POTENTIALLY HAZARDOUS MATERIALS
BUILDING INSPECTION REPORT

for

SSOE, Inc.
1050 Wilshire Drive
Suite 260
Troy, Michigan 48084

at

Michigan State University
Physics Astronomy Building
(Now Psychology)
East Lansing, Michigan 48824

Investigation conducted by

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

Project # 17318-1

Project Duration: February 19- March 20, 2003

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INTRODUCTION

Fibertec Industrial Hygiene Services, Inc. (Fibertec IHS) was retained by SSOE to perform an inspection for potentially hazardous materials at the Michigan State University, Physics Astronomy Building, East Lansing, Michigan. The project was discussed with Mr. Pete Wilson and Mr. David Rose of SSOE, 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, freon in water coolers and hydraulic oil in hydraulic door closers. The project included all rooms and corridors in the building and was conducted in preparation for building renovation.

The hazardous materials building inspection took place from February 19 through March 20, 2003. 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 IHS Polarized Light Microscopy (PLM) laboratory for analysis. Paint samples were submitted to the Fibertec, Inc. Analytical Laboratory for analysis.

CERTIFICATION

Kristin Thick, a State of Michigan accredited asbestos building inspector, conducted the building inspection. Ms. Thick also maintains accreditation as an Asbestos Contractor/Supervisor and Management Planner. A copy of Ms. Thick'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 IHS 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 IHS 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, corridors, and crawlspaces.

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 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 and pipe hangers 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.

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, freon and hydraulic oil in hydraulic door closers were made by detailed visual inspection.

RESULTS OF VISUAL INSPECTION

Based on the inspection, seventy-one distinct suspect asbestos-containing materials and six major paint colors were identified in the Physics Astronomy Building, East Lansing, Michigan. Some suspect asbestos-containing materials were sampled a number of times in different locations, white, smooth wall 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, freon and hydraulic oil in 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 Physics Astronomy Building:

9” x 9”, dark brown floor tile with orange and white streaks
9” x 9”, brown floor tile with white
9” x 9”, tan floor tile with brown streaks and associated mastic
9” x 9”, green floor tile with streaks
White window glazing compound
Glue pods above 1’ x 1’, white glued-on ceiling tiles with waves
12” x 12”, light brown floor tile with white streaks
Hot water pipe joint insulation, 1946 construction
Hot water pipe straight insulation, 1946 construction
Cloth wrap for vibration collar
Black glue pods above glued on ceiling tile
12” x 12”, gray floor tile
9” x 9”, gray floor tile
12” x 12”, yellow/brown floor tile and associated mastic
Black flashing 1977 addition
Black mastic basement
Cold water pipe joint insulation, 1946 construction

Steam straight pipe insulation, 1946 construction
Mastic below 9” x 9”, black floor tile
9” x 9”, brown floor tile with white
Duct caulk from exhaust fan #5
Transite

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

Mastic below 9” x 9”, dark brown floor tile
Mastic below 9” x 9”, brown floor tile with white
2’ x 2’, white waved drop ceiling tile
Mastic below 9” x 9”, dark green floor tile with streaks
Gray window caulking
Green drywall chalkboard
Plaster ceiling
1’ x 1’, white glued-on ceiling tile with hole pattern and associated glue pods
Black transite-like caulk board
1’ x 1’, white glued-on ceiling tile with pin holes and associated glue pods
1’ x 1’, glued-on ceiling tile with wave pattern
4”, light brown cove molding and associated mastic
4”, dark brown cove molding and associated mastic
Drywall
Drywall joint compound
Mastic below 12” x 12”, light brown floor with white streaks
2’ x 2’, white fluffy drop ceiling tile
Glue pods on ceiling
4”, black cove molding and associated mastic
Green countertop
Black countertop
Gray kitchen sinks
12” x 12”, white floor tile with brown and associated mastic
Smooth coat plaster
4”, black wood-like cove molding and associated mastic
Gray sparkled linoleum
6”, black cove molding and associated mastic
Gray linoleum and associated mastic
Gray sink undercoating
Pyrobar white panels
Mastic below 12” x 12”, gray floor tile
Mastic below 9” x 9”, gray floor tile
Green roof shingle
6”, blue cove mold and associated mastic
Black sink undercoating
12” x 12”, white floor tile and associated mastic
6”, dark brown cove mold and associated mastic
2’ x 2’, white smooth drop ceiling tile
Gray roof flashing
Hot water pipe joint insulation, 1977 construction
Steam pipe joint insulation, 1977 construction
Cold water pipe joint insulation, 1977 construction
Black vibration collar
2’ x 4’, white smooth drop ceiling tile
4”, gray cove molding and associated mastic
White linoleum and associated mastic
White transite-like panels
Vermiculite
Cold water pipe straight insulation, 1946 construction
Waste line drain pipe joint

