? | ___ | ___ |
| If "YES" state nature of defect _____ | | |
| D. Are you suffering from or have you ever suffered from: | Yes | No |
| a. Epilepsy (or fits, seizures, convulsions)? | ___ | ___ |
| b. Rheumatic fever? | ___ | ___ |
| c. Kidney disease? | ___ | ___ |
| d. Bladder disease? | ___ | ___ |
| e. Diabetes? | ___ | ___ |
| f. Jaundice? | ___ | ___ |

19. CHEST COLDS AND CHEST ILLNESSES

19A. If you get a cold, does it “usually” go to your chest (usually means more than ½ the time)?
1. Yes _____ 2. No _____ 3. Don’t get colds _____

20A. During the past 3 years, have you had any chest illnesses that have kept you off work, indoors at home or in bed?
1. Yes _____ 2. No _____

IF YES TO 20A:

B. Did you produce phlegm with any of these chest illnesses? 1. Yes _____ 2. No _____ 3. Does not apply _____

C. In the last 3 years, how many such illnesses with (increased) phlegm did you have which lasted a week or more?

Number of illnesses _____ No such illnesses _____

21. Did you have any lung trouble before the age of 16? 1. Yes _____ 2. No _____

22. Have you ever had of the following?

1A. Attacks of bronchitis? 1. Yes _____ 2. No _____

IF “YES” TO 1A:

B. Was it confirmed by a doctor? 1. Yes _____ 2. No _____ 3. Does not apply _____

C. At what age was your first attack? Age in years _____ Does not apply _____

2A. Pneumonia (include bronchopneumonia)? 1. Yes _____ 2. No _____

IF “YES” TO 2A:

B. Was it confirmed by a doctor? 1. Yes _____ 2. No _____ 3. Does not apply _____

C. At what age did you first have it? Age in years _____ Does not apply _____

3A. Hay Fever? 1. Yes _____ 2. No _____

IF “YES” TO 3A:

B. Was it confirmed by a doctor? 1. Yes _____ 2. No _____ 3. Does not apply _____

C. At what age did it start? Age in years _____ Does not apply _____

23A. Have you ever had chronic bronchitis? 1. Yes _____ 2. No _____

IF “YES” TO 23A:

B. Do you still have it? 1. Yes _____ 2. No _____ 3. Does not apply _____

C. Was it confirmed by a doctor? 1. Yes _____ 2. No _____ 3. Does not apply _____

D. At what age did it start? Age in years _____ Does not apply _____

24A. Have you ever had emphysema? 1. Yes _____ 2. No _____

IF “YES” TO 24A:

B. Do you still have it? 1. Yes _____ 2. No _____ 3. Does not apply _____

C. Was it confirmed by a doctor? 1. Yes _____ 2. No _____ 3. Does not apply _____

D. At what age did it start? Age in years _____ Does not apply _____

25A. Have you ever had asthma? 1. Yes _____ 2. No _____

IF "YES" TO 25A:

B. Do you still have it? 1. Yes _____ 2. No _____ 3. Does not apply _____

C. Was it confirmed by a doctor? 1. Yes _____ 2. No _____ 3. Does not apply _____

D. At what age did it start? Age in years _____ Does not apply _____

E. If you no longer have it, what age did it stop? Age stopped _____ Does not apply _____

26. Have you ever had:

A. Any other chest illness? 1. Yes _____ 2. No _____

If yes, please specify _____

B. Any chest operations? 1. Yes _____ 2. No _____

If yes, please specify _____

C. Any chest injuries? 1. Yes _____ 2. No _____

If yes, please specify _____

27A. Has a doctor ever told you that you had heart trouble? 1. Yes _____ 2. No _____

IF "YES" TO 27A:

B. Have you ever had treatment for heart trouble in the past 10 years?

1. Yes _____ 2. No _____ 3. Does not apply _____

28A. Has a doctor told you that you had high blood pressure?

