POTENTIALLY HAZARDOUS MATERIALS
BUILDING INSPECTION REPORT

for

Michigan State University
Engineering and Architectural Services
Physical Plant Building, Room 101
East Lansing, Michigan 48824-1326

at

Michigan State University
Biochemistry Building
Building #168
East Lansing, Michigan 48824

Investigation conducted by

Fibertec, Inc.
1914 Holloway Drive
Holt, Michigan 48842

Project # 16644-1

Project Duration: August 30, through September 24, 2002

Final Report Date: October 8, 2002

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INTRODUCTION

Fibertec, Inc. was retained by Michigan State University (MSU) to perform a building inspection for potentially hazardous materials at the MSU Biochemistry Building, MSU Building #168, East Lansing, Michigan. The project was discussed with Mr. David Erickson of MSU-ORCBS, prior to beginning the fieldwork. The inspection was designed to identify potentially hazardous materials within the building including: asbestos containing material, lead paint, mercury vapor in fluorescent light bulbs, Polychlorinated Biphenyls (PCB's) in fluorescent light fixture ballasts, mercury in switches and thermostats and hydraulic oil in hydraulic door closers. The project included all rooms and corridors, excluding the steam tunnel entering the building in the basement Mechanical Room #8. The inspection was conducted in preparation for building renovation.

The hazardous materials building inspection took place from August 30 through September 24, 2002. During the inspection, bulk samples of suspect asbestos-containing material (ACM) and suspect lead paints were collected. Collected asbestos bulk samples were submitted to the Fibertec, Inc. Polarized Light Microscopy (PLM) laboratory for analysis. Paint samples were submitted to the Fibertec, Inc. Analytical Laboratory for analysis.

CERTIFICATION

Sean Hillaker, a State of Michigan accredited asbestos building inspector, conducted the building inspection. Mr. Hillaker also maintains accreditation as an Asbestos Contractor/Supervisor. A copy of Mr. Hillaker's asbestos inspector credentials appear in Appendix A.

John Walker, Steven Day or Sean Hillaker, trained polarized light microscopists, analyzed all bulk asbestos samples in the Fibertec, Inc. Polarized Light Microscopy (PLM) laboratory. This laboratory maintains current National Voluntary Laboratory Accreditation Program (NVLAP) accreditation (Lab Code 101510-0). A copy of the Fibertec, Inc. NVLAP accreditation certificate appears in Appendix B.

Jeri Haney, a trained laboratory chemist, analyzed all lead paint samples in the Fibertec, Inc. Analytical Lab. The Fibertec, Inc. Analytical Laboratory is a proficient participant in the NIOSH/AIHA PAT Program.

GENERAL INSPECTION PROCEDURES

In an effort to identify asbestos-containing material (ACM) and lead-containing paint in all areas of the facility, an extensive inspection procedure was followed. A visual inspection of all rooms in the structure was combined with the collection of an appropriate number and distribution of bulk samples. The visual inspection included all rooms and corridors. The Steam Tunnel in Mechanical Room #8 was outside of the scope of this project.

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.*, white, smooth wall and ceiling plaster). An appropriate number and distribution of samples were collected from material in each homogenous area. All samples were analyzed by polarized light microscopy. 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. As such, quantities of ACM believed to exist in inaccessible areas (like pipe joint insulation in wall cavities or above the plaster ceilings) have been estimated. Additionally, some asbestos-containing material hidden from view may be present and may not have been accounted for as part of this inspection (e.g., Pyrobar blocks between cinderblock walls).

Determination of lead paint was based on visual examination and bulk sample analysis. Specifically, a sample of each observed major paint color was collected pursuant to the requirements of ASTM Standard E1729-95 Standard Practice for Field Collection of Dried Paint Samples. All paint samples were submitted to the Fibertec, Inc. Analytical Laboratory, Holt, Michigan for analysis. When results indicate lead levels above 0.5 weight percent, the paint is considered lead-based. When the results indicate lead present below 0.5 weight percent and above the detection limit, the paint is considered lead-containing. When the results indicate lead present at or below the method detection limit, the paint is considered non lead-containing.

The identification of other potentially hazardous materials including, fluorescent light bulbs presumed to contain mercury vapor, PCB containing ballasts/transformers (labeled as PCB containing or not labeled as non-PCB containing), mercury switches/thermostats and hydraulic door closers were made by detailed visual inspection.

RESULTS OF VISUAL INSPECTION

Based on the inspection, thirty-one distinct suspect asbestos-containing materials and six major paint colors were identified in the MSU Biochemistry Building, MSU Building #168, East Lansing, Michigan. Some suspect asbestos-containing materials were sampled a number of times in different locations, white, smooth wall and ceiling plaster, being an example. All suspect asbestos-containing materials and suspect lead paint observed at the time of the inspection are listed in the Room by Room Hazard Assessment Forms. Information from lab analysis of collected samples is incorporated into the Room by Room Hazard Assessment Forms to facilitate interpretation of the data. Fluorescent light bulbs, PCB ballasts and hydraulic door closers were identified and their presence is enumerated on the bottom of the Room by Room Hazard Assessment Forms.