Electrical line wrap

The following materials were assumed to contain asbestos at Physics Astronomy:

Elevator brake pads
Fire door and frame
Roof drain

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

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

White paint
Off-white paint
Blue paint
Green paint
Yellow paint
Gray paint

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

SUMMARY OF OTHER POTENTIALLY HAZARDOUS MATERIALS

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 in the building without green ends must be assumed to contain mercury vapor. Approximately 10% of inspected fluorescent light ballasts were observed labeled with a manufacturer sticker stating “no PCB’s”. Approximately 90% of inspected fluorescent light ballasts were not labeled as such. Consequently, these non-labeled ballasts must be handled and disposed of as PCB containing unless future testing indicates they are not PCB containing.

No mercury switches/thermostats were found in the building. Freon was found in the air conditioners and in the refrigerators in the building these are said to be removed by building staff. Hydraulic door closers were found in the building. PCB oil was found in one of the transformers in the electrical room.

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”, green floor tile) were identified at the MSU Physics Astronomy 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 Physics Astronomy 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: PCB ballasts and fluorescent light bulbs, hydraulic door closers, freon and PCB oil 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.
- 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 material from areas where the material will be disturbed by renovation or demolition activities.
- 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.
- Plan for removal of PCB containing oil in the transformer in the basement electrical room.
- Drain the oil from the hydraulic door closers in the hallways before removal of doors. Dispose of this oil properly.

COST ESTIMATE

As the scope of renovation is under development, no cost estimate to remove only those ACM and other potentially hazardous materials which might be disturbed by the renovation has been prepared. Once the renovation project scope is known, a detailed cost of remediation can be prepared.

A cost estimate for the removal of all identified hazards has been prepared and appears in Table 1.

Table 1
Cost Estimate for Abatement
(Complete Abatement)

SERVICE	ESTIMATED UNITS	ESTIMATED UNIT PRICE	SUB-TOTAL
Air monitoring during removal	120 days	$500.00/day	$60,000.00
Conduct awareness training	Up to 8 sessions	$325.00/session	$2,600.00
Lead air monitoring during removal	10 days	$600.00/day	$6,600.00
Remove and dispose of pipe joint and straight insulation	4,046 joints and straight insulation (approx.)	$20.00/each	$80,920.00
9” x 9”, floor tile removal	30,073 s.f.	$ 2.00/s.f.	$60,146.00
9” x 9”, floor tile and mastic removal	2,236 s.f.	$ 5.00/s.f	$11,180.00
12” x 12”, floor tile removal	12,386 s.f.	$ 2.00/s.f.	$24,772.00
12” x 12”, floor tile and mastic removal	3,002 s.f.	$ 5.00/s.f.	$15,010.00
Remove white window glazing	407 windows	$350.00/window	$142,450.00
Remove black glue pods	22 s.f.	$ 5.00/s.f.	$110.00
Remove cloth wrap collar	6 collars	$50.00/collar	$300.00
Remove black roof flashing	1,488 s.f.	$4.00/s.f.	$5,952.00
Remove black floor mastic	640 s.f.	$ 2.00/s.f.	$1,280.00
Remove gray transite panels	60 s.f.	$5.00/s.f.	$300.00
Removal of glue pods from 1’ x 1’ ceiling tiles white waved pattern	1,953 s.f.	$5.00/s.f.	$9,765.00

Removal of duct caulk penthouse	24 l.f.	$5.00/l.f.	$120.00
Remove and dispose of PCB light ballasts	1,030 ballasts	$6.25	$6,437.50
Remove and dispose of fluorescent light bulbs	3,600 fluorescent light bulbs	$1.25/bulb	$4,500.00
Removal of oil in hydraulic door closers	39 door closers	$50.00/door closer	$1,950.00
Removal of PCB oil in transformer from basement electrical room	1 transformer	$10,000.00/transformer	$10,000.00
Specification development	1 specification	$3,360.00/specification	$3,360.00
Contingency	10%	10% of $448,022.00	$44,802.00

Estimated Grand Total: $492,824.00

- 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 and access. The cost assumed heat, water and power necessary to conduct the work will be provided by the owner.

- The pipe joint and pipe straight insulation was quantified using available blueprints. Blueprints from the basement were damaged and quantities of ACM in the basement have been estimated and may not reflect actual conditions.

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Kristin Thick
Michigan Accredited Asbestos Inspector

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Phillip A. Peterson
Vice President