1. Yes _____ 2. No _____ 3. Does not apply _____

IF "YES" TO 28A:

B. Have you had any treatment for high blood pressure (hypertension) in the past 10 years?

1. Yes _____ 2. No _____ 3. Does not apply _____

29. When did you have your chest X-Rayed? Year _____

30. Where did you last have your chest X-Rayed (if known)? _____

What was the outcome? _____

FAMILY HISTORY

31. Were either of your natural parents ever told by a doctor that they had a chronic lung condition such as:

| | FATHER | | | MOTHER | | |
|----------------------------------|--------|---------------|------------|--------|---------------|------------|
| | Yes | No | Don't Know | Yes | No | Don't Know |
| A. Chronic Bronchitis? | ___ | ___ | ___ | ___ | ___ | ___ |
| B. Emphysema? | ___ | ___ | ___ | ___ | ___ | ___ |
| C. Asthma? | ___ | ___ | ___ | ___ | ___ | ___ |
| D. Lung cancer? | ___ | ___ | ___ | ___ | ___ | ___ |
| E. Other chest conditions? | ___ | ___ | ___ | ___ | ___ | ___ |
| F. Is parent currently alive? | ___ | ___ | ___ | ___ | ___ | ___ |
| G. Please specify | ___ | Age if Living | ___ | ___ | Age if Living | ___ |
| | ___ | Age at Death | ___ | ___ | Age at Death | ___ |
| | ___ | Don't Know | ___ | ___ | Don't Know | ___ |
| H. Please specify cause of death | _____ | | | _____ | | |

32A. Do you usually have a cough? (Count a cough with first smoke or on first going out of doors. Exclude clearing of throat) (If no, skip to Question 32C.) 1. Yes _____ 2. No _____

B. Do you usually cough as much as 4 to 6 times a day 4 or more days out of the week? 1. Yes _____ 2. No _____

C. Do you usually cough at all on getting up or first thing in the morning? 1. Yes _____ 2. No _____

D. Do you usually cough at all during the rest of the day or at night? 1. Yes _____ 2. No _____

IF YES TO ANY OF THE ABOVE (32 A, B, C OR D), ANSWER THE FOLLOWING. IF NO TO ALL, CHECK "DOES NOT APPLY" AND SKIP TO NEXT PAGE.

E. Do you usually cough more like this on most days for 3 consecutive months or more during the year?

1. Yes _____ 2. No _____ 3. Does not apply _____

F. For how many years have you had the cough? Number of years _____ Does not apply _____

33A. Do you usually bring up phlegm from your chest? (Count phlegm with the first smoke or on first going out of doors. Exclude phlegm from the nose. Count swallowed phlegm.) (If no, skip to Question 33C.) 1. Yes _____ 2. No _____

B. Do you usually bring up phlegm like this as much as twice a day 4 or more days out of the week? 1. Yes _____ 2. No _____

C. Do you usually bring up phlegm at all on getting up or first thing in the morning? 1. Yes _____ 2. No _____

D. Do you usually bring up phlegm at all during the rest of the day or at night? 1. Yes _____ 2. No _____

IF YES TO ANY OF THE ABOVE (33A, B, C OR D), ANSWER THE FOLLOWING:

IF NO TO ALL, CHECK "DOES NOT APPLY" AND SKIP TO 34A

E. Do you bring up phlegm like this on most days for 3 consecutive months or more during the year?

1. Yes ____ 2. No ____ 3. Does not apply ____

F. For how many years have you had trouble with phlegm? Number of years ____ Does not apply ____

EPISODES OF COUGH AND PHLEGM

34A. Have you had periods or episodes of (increased*) cough and phlegm lasting for 3 weeks or more each year? *(For persons who usually have cough and/or phlegm) 1. Yes ____ 2. No ____

IF "YES" TO 34A

B. For how long have you had at least 1 such episode per year? Number of years ____ Does not apply ____

WHEEZING

35A. Does your chest ever sound wheezy or whistling

1. When you have a cold? 1. Yes ____ 2. No ____

2. Occasionally apart from colds? 1. Yes ____ 2. No ____

3. Most days or nights? 1. Yes ____ 2. No ____

IF "YES" TO 1, 2, OR 3 IN 35A

B. For how many years has this been present? Number of years ____ Does not apply ____

36A. Have you ever had an attack of wheezing that has made you feel short of breath? 1. Yes ____ 2. No ____

IF "YES" TO 36A

B. How old were you when you had your first such attack? Age in years ____ Does not apply ____

C. Have you had 2 or more such episodes? 1. Yes ____ 2. No ____ 3. Does not apply ____

D. Have you ever required medicine or treatment for the(se) attack(s)? 1. Yes ____ 2. No ____ 3. Does not apply ____

BREATHLESSNESS

37. If disabled from walking by any condition other than heart or lung disease, please describe and proceed to Question 39A.

