Asbestos Awareness Training
Please watch video

- [https://www.youtube.com/watch?v=pgZeWA0aAFU](https://www.youtube.com/watch?v=pgZeWA0aAFU)
Asbestos is a Hazard that has No Visible Signs.

- Known as the “silent killer”, asbestos is an odorless, colorless material, made from “rock”.
Asbestos Has Special And Unique Characteristics.

- Fibers so small that they can only be seen with a powerful microscope.
- Strong as Steel
- Fireproof
- Does not conduct electricity
- Absorbs sound
- Is light-weight
Asbestos has been used in construction in many ways.
Breathing Asbestos Fibers Can Damage the Lungs!

- Because asbestos fibers are small and light they can float in the air for a long time and get inhaled. This can cause serious illness, such as “asbestosis.” This disease, which damages the lungs, can cause:
  - Shortness of breath.
  - Enlargement of the heart.
  - In extreme cases… death.
Friable Asbestos

- When dry, an ACM (asbestos containing material) is considered friable if it can be crumbled, pulverized, or reduced to powder by hand pressure.
Friable Asbestos Permissible Exposure Level

The PEL (permissible exposure level) was reduced to an 8 hour, time-weighted average of 0.1 fibers per cc of air.
Asbestos is especially dangerous for smokers!

- In normal lungs mucus captures most inhaled particles. Small hairs called “cilia” move this mucus out of the lungs.
- But smoking numbs the cilia, allowing more particles into the lungs. As a result, smokers are 50 times more likely to develop an illness after exposure to asbestos.
What Activities Can Involve Exposure to Asbestos?

- Flooring installed before 1980 frequently contains asbestos.
- Stripping floors should be done wet and at buffer speeds below 300 rpm.
- Pipe insulation damage or repair. Do not handle this unless trained to do so.
- The key to prevention is not to disturb any materials that contain asbestos.
Thermal System Insulation

- This insulation was the most common use for asbestos in structures built before 1980. It can be found around:
  - Heating Systems
  - Boilers
  - Utility Pipes
  - Ductwork.
What is Friable Asbestos Material?

- Asbestos that is soft and brittle and is easily crumbled in your hand, releasing asbestos fibers into the air.
What is Non-Friable Asbestos?

- ACM’s, such as floor tiles, are “non-friable”. They can take much more abuse before fibers are released because they are encapsulated in a hard material.
Cleaning, Stripping, Waxing
V.A.T Vinyl Asbestos Floor Tile

- Wet Mop
- Wet Vac
- Strip Machine 175-300RPM.
- Never perform dry stripping!
- 3-4 layers of sealer need to be applied.
V.A.T. in bad condition.

Allows friable asbestos fibres to become airborne!

No Sealer
Buffer Speeds no higher than 300 RPM.

Use white or red pads
OSHA rules for VAT Floor Care Procedures

STRIPPING – ROTARY FLOOR MACHINE VAT

The care of vinyl asbestos tiles (VAT), must be handled in accordance with OSHA regulations and procedures. The exact process is referenced in 29 CFR 1910.1001. The sanding of VAT flooring is prohibited. Stripping activities must employ wet methods, and use low abrasion pads at an rpm of 300 rpm or less.

Burnishing or dry buffing is allowed, but ONLY if performed on VAT which have sufficient finish build up to inhibit the pad from contacting the raw tiles. Care must be taken when removing dust from the burnishing operation.

Generally speaking if there is sufficient finish on the floor one would not expect to generate asbestos containing dust.
After sealer is put on...

3-4 layers of sealer
Asbestos Debris Should be Handled with Caution!

