

**LIMITED POTENTIALLY HAZARDOUS MATERIAL BUILDING
INSPECTION REPORT
AND
ASBESTOS BUILDING INSPECTION REPORT**

for

Michigan State University
Physical Plant Division
Engineering and Architectural Services Department
East Lansing, Michigan 48824

at the

Food Stores Building
Building #171
Michigan State University
East Lansing, Michigan 48823

Inspection conducted by:

Fibertec Industrial Hygiene Services, Inc.
1914 Holloway Drive
Holt, Michigan 48842

Project #20143-1

Project dates: December 28, 2004 through January 14, 2005

Final Report Date: February 22, 2005

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Food Stores Building #171
Project #20143-1

INTRODUCTION

Fibertec Industrial Hygiene Services, Inc. (Fibertec IHS) was retained by the Michigan State University Engineering and Architectural Services Department to conduct a comprehensive asbestos building inspection and a limited potentially hazardous materials inspection. The project was discussed with Mr. Greg Houghtaling of the Engineering and Architectural Services Department prior to beginning the fieldwork. Mr. Houghtaling requested a comprehensive asbestos building inspection and an inventory of other potentially hazardous building materials within those areas of the building to be renovated, including the collection of an appropriate number of bulk asbestos samples in accordance with the provisions of the Asbestos in Construction Standard.

The building inspection took place from December 28, 2004 to January 14, 2005.

Asbestos

During the inspection, bulk samples of suspect asbestos-containing material (ACM) were collected and submitted to the Fibertec IHS Polarized Light Microscopy (PLM) laboratory for analysis. Quantities of suspect asbestos-containing materials were estimated.

Hazardous Materials

A visual inspection was conducted for PCB light ballasts, chlorofluorocarbons in water coolers, mercury vapor in fluorescent light bulbs, mercury switches and thermostats, lead in paints or glazes and metals in incinerator ash.

CERTIFICATION

The building inspection was conducted by John Luna, a State of Michigan accredited Asbestos Building Inspector. Mr. Luna also maintains accreditation as an Asbestos Contractor Supervisor.

Steven Day and John Sink, trained Polarized Light Microscopists, analyzed all bulk asbestos samples in the Fibertec IHS Polarized Light Microscopy (PLM) laboratory.

GENERAL INSPECTION PROCEDURES

In an effort to identify potentially hazardous material at the Food Stores Building, an extensive inspection procedure was followed. A visual inspection of all areas impacted by the future renovations was combined with the collection of an appropriate number and distribution of bulk asbestos samples. Material sampling that would potentially compromise the weather tight integrity of the building envelope was not conducted (e.g., window glazing compound, roofing) at the request of Michigan State University (including any exterior sampling).

Asbestos

Determination of suspect asbestos-containing material was based on visual examination, bulk sample analysis, material age and professional experience. Specifically, materials similar in color and texture were classified into homogenous areas (e.g., drywall). An appropriate number of samples were collected from material in each homogenous area. The samples were analyzed by Polarized Light Microscopy (PLM) in the Fibertec IHS PLM Laboratory. When the results of analysis of all samples from a homogenous area indicate no asbestos present (less than or equal to one percent), the homogenous area is considered to be a non-asbestos containing material. When the results of analysis indicate asbestos present (in a quantity greater than one percent) in just one sample of those collected from a single homogenous area, the material in the entire homogenous area must be considered asbestos-containing.

Destructive testing (*i.e.*, demolition) was not conducted as part of this asbestos building inspection. Additionally, some asbestos-containing material hidden from view (e.g., pipe insulation in inaccessible pipe chases, between walls, floor leveling compound below floor tile, duct caulk on duct in mechanical shafts and vermiculite in cinderblock walls) may be present and may not have been accounted for as part of this inspection.

Hazardous Materials

A visual inspection was conducted for PCB in ballasts, chlorofluorocarbons, mercury vapor in fluorescent light bulbs, mercury in switches and thermostats, lead in paints or glazes and metals in incinerator ash. The ballasts were assumed to contain PCB if they were not labeled. The fluorescent bulbs were assumed to contain mercury vapor if green end caps were not present on the bulbs. The covers of the thermostats were removed to determine if there was mercury visible in the assembly. A sample of ceramic tile glaze was collected for lead determination. Samples of fly ash were collected for analysis to determine the metals content of the ash.

RESULTS OF VISUAL INSPECTION

Asbestos

Based on the inspection, 28 distinct suspect asbestos-containing materials were identified in the Food Stores Building. Some suspect asbestos-containing materials were sampled a number of times in different locations, drywall, being an example. All suspect asbestos-containing materials observed at the time of the inspection are listed in the Room by Room Hazard Assessment Forms.