Nature of condition(s) _____

38A. Are you troubled by shortness of breath when hurrying on the level or walking up a slight hill? 1. Yes ____ 2. No ____

IF "YES" TO 38A

B. Do you have to walk slower than people of your age on the level because of breathlessness?

1. Yes ____ 2. No ____ 3. Does not apply ____

- C. Do you ever have to stop for breath when walking at your own pace on the level?
 1. Yes _____ 2. No _____ 3. Does not apply _____
- D. Do you ever have to stop for breath after walking about 100 yards (or after a few minutes) on the level?
 1. Yes _____ 2. No _____ 3. Does not apply _____
- E. Are you too breathless to leave the house or breathless on dressing or climbing one flight of stairs?
 1. Yes _____ 2. No _____ 3. Does not apply _____

TOBACCO SMOKING

- 39A. Have you ever smoked cigarettes? (No means less than 20 packs of cigarettes or 12 oz. of tobacco in a lifetime or less than 1 cigarette a day for 1 year.) 1. Yes _____ 2. No _____

IF "YES" TO 39A

- B. Do you now smoke cigarettes (as of one month ago)? 1. Yes _____ 2. No _____ 3. Does not apply _____
- C. How old were you when you first started regular cigarette smoking? Age in years _____ Does not apply _____
- D. If you have stopped smoking cigarettes completely, how old were you when you stopped?
 Age stopped _____ Check if still smoking _____ Does not apply _____
- E. How many cigarettes do you smoke per day now? Cigarettes per day _____ Does not apply _____
- F. On the average of the entire time you smoked, how many cigarettes did you smoke per day?
 Cigarettes per day _____ Does not apply _____
- G. Do or did you inhale the cigarette smoke?
 Does not apply _____ Not at all _____ Slightly _____ Moderately _____ Deeply _____

- 40A. Have you ever smoked a pipe regularly? (Yes means more than 12 oz. of tobacco in a lifetime.) 1. Yes _____ 2. No _____

IF "YES" TO 40A:

FOR PERSONS WHO HAVE EVER SMOKED A PIPE

- B. 1. How old were you when you started to smoke a pipe regularly? Age _____
2. If you have stopped smoking a pipe completely, how old were you when you stopped?
 Age stopped _____ Check if still smoking a pipe _____ Does not apply _____
- C. On the average over the entire time you smoked a pipe, how much pipe tobacco did you smoke per week? (A standard pouch of tobacco contains 1-1/2 oz.) oz. per week _____ Does not apply _____
- D. How much pipe tobacco are you smoking now? oz. per week _____ Not currently smoking a pipe _____
- E. Do you or did you inhale the pipe smoke?

Never smoked _____ Not at all _____ Slightly _____ Moderately _____ Deeply _____

41A. Have you ever smoked cigars regularly? (Yes means more than 1 cigar a week for a year) 1. Yes _____ 2. No _____