- Dust and debris that contain asbestos must be handled with extreme caution.
  - Do not sweep or shovel dry materials.
  - Wet down any debris before, during, and after sweeping or bagging it for disposal.
  - Do not use ordinary vacuum to clean up asbestos debris. Only use HEPA (High-efficiency particulate arrestance) filtered vacuum for this type of work.
Wearing appropriate PPE is especially important

- Work involving asbestos or ACMs can only be performed by people who are specially trained and authorized.
- Work involving asbestos must be contained to prevent contaminating other areas.
- Negative pressure containment area’s are used to prevent cross contamination.
Asbestos Handling Procedure

- Visually see damaged or friable asbestos
- Report it to your supervisor
- Contact H&FS Office X7999
- Fill out Maintenance Requisition
- Physical Plant calls in HBC asbestos abatement contractors who remove or reseal asbestos.
- FTC&H Industrial Hygienist monitors work.
Asbestos is a Regulated Waste.

- Asbestos is a regulated waste so exercise extreme caution when handling disposal bags.
- Air monitoring by an Industrial Hygienist may be required to assure the safety of the area.
- Employees who may, as a result of their job, be required to work around or with asbestos need to be medically monitored and properly trained on use of PPE.
- Wash your hands and face thoroughly with soap before leaving work.
Know Where Asbestos Is Located in Your Workplace.

- A complete Asbestos/Lead survey was completed at Hope College in 2008. A list of each building and what each building contains is documented on this survey which was conducted by FTC&H.
- This survey information can be viewed at the Physical Plant or H&FS office.
An Asbestos Management Plan Is Essential

- An “Asbestos Management Plan” lists the locations, information, persons responsible for ACM’s in your facility. This should be the first place to look for information on how to know what is in your building and how to avoid exposure. See link below

- http://www.hope.edu/admin/safety/PDFs/asbestos_manage_pln.pdf
A Comprehensive Asbestos and Lead Survey Test Result CD was made by FTC&H. This can be viewed by contacting the Physical Plant of Health & Fire Safety Office.
Hope College

Hazardous Materials Inspection Report Buildings

November 2008
Project Number 08043
Assumed Asbestos Containing Materials in buildings

9” X 9” Vinyl Floor Tile

Dual Black  Driftwood
Charcoal Gray  Dual Brown
ET Cedar  Forest Green
White

Asphalt Shingles

Fire Doors

Aircell Pipe Insulation
Buildings Built Post 1980

Assumed Non-Asbestos
Items presumed not to contain asbestos or lead and excluded from samples are ...
Lead Paint

Paint Samples were taken and tested in all Residential Buildings.

Test results are listed by building on inspection report.
### Description of Homogeneous Materials

**Table 1**

<table>
<thead>
<tr>
<th>Facility Owner</th>
<th>Facility I.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hope College</td>
<td>Avison</td>
</tr>
<tr>
<td></td>
<td>94 East 14th Street</td>
</tr>
<tr>
<td></td>
<td>Holland, MI 49423</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site Contact</th>
<th>Asbestos Identified in Bldg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. Jerry Gunnink</td>
<td>☑ Yes ☐ No</td>
</tr>
<tr>
<td>178 East 11th Street</td>
<td></td>
</tr>
<tr>
<td>Holland, MI 49423</td>
<td></td>
</tr>
<tr>
<td>Telephone: 616-395-7999</td>
<td></td>
</tr>
</tbody>
</table>

| Number of Floors     | 2 plus attic                                      |
|                      |                                                   |
| Basement             | ☑ Yes ☐ No                                        |
|                      |                                                   |
| Approximate Sq. Ft.  | 2,772                                             |

