WMI Environmental Services

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Building Inspection for Asbestos At Eppley Center Michigan State University East Lansing, MI

April, 1993

Project #AI93-487

A Division of Wonder Makers, Inc.

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ASBESTOS INSPECTION REPORT

FOR

Eppley Center

Michigan State University

AI93-487

Eppley

INTRODUCTION

WMI Environmental Services was retained by Michigan State University to perform an asbestos inspection of the ~~Chemistry~~ Building. The details of the inspection scope and schedule were discussed with Chuck Wallin, and Tim McCormick of Michigan State University.

The physical inspection of the facility took place between March 22 and April 21, 1993. In conjunction with the physical inspection, bulk samples were collected and analyzed.

This report incorporates information collected by the inspectors prior to the site visit, the inspection conducted on the date noted above, the sample results as determined after the inspection, and comments made by MSU personnel in conjunction with the site visit.

The scope of the survey was discussed extensively. The specific guidelines for the survey are detailed in MSU's guidelines for asbestos Surveys dated March, 1993 and Purchase Order #021316-RJL. The basic purpose of the inspection was to identify and quantify asbestos products in the building so planning and cost estimates could be developed for a possible renovation of the structures. As such, the scope of the project included all floors and wings of the Eppley Center. It was acknowledged that since non-destructive inspection techniques would be used, the identification of ACM in hidden areas would be estimated.

CERTIFICATION

The inspection effort was led by Michael A. Pinto whose technical qualifications include a Bachelor of Science degree, Masters in Public Administration, certification as a Safety Executive, certification as a Safety Specialist,

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certification as an Asbestos Inspector, certification as an Asbestos Management Planner, certification as an Asbestos Abatement Supervisor, and others.

Michael was assisted by David Batts. David is president of National Insulation Services Company. His company has undertaken numerous large-scale asbestos abatement and insulation projects; most notably for Maytag Corporation and Eagle Ottawa Leather Company. In addition to being a licensed abatement contractor, he is a certified asbestos supervisor, asbestos inspector, and asbestos management planner.

Technical assistance from MSU was provided by Laura Dunatchik and Beth Myers, a student/employee of the university. Ms. Myers assisted with providing access and accompanying the inspectors and Ms. Dunatchik through the building.

All samples were analyzed by Matthew Pinto, or Ron Schoenfelder. Matthew Pinto's qualifications include a Bachelor of Science degree, certifications as an Asbestos Inspector, training as an Asbestos Management Planner, and certification as an Asbestos Abatement Supervisor. In addition, Mr. Pinto is certified to analyze air samples following the NIOSH 7400 protocol and analyze asbestos bulk samples by means of Polarized Light Microscopy. His bulk sample training is from McCrone Institute where he has successfully completed the basic and advanced course on polarized light microscopy.

Ron Schoenfelder's qualifications include a Bachelor of Business Administration, certifications as an Asbestos Inspector, training as an Asbestos Management Planner, and certification as an Asbestos Abatement Supervisor. In addition, Mr. Schoenfelder is certified to analyze air samples following the NIOSH 7400 protocol and analyze asbestos bulk samples by means of Polarized Light Microscopy. His bulk sample training is from McCrone Institute where he has successfully completed the basic and advanced course on polarized light microscopy.

BACKGROUND INFORMATION

Exposure to airborne asbestos fibers has been shown to cause a number of serious and/or fatal illnesses in humans. Because of this, asbestos containing materials (ACM) are highly regulated by federal, state, and local agencies.

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These agencies have determined various limits of exposure which are acceptable (i.e. OSHA Permissible Exposure Limit of 0.2 fibers per cubic centimeter of air (f/cc), MIOSHA clearance level of 0.05 f/cc, EPA Recommended Clean Air Value of 0.01 f/cc, etc.) In order to keep exposure below recommended limits, strict guidelines are enforced for the handling of asbestos; not only if exposure to airborne fiber level of asbestos exceeds the various limits; but also if ACM is handled or disturbed during renovation or demolition activities.

Liability concerns based on extensive legal action involving asbestos products has also contributed to the increased interest in handling asbestos properly. However, contrary to common belief; proper handling of asbestos does not necessarily mean removal of the ACM. Other options such as enclosures, encapsulation, repair, and/or periodic observation of intact products are recognized by the EPA as acceptable options depending on the specific circumstances of the facility.

The hazard posed by an asbestos containing product is not only based on its content but the likelihood that it will release fibers into the air. Because of this, the EPA has developed the term, "friable" to identify those materials that can be crumbled, crushed, or pulverized by hand pressure. Friable asbestos containing material poses a greater risk than non-friable asbestos products. In addition, the EPA definition of asbestos containing materials only includes those items with more than one percent asbestos.

Although asbestos has been found as a component of over 3,300 different products, the initial review of the facility indicated that only a small number would be of specific concern. A brief description of the major classes of products reviewed at every site follows:

-Aircell pipe insulation is composed of asbestos paper corrugated into half round sections which are placed over the top and bottom of a pipe. The aircell insulation may be held in place with a canvas cover, metal bands, wire, or tape. Because it is easily damaged and has a high asbestos content (35 to 90 percent) aircell is considered very dangerous when disturbed. The MSU code for this type of material is "CINSL" -- corrugated pipe insulation.

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-Asbestos paper was often used to insulate air ducts and foundation walls. It normally consists of over 90% asbestos. The MSU code for this type of material is "PAPER".