IF "YES" TO 41A

FOR PERSONS WHO HAVE EVER SMOKED A CIGAR

B. 1. How old were you when you started smoking cigars regularly? Age _____

2. If you have stopped smoking cigars completely, how old were you when you stopped?

Age stopped _____ Check if still smoking cigars _____ Does not apply _____

C. On the average over the entire time you smoked cigars, how many cigars did you smoke per week?

Cigars per week _____ Does not apply _____

D. How many cigars are you smoking per week now?

Cigars per week _____ Check if not smoking cigars currently _____

E. Do or did you inhale the cigar smoke?

Never smoked _____ Not at all _____ Slightly _____ Moderately _____ Deeply _____

Signature _____

Date _____

Part 2
PERIODIC MEDICAL QUESTIONNAIRE

1. NAME _____
2. SOCIAL SECURITY # _____
3. CLOCK NUMBER _____
4. PRESENT OCCUPATION _____
5. PLANT _____
6. ADDRESS _____
7. _____
8. TELEPHONE NUMBER _____ (Zip Code)
9. INTERVIEWER _____
10. DATE _____
11. What is your marital status? 1. Single _____ 2. Married _____ 3. Widowed _____ 4. Separated/Divorced _____
12. OCCUPATIONAL HISTORY
- 12A. In the past year, did you work full time (30 hours per week or more) for 6 months or more? 1. Yes _____ 2. No _____
- IF YES TO 12A:
- 12B. In the past year, did you work in a dusty job? 1. Yes _____ 2. No _____ 3. Does not apply _____
- 12C. Was dust exposure: 1. Mild _____ 2. Moderate _____ 3. Severe _____
- 12D. In the past year, were you exposed to gas or chemical fumes in your work? 1. Yes _____ 2. No _____
- 12E. Was exposure: 1. Mild _____ 2. Moderate _____ 3. Severe _____
- 12F. In the past year, what was your:
1. Job/Occupation _____
2. Position/Job Title _____
13. RECENT MEDICAL HISTORY
- 13A. Do you consider yourself to be in good health? Yes _____ No _____

13B. In the past year, have you developed:

| | Yes | No |
|------------------|-------|-------|
| Epilepsy? | _____ | _____ |
| Rheumatic Fever? | _____ | _____ |
| Kidney Disease? | _____ | _____ |
| Bladder Disease? | _____ | _____ |
| Diabetes? | _____ | _____ |
| Jaundice? | _____ | _____ |
| Cancer? | _____ | _____ |

14. CHEST COLDS AND CHEST ILLNESSES

14A. If you get a cold, does it “usually” go to your chest (usually means more than ½ the time)?

1. Yes _____ 2. No _____ 3. Don't get colds _____

15A. During the past year, have you had any chest illnesses that have kept you off work, indoors at home or in bed?

1. Yes _____ 2. No _____ 3. Does not apply _____

IF “YES” TO 15A:

15B. Did you produce phlegm with any of these chest illnesses? 1. Yes _____ 2. No _____ 3. Does not apply _____

15C. In the past year, how many such illnesses with (increased) phlegm did you have which lasted a week or more?

Number of illnesses _____ No such illnesses _____

16. RESPIRATORY SYSTEM

In the past year, have you had:

| | Yes | No | Comment further on Positive Answers |
|---------------------|-------|-------|-------------------------------------|
| Asthma | _____ | _____ | _____ |
| Bronchitis | _____ | _____ | _____ |
| Hay Fever | _____ | _____ | _____ |
| Other Allergies | _____ | _____ | _____ |
| Pneumonia | _____ | _____ | _____ |
| Tuberculosis | _____ | _____ | _____ |
| Chest Surgery | _____ | _____ | _____ |
| Other Lung Problems | _____ | _____ | _____ |
| Heart Disease | _____ | _____ | _____ |

Do you have:

Frequent colds _____

Chronic Cough _____

Shortness of breath when walking or
climbing one flight of stairs _____

Do you:

Wheeze _____

Cough up phlegm _____

Smoke _____ Packs per day _____ How many years _____

Date _____

Signature _____

QUALITATIVE RESPIRATOR FIT TEST SUMMARY

Negative Pressure Air Dual Cartridge Respirator. This fit test procedure has been developed and implemented in accordance with 29 CFR 1926.1101 of the OSHA Regulations.

Test Subject _____ Date _____

Respirator Selected

Manufacturer of Respirator _____

Model Number _____

Size _____

MSHA-NIOSH Approved _____

Test Subject Signature _____

Test Agent: (check one)

Irritant Smoke (Stannic Oxychloride)

Banana Oil (Isoamyl Acetate)

Saccharin Solution Aerosol

Test Conductor:

I hereby certify that the test subject listed above has passed a qualitative respirator fit test using the respirator and test agent listed.

Signature

Date

GLOSSARY OF TERMS

The following definitions will assist the user of this Operations and Maintenance Program Manual when reading industry-specific terms and regulation terminology. Please note that many of these definitions are regulation-specific and may often be exactly as defined by applicable regulations. Also, some of the terms below are not used within this Manual, but may often be referred to when dealing with certain asbestos situations.

Accredited Personnel

Properly trained and registered personnel who conduct certain activities, e.g., inspections, sample analysis, large-scale abatement projects, etc.

ACM

Asbestos-containing material. Any material or product that contains more than 1 percent asbestos by weight.

AFD

Air filtration device. HEPA filter equipped machines that filter air in an enclosure and other designated locations.

Air Sampling (Monitoring)

Air samples collected from a specific quantity of air, from a certain, defined area, in order to determine an airborne fiber concentration. These samples are usually reported as the amount of fibers present per cubic centimeter of air (f/cc).