BULK SAMPLE RESULTS

The information gathered from the inspection is included in Appendices C (Bulk Asbestos and Paint Sample Log), D (Bulk Asbestos and Paint Sample Analytical Report) and E (Room by Room Hazard Assessment Forms). The lab analysis reports give a description of each sample, location where each was collected, and the results of analysis. Floor plan drawings appear in Appendix F.

SUMMARY OF ASBESTOS-CONTAINING MATERIALS AND LEAD PAINT

The following materials were found to contain asbestos at the Biochemistry Building:

Condensate pipe straight insulation in the Penthouse
Condensate pipe joint insulation
Cold water system pipe joint insulation
Steam system insulation (straights and pipe joint insulation)
Hot water system pipe joint insulation
Gaskets (on fume hood air handler units)
Black cement board (transite in fume hoods)
9” x 9”, gray floor tile (mastic is non-asbestos)
Fume hood exhaust duct caulk compound
Fire door insulation
Roof flashing

The following materials were found not to contain asbestos at the Biochemistry Building:

Vibration collars
Wall and ceiling plaster
Roof drain insulation
2' x 2', white rough fiber ceiling tile (tectum-like panels)
4' x 2', white rough fiber ceiling tile (tectum-like panels)
1' x 1,' white sparsely fissured ceiling tile
4", black cove molding and associated mastic
2", black cove molding and associated mastic
1' x 2', white ceiling tile with pinholes
Gray countertops
Stone window sill
Gray cementitious sink
Sprayed-on structural fireproofing
Mastic associated with 9" x 9," gray floor tile (floor tile does contain asbestos)
2' x 2', white with pinholes and random crenulations ceiling tile
Black tar paper
2' x 2', white pitted drop ceiling tile
White duct collar
12" x 12", brown speckled floor tile and associated mastic
Roof felt

The electrical conduit wrap in the electrical vault in Room 10 was assumed to contain asbestos at the MSU Biochemistry Building.

No paints were found to be lead-based (0.5% or greater lead by weight) at the MSU Biochemistry Building.

The following paints were found to be lead-containing (above the detection limit and below 0.5% lead by weight) at the MSU Biochemistry Building:

Brown paint from the Penthouse Air Handler Unit,
White paint in the corridors throughout the building,
White paint in laboratories, classrooms, and offices throughout the building,
White paint from the loading dock area, and
Beige paint from the Mechanical Shop welding hood.

No paints were found to be non lead-containing (at or below the method detection limit) at the MSU Biochemistry Building.

SUMMARY OF OTHER POTENTIALLY HAZARDOUS MATERIALS

Four hydraulic door closers were found at the MSU Biochemistry Building (west end of the first floor).

Visual inspection of light fixtures for fluorescent bulbs indicated that most bulbs were not manufactured with the green ends indicating a low or non-detectable mercury vapor level. Therefore, all fluorescent bulbs without green ends must be assumed to contain mercury vapor. Approximately 15% of inspected fluorescent light ballasts were observed labeled with a manufacturer sticker stating "no PCB's". Approximately 85% of inspected fluorescent light ballasts were not labeled as such. Consequently, these non-labeled ballasts must be handled and disposed of as PCB containing.

Mercury switches/thermostats were not found in the building.

CONCLUSION

Non-friable (cannot be crumbled, pulverized or reduced to powder by hand pressure when dry) known or assumed asbestos-containing materials, (*e.g*., 9" x 9", gray floor tile) were identified at the MSU Biochemistry Building.
Friable (can be crumbled, pulverized or reduced to powder by hand pressure when dry) asbestos-containing materials, (*e.g*., various thermal system insulations) were identified at the MSU Biochemistry Building.

All paints were found to be lead-containing. No lead-based paint was found in the building. No non lead-containing paints were found in the building.

Other potentially hazardous materials, including: hydraulic oil in hydraulic door closers, PCB ballasts and fluorescent light bulbs were discovered during the course of this inspection.

This inspection, to determine the location of potentially hazardous building materials, was conducted in accordance with the inspection provisions of the Asbestos Hazard Emergency Response Act (AHERA 40 CFR, Part 763) and the EPA Asbestos Sampling Bulletin dated September 30, 1994 and current industry standards.

RECOMMENDATIONS

Based on the information collected during this hazardous material building inspection, the following recommendations are offered. These recommendations are based on plans to renovate the building and may have to be adjusted if change of ownership, emergency, change in the scope or sequencing of renovation or other factors alter the condition, use or planned use of the building.