BULK SAMPLE RESULTS

The information gathered from the inspection is included in Appendices B (Bulk Asbestos and Paint Sample Log), C (Bulk Asbestos and Paint Sample Analytical Report), D (Room By Room Hazard Assessment Forms), E (Photograph Log), F (Floor Plan Sketches) and G (Significantly Damaged ACM).

SUMMARY OF ASBESTOS-CONTAINING MATERIALS

The following materials were found to contain asbestos in the Food Stores Building:

- Domestic water pipe joint and hanger insulation
- Drywall joint compound
- Gray ceramic bedding compound

The following materials were found not to contain asbestos in the Food Stores Building:

- 9" x 9" tan floor tile with tan swirls and associated mastic
- White window frame caulk compound (interior)
- White ceramic wall tile grout
- Refrigeration gray caulk compound
- Refrigeration white caulk compound
- Black vapor barrier over fiberglass insulation
- 2' x 2' white drop-in ceiling tile with pin holes and fissures
- 4" black cove molding and associated mastic
- Plaster (over ventilation ductwork)
- Tan vinyl stair tread and associated mastic
- Cream vinyl flooring with tan specks and associated mastic
- Cream sink undercoating
- 2' x 4' white lay-in ceiling tile with pin holes and fissures
- Drywall
- 4" brown cove molding and associated mastic
- 12" x 12" cream floor tile with rust streaks and associated mastic
- 4" tan cove molding and associated mastic
- Domestic water pipe straight insulation

The following materials were assumed to contain asbestos in the Food Stores Building:

- Fire doors and frames
- Roof drain pipe joint insulation (inaccessible during the inspection)
- Roofing products
- Green building caulk compound
- Gray building caulk compound
- Black building caulk compound
- White building and window frame caulk compound (exterior)

Summary of Potentially Hazardous Materials

Unlabeled ballasts presumed to contain PCB, mercury vapor-containing fluorescent light bulbs and water coolers presumed to contain chlorofluorocarbons were observed. No duct sections were observed to be lined or insulated. As such, no PCBs are believed to be present in the ductwork. No mercury switches or thermostats were observed, lead was found in the glaze on the ceramic wall tile and metals were discovered in the fly ash. Observed items are listed in the Room by Room Hazard Assessment Forms in Appendix E.

CONCLUSION

Asbestos

Undamaged, non-friable (cannot be crumbled, pulverized or reduced to powder by hand pressure when dry) known or assumed asbestos-containing materials, as well as friable known asbestos-containing materials were discovered during the course of this inspection. At least some of the materials are likely to be impacted by the upcoming renovation and must be removed by trained, protected individuals prior to disturbance by the renovation.

Hazardous Materials

PCB ballasts, mercury vapor-containing fluorescent light bulbs, and water cooler units presumed to contain chlorofluorocarbons were observed at the Food Stores Building and could be impacted by the renovation. Ballasts and bulbs impacted by the renovation must be removed and recycled or disposed of prior to renovation. Water coolers may be saved for reuse by the University. No mercury switches or thermostats were observed in the building. Glaze on ceramic wall tile was found to contain lead. Ash, containing metals, was present in the incinerator and was visible on the incinerator, was presumed present between the flue and the masonry shell and chimney of the incinerator. Engineering controls and personal protection equipment will be necessary to protect workers during the removal of fly ash to ensure exposure to Arsenic, Cadmium and Chromium are kept within regulatory limits.

This facility inspection to determine the location of asbestos-containing materials, PCB ballasts, chlorofluorocarbons in drinking fountains, mercury vapor containing light bulbs, mercury switches and thermostats, lead in glaze and metals in fly ash was conducted in accordance with the provisions of the Asbestos in Construction Standard, the EPA Sampling Bulletin of September 30, 1994 and current industry standards.

RECOMMENDATIONS

Based on the information collected during this limited potentially hazardous material building inspection and asbestos building inspection, the following recommendations are offered. These recommendations are based on currently observed conditions and plans to renovate the building and may have to be adjusted if change of ownership, emergency, or other factors substantially alter the condition, use, or planned future use of the building.

1. Notify the building occupants, custodians, Physical Plant personnel and others who may encounter ACM during the routine execution of their assigned work of the presence of known or assumed asbestos-containing products in or on the building. This notification must be given to any outside contractors (e.g., HVAC maintenance personnel) who work within or atop the building and may disturb the asbestos-containing material(s). Depending on the specific activity being performed, maintenance or repair personnel may need to utilize personal protective equipment or other engineering controls and comply with the provisions of various asbestos regulations.