Airborne

Unsettled fibers in the air.

Airless Water Sprayer

A device used to spray water on asbestos-containing materials that are not pressurized by air, thereby not causing disturbance to the material.

Amended Water

Water to which a chemical wetting agent (surfactant) has been added to improve the penetration capabilities on asbestos-containing materials.

Asbestos

A group of fibrous minerals that possess unique physical and chemical properties. These characteristics include fibrous nature, heat resistance, thermal and electrical resistance, flexibility, high tensile strength and stability in acids and alkalis. Asbestos includes many asbestiform varieties of which the following are the most common found in buildings: chrysotile, crocidolite and amosite.

Asbestos Abatement

Methods used to control or contain asbestos-containing materials. These methods are removal, encapsulation and encasement.

Authorized Person

Any person authorized by the employer and required by work duties to be present in regulated areas.

Building/Facility Owner

Is the legal entity, including a lessee, who exercises control over management and recordkeeping functions relating to a building and or facility covered by the OSHA standard.

Class I Asbestos Work

Activities involving the removal of TSI and surfacing ACM and PACM.

Class II Asbestos Work

Activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to the removal of asbestos containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III Asbestos Work

Repair and maintenance operations, where "ACM", including thermal system insulation and surfacing material is likely to be disturbed.

Class IV Asbestos Work

Maintenance and custodial activities during which employees contact ACM and PACM and activities to clean up waste and debris containing ACM and PACM.

Caution/Warning Signs

Signs that must be posted at all approaches to regulated areas so that all employees, personnel, and the public may read the sign and take necessary protective steps before entering the area.

Clean Room

An uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.

Closely Resemble

Means that all the major workplace conditions that have contributed to the levels of historic asbestos exposure, are no more protective than conditions of the current workplace.

Competent Person

Person who has received specialized training capable of identifying existing asbestos hazards in the workplace and who has the authority to take prompt corrective measures to eliminate them as specified in the OSHA Asbestos Standard.

Critical Barrier

One or more layers of plastic sealed over openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos from migrating to an adjacent area.

Coverall

Disposable body covering utilized use when disturbing asbestos-containing materials in any way.

Decontamination Area

An enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.

Debris

Asbestos-containing material that is no longer adhered to its original cohesive substrate. This material is usually found lying on the floor and on other horizontal surfaces.

Demolition

The wrecking or taking out of any load supporting structural member and any related razing, removing, or stripping of asbestos products.

Disposal Bag

Properly labeled bag used only for asbestos waste.

Disturbance

Contact which releases fibers from ACM or PACM or debris containing ACM or PACM. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris. Disturbance includes cutting away small amounts of ACM and PACM, no greater than the amount which can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length or width.

Documentation Forms

Forms used for the necessary and proper documentation of asbestos related activities. The forms are required to update the Management Plans.

Employee Exposure

Exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

Encapsulation

A response action entailing the covering of ACMs by coating the material with a sealing agent in order to prevent release of airborne asbestos.

Encasing

An abatement method by which an asbestos material is encased (totally enclosed) using some type of structure that seals the asbestos material within an airtight barrier.

Enclosure

An isolated area that is sealed from other building areas and where asbestos abatement activities commence. Proper engineering controls and project management methods isolate these work areas from other building areas.

Engineering Controls

Proper equipment and procedures used to control an asbestos related activity.

EPA

Environmental Protection Agency.

Exposure Monitoring

Air monitoring used to determine the concentrations of asbestos to which their individuals may be exposed.

Friable

Asbestos material that, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure (this includes nonfriable material that is damaged to the extent that when dry it may be crumbled, pulverized, or reduced to powder by hand pressure).

Glove Bag

Plastic bag-like enclosure used to contain small amounts of material, usually pipe insulation, for asbestos removal.

HEPA

High-efficiency particulate air. Filters used for trapping and retaining 99.97 percent of all particles larger than 0.3 micrometers. These filters are commonly used in air filtration devices, vacuums, respirators, and decontamination showers.

Homogeneous Area

An area of surfacing material, thermal system insulation material or miscellaneous material that is uniform in color and texture.

HVAC

Heating, Ventilation, and Air Conditioning systems found in many building.