Perform the following in this case:

- Notify the owner, building maintenance staff, and contractors of the presence of ACM, lead-containing paint and other potentially hazardous materials within the building. Ensure that contractors who work in the vicinity of or who may encounter potentially hazardous materials during the course of their work have successfully completed hazard awareness training. Ensure that contractors who work in the vicinity of or who may disturb asbestos-containing materials or lead-containing paint, do so pursuant to the requirements of the Asbestos in Construction Standard 29 CFR 1926.1101 and the Lead in Construction Standard 29 CFR 1926.62. Given the multiple phases of the work, multiple hazard awareness training sessions will likely be required.
- Plan for and conduct removal of all potentially hazardous materials that will be impacted by renovation prior to the renovation.
- Develop Specifications defining the scope of work and acceptable work practices for the removal of asbestos, lead-containing paint, and other potential hazards.
- Remind trades involved in the project of the presence, location, quantity and condition of ACM in and in the vicinity of their work, which will not be removed and which they must carefully work around.
- Have the construction manager train the electrical contractor to remove and recycle fluorescent light bulbs presumed to contain mercury vapor. The electricians must be specially trained and must use appropriate personal protective equipment. Equipment designed to capture mercury vapor from crushed bulbs may be required. Ensure that waste manifests are correctly completed.
- Have the construction manager train the electrical contractor to remove and recycle fluorescent light fixture ballasts presumed to contain PCBs. The electricians must be trained and must use appropriate personal protective equipment. Ensure that waste manifests are correctly completed.
- Remove asbestos-containing pipe joint insulation from areas where the insulation will be disturbed by renovation or demolition activities.
- Have a lead removal contractor dismantle and remove the air handling units in the Penthouse using appropriate work practices, engineering controls and personal protective equipment, as specified in the Lead in Construction Standard.

- Remove the duct with the asbestos containing caulk prior to demolition. A demolition contractor with 8-hour task specific training may perform this work. Ensure that the contractor maintains appropriate insurance and complies with all necessary provisions of the Asbestos in Construction Standard and other applicable health and safety standards.
- Conduct on-site air monitoring during asbestos abatement and lead-containing painted surface demolition and other lead paint disturbance activities to document compliance with applicable regulations and to document acceptable air quality following the work.

COST ESTIMATE

Two cost estimates have been prepared. The first (Table 1) estimates the cost of removal of asbestos and lead containing paint coated structures necessary to accommodate the renovations. Asbestos-containing materials will remain within work areas in this scenario. The second (Table 2) estimates all the costs of Table 1 and the cost of removal of all accessible pipe joint and pipe straight insulation. Some asbestos containing materials will remain in the building, including but not limited to the following: inaccessible pipe joint insulation, floor tile, sink undercoating, fire doors and frames and roof flashing.

Table 1
Cost Estimate for Abatement
(Only that necessary to accommodate the renovation)
(Using preliminary demolition drawing provided by Harley Ellis, dated 10/8/02)

SERVICE	APPROXIMATED/ ESTIMATED UNITS	ESTIMATED UNIT PRICE	SUB-TOTAL
Air monitoring during removal	65 days	$500.00/day	$35,500.00
Conduct awareness training	Up to 8 sessions	$325.00/session	$2,600.00
Lead air monitoring during removal	12 days	$600.00/day	$7,200.00
Remove and dispose of pipe joint and straight insulation	3,735 joints and straight insulation	$20.00/each	$74,700.00
Remove and dispose of fume hood duct	1,850 l.f. of duct	$7.50/l.f.	$13,875.00
Remove and dispose of black cement board in fume hoods	28 fume hoods	$500.00/hood	$14,000.00
Remove gaskets from fume hood blowers in penthouse	74 gaskets	$125.00/gasket	$9,250.00
Dismantling and removal of air handler units painted with brown lead-containing paint	2 units	$15,000/unit	$30.000.00

Remove and dispose of PCB light ballasts	850 ballasts	$6.25	$5,312.50
Remove and dispose of fluorescent light bulbs	3,000 fluorescent light bulbs	$1.25/bulb	$3,750.00
Contingency	10%	10% of $165,927.5	$19,618.75

Estimated Grand Total: $215,806.25

Table 2
Cost Estimate for Abatement
(Necessary to accommodate the renovation and to remove accessible pipe joint insulation)

SERVICE	ESTIMATED UNITS	ESTIMATED UNIT PRICE	SUB-TOTAL
Air monitoring during removal	130 days	$500.00/day	$65,000.00
Conduct awareness training	Up to 8 sessions	$325.00/session	$2,600.00
Lead air monitoring during removal	12 days	$600.00/day	$7,200.00
Remove and dispose of pipe joint and straight insulation	7,000 joints and straight insulation	$20.00/each	$140,000.00
Remove and dispose of fume hood duct	1,850 l.f. of duct	$7.50/l.f.	$13,875.00
Remove and dispose of black cement board in fume hoods	28 fume hoods	$500.00/hood	$14,000.00
Remove gaskets from fume hood blowers in penthouse	74 gaskets	$125.00/gasket	$9,250.00
Dismantling and removal of air handler units painted with brown lead-containing paint	2 units	$15,000/unit	$30.000.00
Remove and dispose of PCB light ballasts	850 ballasts	$6.25	$5,312.50

Remove and dispose of fluorescent light bulbs	3,000 fluorescent light bulbs	$1.25/bulb	$3,750.00
Contingency	10%	10% of $165,927.5	$29,098.75

Estimated Grand Total: $320,086.25

- The cost estimates are based on current industry prices. 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 multiple phases required to complete the work. The cost assumed heat, water and power necessary to conduct the work will be provided by the owner.

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