<table>
<thead>
<tr>
<th>Project No.</th>
<th>G080483A08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Inspection</td>
<td>August 1, 2008</td>
</tr>
<tr>
<td>Name of Inspector</td>
<td>Mr. Reuben P. Van Dam</td>
</tr>
<tr>
<td>Inspector Accreditation No.</td>
<td>A34144</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reference Documents</th>
<th>Tables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duct Wrap Observed</td>
<td>Table 1 – Description of Homogeneous Materials</td>
</tr>
<tr>
<td>Exterior Window Caulk Contains Asbestos</td>
<td>Table 2 – Bulk Sample Location Log</td>
</tr>
<tr>
<td></td>
<td>Table 3 – Summary of Asbestos-Containing Homogeneous Materials</td>
</tr>
<tr>
<td></td>
<td>Table 4 – Lead-Based Paint Results</td>
</tr>
<tr>
<td></td>
<td>Appendix 1 – Floor Plans Showing Sample Sites</td>
</tr>
<tr>
<td></td>
<td>Appendix 2 – Analytical Results</td>
</tr>
</tbody>
</table>

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Duct Wrap Observed
Exterior Window Caulk Contains Asbestos
## Table 2 - Bulk Sample Location Log

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sample Location</th>
<th>Asbestos</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVI-1-1A</td>
<td>First floor, basement steps, above door</td>
<td>None Detected</td>
<td>White finish coat</td>
</tr>
<tr>
<td>AVI-1-1B</td>
<td>First floor, basement steps, above door</td>
<td>None Detected</td>
<td>Gray base coat</td>
</tr>
<tr>
<td>AVI-1-2A</td>
<td>First floor, entry way, closet SW corner</td>
<td>None Detected</td>
<td>White finish coat</td>
</tr>
<tr>
<td>AVI-1-2B</td>
<td>First floor, entry way, closet SW corner</td>
<td>None Detected</td>
<td>Gray base coat</td>
</tr>
<tr>
<td>AVI-1-3</td>
<td>First floor, entry way, above doorbell</td>
<td>None Detected</td>
<td>White finish coat only; insufficient base coat sample</td>
</tr>
<tr>
<td>AVI-1-4A</td>
<td>First floor, entry way, across from closet</td>
<td>None Detected</td>
<td>White finish coat</td>
</tr>
<tr>
<td>AVI-1-4B</td>
<td>First floor, entry way, across from closet</td>
<td>None Detected</td>
<td>Gray base coat</td>
</tr>
<tr>
<td>AVI-1-5A</td>
<td>Second floor, stairwell, east wall</td>
<td>None Detected</td>
<td>White finish coat</td>
</tr>
<tr>
<td>AVI-1-5B</td>
<td>Second floor, stairwell, east wall</td>
<td>None Detected</td>
<td>Gray base coat</td>
</tr>
<tr>
<td>AVI-1-6</td>
<td>Second floor, room closet, north wall</td>
<td>None Detected</td>
<td>Tan base coat only; insufficient finish coat sample</td>
</tr>
<tr>
<td>AVI-1-7A</td>
<td>Second floor, attic stairs ceiling</td>
<td>None Detected</td>
<td>White finish coat</td>
</tr>
<tr>
<td>AVI-1-7B</td>
<td>Second floor, attic stairs ceiling</td>
<td>None Detected</td>
<td>Gray base coat</td>
</tr>
<tr>
<td><strong>AVI-4-1</strong></td>
<td>Second floor, bathroom closet</td>
<td>10% Chrysotile</td>
<td></td>
</tr>
<tr>
<td>AVI-5-1</td>
<td>Second floor, bathroom, under cabinet</td>
<td>None Detected</td>
<td></td>
</tr>
<tr>
<td>AVI-6-1</td>
<td>Second floor, bathroom closet</td>
<td>None Detected</td>
<td></td>
</tr>
<tr>
<td>AVI-7-1A</td>
<td>Second floor, room 22, west closet</td>
<td>None Detected</td>
<td>Green sfc</td>
</tr>
<tr>
<td>AVI-7-1B</td>
<td>Second floor, room 22, west closet</td>
<td>None Detected</td>
<td>Yellow mastic</td>
</tr>
<tr>
<td>AVI-8-1A</td>
<td>Second floor, room 22, west closet</td>
<td>None Detected</td>
<td>Pink/blue carpet</td>
</tr>
<tr>
<td>AVI-8-1B</td>
<td>Second floor, room 22, west closet</td>
<td>None Detected</td>
<td>Yellow mastic</td>
</tr>
<tr>
<td>AVI-9-1A</td>
<td>First floor, kitchen, under sink</td>
<td>None Detected</td>
<td>Black cove base</td>
</tr>
<tr>
<td>AVI-9-1B</td>
<td>First floor, kitchen, under sink</td>
<td>None Detected</td>
<td>Tan mastic</td>
</tr>
<tr>
<td>AVI-10-1</td>
<td>First floor, east kitchen doorway</td>
<td>None Detected</td>
<td></td>
</tr>
<tr>
<td>AVI-11-1</td>
<td>First floor, bathroom, NE corner</td>
<td>None Detected</td>
<td></td>
</tr>
<tr>
<td>AVI-13-1</td>
<td>South kitchen window</td>
<td>&lt;1% Chrysotile</td>
<td></td>
</tr>
<tr>
<td>AVI-14-1</td>
<td>First floor, east doorway of kitchen</td>
<td>20% Chrysotile</td>
<td></td>
</tr>
<tr>
<td>AVI-15-1</td>
<td>Top basement stair</td>
<td>None Detected</td>
<td></td>
</tr>
</tbody>
</table>
### Table 3 - Summary of Asbestos-Containing Homogeneous Materials