Intact

The ACM has not crumbled, been pulverized, or otherwise deteriorated so that it is no longer likely to be bound with its matrix.

Labels

Refers to warning labels that are attached immediately adjacent to any friable and nonfriable ACMs and suspected ACMs, assumed to be ACM, located in routine maintenance areas (e.g., boiler rooms).

Maintenance Request/Work Order Forms

General forms that building owners/operators utilize for requesting maintenance work throughout the buildings.

Medical Surveillance

The employer shall institute a medical surveillance program for all employees who for a combined total of 30 or more days per year are engaged in Class I, II, and III work or who are exposed at or above the permissible exposure limit or excursion limit, and who wear negative pressure respirators pursuant to the requirements of this section.

Mil

Used to determine thickness of polyethylene sheeting. Mil is a prefix meaning one thousandth.

Mini-enclosure

A small walk-in enclosure (enclosed area) which accommodates no more than two persons. Made with applicable structural devices and polyethylene in order to isolate an area for disturbances or removal.

Minor Fiber Release Episode

The falling or dislodging of 3 square or linear feet or less of friable asbestos-containing material.

Negative Initial Exposure Assessment

A demonstration by the employer, which complies with the criteria in the OSHA standard that employee exposure during an operation is expected to be consistently below the PELs.

Negative Pressure Respirator

Air is drawn through the respirator's filters when the wearer breathes; as compared to having air supplied mechanically.

NIOSH

National Institute for Occupational Safety and Health.

Non-friable

Asbestos material that, when dry, may not be crumbled, pulverized, or reduced to powder by hand pressure.

Operations & Maintenance Program (O&M)

A program of work practices to maintain friable ACBM in good condition, ensure clean up of asbestos fibers previously released, and prevent further release by minimizing and controlling friable ACBM disturbance or damage.

OSHA

Occupational Safety and Health Administration.

Phase Contrast Microscopy (PCM)

Method of air sample analysis.

Permissible Exposure Limit PEL

An airborne concentration of asbestos of 0.1 fibers per cubic centimeter (f/cc) of air calculated as an eight (8)-hour time weighted average.

Phase Light Microscopy (PLM)

Method of bulk sample analysis.

Polyethylene

Plastic sheeting used for sealing off asbestos work areas such as large enclosures and mini-enclosures. Also used for drop cloths and various other asbestos work practices.

Positive Air-Purifying Respirator

Air is supplied to the respirator wearer. This is done by either having the surrounding air forced through the respirator filters or by a supplied air source being forced through the respirator filters.

Post Abatement (Clearance) Air Samples

Samples collected following the completion of an asbestos abatement project in order for clearance of the site in accordance with air levels set by applicable regulations.

Presumed Asbestos Containing Material (PACM)

Thermal System Insulation, surfacing, and flooring material found in buildings constructed no later than 1980.

Preventive Measure

Actions taken to reduce disturbance of ACBMs or otherwise eliminate the reasonable likelihood of the material becoming damaged or significantly damaged.

Project Designer

A person who has successfully completed the training requirements for an abatement project designer.

Regulated Area

An area established to demarcate (mark off) areas where Class I, Class II, and Class III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work occur; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit (PEL).

Removal

All operations where ACM and/or PACM are taken out or stripped from structures or substrates, and include demolition operations.

Renovation

The modifying of any existing structure, or portion thereof.

Repair

Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, and including encapsulation or other repair of ACM or PACM attached to structures or substrates.

Respirator

Personal protective face-piece used with proper filters to prevent the inhalation of airborne asbestos fibers.

Respirator Program

Program designed to motivate and train personnel to wear proper respiratory protection and to provide administrative controls to ensure that these objectives are met.

Response Team

A group of workers selected to conduct specific asbestos related activities.

Surfacing Material

Material that is sprayed, trowelled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing and other purposes. Materials must contain more than 1% asbestos.

Surfactant

The chemical wetting agent that is added to water to enhance its penetration into asbestos-containing materials

Transmission Electron Microscopy (TEM)

Method of air and bulk sample analysis.

Thermal System Insulation (TSI)

ACM applied to pipes, fittings, boilers, breaching, tanks, ducts, or other structural components to prevent heat loss or gain. Materials must contain more than 1% asbestos.

Wet-Wiping

A cleaning procedure using wet towels/rags to wipe off ACM.