2. Provide 2-hour Awareness Training, including specific information regarding the quantity, condition and location of ACM for those individuals in the building who may encounter asbestos during the course of their work. Ensure that contractors performing work in the building have equivalent training (at a minimum) and that they provide appropriate documentation of said training.
3. Draft specifications for the removal of potentially hazardous materials.
4. Properly remove any potentially hazardous materials which may be impacted by renovation prior to any renovation within the facility (e.g., asbestos-containing domestic water pipe joint and hanger insulation, roofing material, window caulk, bedding compound, fluorescent light bulbs, ballasts, ash, etc.). A list of potentially hazardous materials requiring abatement/disposal prior to renovations can be found in the attached cost estimate.
5. Label any ACM identified in routine maintenance areas, mechanical rooms, custodial closets, and inside ceiling access hatches at a minimum, in accordance with 29 CFR 1910.1200(7) (vii). In the case of the Food Stores Building, labels have already been placed in some mechanical room entrances.
6. Repair or remove areas of significantly damaged ACM. Ensure contractors performing the work are licensed and provide appropriate regulatory notification.
7. Conduct appropriate air monitoring, including final clearance monitoring during all asbestos and metals remediation efforts.

COST ESTIMATE

A cost estimate to conduct the recommended actions, in order to safely accommodate the planned renovation is provided in Table T-1. This cost estimate is based on verbal information regarding the scope of renovation provided to Fibertec IHS on December 28, 2004 by the Food Stores Manager.

Should the University wish to abate all identified ACM, the cost to remove those materials not already accounted for in Table T-1, has been estimated in Table T-2.

**TABLE T-1
ESTIMATED COST OF ABATEMENT OF ALL POTENTIALLY HAZARDOUS
MATERIALS NECESSARY TO ACCOMMODATE RENOVATION**

RECOMMENDED ACTION	APPROXIMATE UNITS	UNIT COST	ESTIMATED COST*
Removal of domestic water pipe joint/hanger insulation	95 joints	\$15.00/joint	\$1,425.00
Removal of roofing products (some roofing will remain)	500 s.f. (approximately)	\$5.00/s.f.	\$2,500.00
Removal of white exterior window frame caulk compound	60 l.f.	\$4.00/l.f.	\$240.00
Removal PCB ballasts	84 ballasts	\$6.25/ballast	\$525.00
Removal of mercury vapor containing light bulbs	168 bulbs	\$1.25/bulb	\$210.00
Removal of gray ceramic bedding compound* (some will remain)	1,000 s.f.	\$7.00/s.f.	\$7,000.00
Removal of incinerator ash and associated testing	18 man days	\$650.00/man day	\$11,700.00
Specification development	40 hours	\$65.00/hour	\$2,600.00
Air monitoring and lab work for ash removal	4 days	\$700.00/day	\$2,800.00
On-site air monitoring (asbestos)	6 days	\$500.00/day	\$3,000.00

GRAND ESTIMATED TOTAL \$32,000.00

* Removal of asbestos bedding compound requires the removal of ceramic tile with lead-containing glaze. Contractor to perform TCLP test of glazed tile waste.

**TABLE T-2
ESTIMATED COST OF ABATEMENT OF ASBESTOS-CONTAINING MATERIALS**

RECOMMENDED ACTION	APPROXIMATE UNITS	UNIT COST	ESTIMATED COST*
Removal of domestic water pipe joint/hanger insulation	303 joints	\$15.00/joint	\$4,545.00
Removal of green building caulk compound	50 l.f.	\$4.00/l.f.	\$200.00
Removal of roof drain pipe joint insulation	9 joints	\$15.00/joint	\$135.00
Drywall joint compound	4,320 s.f.	\$6.00/s.f.	\$25,920.00
Removal of roofing products	39,500 s.f.	\$6.00/s.f.	\$237,000.00
Removal of gray building caulk compound	250 l.f.	\$4.00/l.f.	\$1,000.00
Removal of black building caulk compound	700 l.f.	\$4.00/l.f.	\$2,800.00
Removal of white building and window frame caulk compound	1,440 l.f.	\$4.00/l.f.	\$5,760.00
Removal of fire doors and frames	4 ct.	\$225.00/unit	\$900.00
Removal of gray ceramic bedding compound	2,300 s.f.	\$6.00/s.f.	\$13,800.00
On-site air monitoring (asbestos)	6 days	\$500.00/day	\$3,000.00

GRAND ESTIMATED TOTAL \$295,060.00

The cost estimates are based on current industry prices. Industry prices may change at any time. It is assumed that the work is performed by licensed, competent organizations. Estimates include all costs of abatement projects except replacement. Estimated cost is based on project size, difficulty, access, and all work being done at one time, etc. Some savings may be possible by combining projects.

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