**Hazardous Materials Inspection Report**
**Inspection Date: August 1, 2008**
**Hope College, Avion**

<table>
<thead>
<tr>
<th>HA Number</th>
<th>Material Description</th>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Duct wrap</td>
<td>3</td>
<td>s.f.</td>
</tr>
<tr>
<td>4</td>
<td>[Linoleum (green with black veins)]</td>
<td>80</td>
<td>s.f.</td>
</tr>
<tr>
<td>13</td>
<td>Window caulk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Linoleum (similar to HA 4)</td>
<td>174</td>
<td>s.f.</td>
</tr>
</tbody>
</table>

**HA Homogeneous Area**
- s.f. square feet
- I.f. linear feet

Note: HA 3 assumed to be asbestos-containing; no samples obtained.
# Summary of Lead Paint Inspection

## Table 4 - Summary of Paint Chip Sample Results

**Hazardous Materials Inspection Report**  
**Inspection Date:** August 1, 2008  
**Hope College, Avison**

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Sample Site</th>
<th>HA Description</th>
<th>Lead Concentration (% by wt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVI-PB-1</td>
<td>Back porch above ceiling</td>
<td>Yellow paint</td>
<td>11</td>
</tr>
<tr>
<td>AVI-PB-2</td>
<td>Bathroom, closet</td>
<td>White Interior wall paint</td>
<td>3.2</td>
</tr>
<tr>
<td>AVI-PB-3</td>
<td>Bedroom 22, west closet</td>
<td>White Interior trim paint</td>
<td>&lt;0.03</td>
</tr>
<tr>
<td>AVI-PB-4</td>
<td>Door on basement steps</td>
<td>Green Interior paint</td>
<td>1.7</td>
</tr>
<tr>
<td>AVI-PB-5</td>
<td>Window east of front door</td>
<td>Brown exterior trim paint</td>
<td>0.12</td>
</tr>
</tbody>
</table>
Lead Paint Exposure Test Results

RESULTS

The breathing zone air sample did not exceed the OSHA AL of 30 µg/m³ during the time of monitoring. Sample results can be found below in Table 1. The laboratory report of analytical results is enclosed.

Table 1 – Lead in Air Results Summary
May 20, 2009

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sample Location</th>
<th>Duration</th>
<th>Results (µg/m³)</th>
<th>8 Hour TWA (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pb-0520-01</td>
<td>Breathing Zone,</td>
<td>240 minutes</td>
<td>3.9</td>
<td>1.95</td>
</tr>
</tbody>
</table>

µg/m³ = micrograms per cubic meter
Outdoor weather conditions: Clear skies, 75°F, 30% relative humidity, southwest wind 15-20 mph

DISCUSSION AND RECOMMENDATIONS

Based on the information presented above, FTC&H has concluded that employee exposure to lead is below the OSHA AL and PEL, and use of respiratory protection is not required for this task conducted at Hope College located in Holland, Michigan. No additional sampling is required unless work practices, equipment, or materials change.

The representative data collected for this task can be used for a period of 12 months from the date of sampling. Monitoring during the 12 months is not required by the OSHA Lead Construction Standard, unless there is a change in procedure, equipment, control measures, or a new task is initiated.
Map Showing Sample Locations for Avision Cottage

Asbestos Sample in Green
Lead Samples in Red.
Asbestos Management Plan

- Please review the Hope College Asbestos Management Plan located at:
- http://www.hope.edu/admin/safety/PDFs/asbestos_manage_pln.pdf
Review

- Knowing where asbestos is located in your workplace will help you avoid exposure.
- Regularly inspect areas where asbestos can be found, and look for potential problems and report them.
- Do not disturb ACMs unless it is absolutely necessary.
- Wear PPE when working with ACM. Make sure it fits properly before using it.
- Always decontaminate after working with ACMs.
QUIZ

ABESTOS AWARENESS TRAINING

1. Asbestos is Known as the “silent killer”, asbestos is an odorless, colorless material, made from “rock”.
   T or F

2. Because asbestos fibers are small and light they can float in the air for a long time and get inhaled. This can cause serious illness, such as “asbestosis”. This disease, which damages the lungs, can cause:
   A. Shortness of breath.
   B. Enlargement of the heart.
   C. In extreme cases... death.
   D. All of the above

3. When dry, an ACM (Asbestos Containing Material) is considered friable if it can be crumbled, pulverized, or reduced to powder by hand pressure.
   T or F

4. The OSHA PEL (permissible exposure limit) was reduced to an 8 hour, time-weighted average of 0.1 fibers per cc of air.
   T or F
5. Asbestos is especially dangerous for smokers because:
   A. Smoking also causes cancer
   B. Smoking numbs the cilia, allowing more particles into the lungs.
   C. Smoking causes emphysema

6. Even though floor tile is considered non-friable because it is encapsulated in the floor tile it can become friable by buffing, grinding, chipping, or becoming damaged.
   T or F

7. Asbestos can be found in which of these?
   A. Floor Tile
   B. Basement mechanical rooms
   C. Window caulk
   D. All of the above

8. A complete Asbestos/Lead survey was completed at Hope College in 2008. A list of each building and what each building contains is documented on this survey which was conducted by FTC&H. This survey can be viewed at:
   A. Physical Plant Office
   B. Health and Fire Safety Office
   C. Human Resources Office
   D. A and B
   E. B and C
9. Activities that may involve exposure to Asbestos may include stripping vinyl asbestos floor tile on floors installed before 1980. Buffer speeds should be reduced to that the tiles do not start emitting friable asbestos fibers into the air. Buffer speeds should not be higher than:
   A. 400 RPM
   B. 350 RPM
   C. 300 RPM

10. Thermal System Insulation containing asbestos can be found on heating pipes, boilers, ductwork, and hot-water tanks most commonly in buildings built prior to:
    A. 1990
    B. 1980
    C. 1970

11. Dust and debris that contain asbestos must be handled with extreme caution.
    A. Do not sweep or shovel dry materials.
    B. Wet down any debris before, during, and after sweeping or bagging it for disposal.
    C. Do not use ordinary vacuum to clean up asbestos debris. Only use HEPA vacuum for this type of work.
    D. All of the above
Make a copy of pages 39-42 of the quiz and send a copy to the Health and Fire Safety Office. 178 East 11th Street Holland, MI 49423
X7999