-Ceiling tiles of either a drop in format or glue-on style have been known to contain asbestos. Some fire rated tiles have been found to contain up to 20% asbestos. There currently is no specific MSU code for this type of product.

-Cellulose pipe insulation sometimes referred to as "Woolfelt," is composed of a large number of tightly wrapped sheets of paper which creates an effect similar to a roll or paper towels. Very little of the actual cellulose material has ever been detected with an asbestos content. However, many times cellulose pipe insulation will have an asbestos containing tar paper layer as the inner wrap or high percentage asbestos paper as the outer or inner layer. In the MSU coding system this material would have the abbreviation "PFINSL" -- Pre-form pipe insulation.

-Drywall and patching compounds were often manufactured with an asbestos additive as a binder. This is particularly true for decorative plaster. The MSU code for such material is "GYP" -- Gypsum Board/Drywall.

-Electrical cables or wires often were insulated with asbestos, especially if the wires carried high voltage or were used in hot equipment such as stage lights or heaters. The MSU code is "EINSL" -- Electrical Insulation.

-Fabrics of various textures, from open/coarse to fine/closed, were woven from asbestos fibers. These cloths were used as fire blankets, suits, mitts, dampening material and gaskets.

-Fire doors can have asbestos insulation as a core. There currently is no MSU code for fire doors.

-Fireproofing can be sprayed or tamped on the structural members of a building. Asbestos content ranges from 0 - 95 percent, depending on the binder used. Such fireproofing may be light and fluffy or hard and dense. The MSU code for such material is "SOF" -- Spray on Fireproofing.

-Fire resistant wall board, containing 50 to 80% asbestos, was often used as a fire barrier around furnaces, stoves,

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chimneys and other hot items. There is no specific MSU code for this material.

-Floor tile many times contains asbestos as a binder. While asbestos many be a component of any size or shape tile, the nine inch by nine inch square tiles installed between 1930 and 1988 have the highest probability of asbestos content. Many tile mastics also have asbestos as a component. MSU uses the codes "TILE" and ""GLUE" for these materials.

-Furnace brick which is a light tan to a dark brown material used to line the inside of furnaces, boilers, kilns, chimneys, and other heating devices. It ranges from a soft and light consistency to heavy dense material with a smooth texture. Asbestos content of furnace brick ranges from 5 to 60 percent. There is no specific MSU code for this type of material.

-Gasket materials, particularly those used in high temperature applications, often contain asbestos. Their color ranges from grey to brown with consistency from smooth and flat to braided and flexible. The MSU code for this type of material is "GASKET".

-Insulation finish coats are similar to "mud" discussed above but are applied to boiler, duct, tank, and breaching insulation to give it a smooth appearance. It was typically applied over mag block, aircell, fiberglass, mineral wool, or chicken wire, and covered with canvas. MSU uses the same code as "FINSL" -- Fitting Insulation.

-Laboratory equipment such as table tops, sinks, fume hoods, glassware racks and shelves often were constructed of an asbestos composite material. Four different color categories are noted; black, black/grey, grey, and blue/black. The MSU code for all such materials is "EBONY".

-Loose fill insulation was often dumped, blown, or sprayed in place. Most often rock wool or mineral wool was used for this purpose but numerous asbestos cases have been documented. The MSU code is "LFINSL" -- Loose Fill Insulation.

-Magnesium Silicate is also referred to as "Mag." This versatile insulation usually contains between 60 and 85 percent asbestos. It is generally found as a white

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chalk-like material that has been formed into batts, blocks, half rounds for pipes, or bricks. In the MSU coding system mag could show up as "BBB" -- Block/Board/Batt, or "Cover" -- covering/lagging, or "PFINSL" -- pre-form pipe insulation.

-Pipe fitting insulation or compound is often referred to as "mud." It is applied in a wet state around elbows, T's, reducers, etc. and allowed to dry. It may be covered with a canvas outer wrap or left bare. Asbestos mud was manufactured with 20 to 100 percent asbestos. It can be found applied in conjunction with asbestos or non-asbestos pipe insulation. The MSU code for this type of material is "FINSL" -- fitting insulation.

-Plaster has been found with an asbestos content of 2 - 25 percent. It was both spray and trowel applied. It can have a smooth, granular, swirl, or craggy texture. The codes "PLAS" -- Plaster, "SPLAS" Sand Plaster, and "APLAS" -- Acoustical Plaster are used by MSU to identify this type of materials.

-Powerhouse cement is the name given to non-asbestos fitting compounds. It is often used in conjunction with fiberglass pipe insulation and looks similar to asbestos "mud".

-Tar paper roofing felts, and shingles often contain asbestos fibers as a binder. The addition of 5 to 25 percent asbestos was often used to give the asphalt flexibility strength, and ultraviolet resistance. MSU codes this type of material as "FELT", "FLASH", or "SHNGL".

-Textiles woven from asbestos were used as expansion joints for ducts, fire blankets, flame resistant clothing, curtains, cords, and felts. Asbestos content is 50 - 100 percent. The MSU code for this type of material is "TEXT".

-Textured and reflective paint often had asbestos added to produce the thickness. The MSU code is "COAT" -- Coating/Paint/Sealer.

-Transite is the name given to products that are made from asbestos containing cement. Transite is most commonly found as large diameter pipes, building siding, roof decks, table tops, fume hoods, and oven insulation. Transite usually contains 10 to 50 percent asbestos. These materials can be found under the MSU codes "EBONY, "T BOARD", and "T PIPE".

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-Underlayment used with tile or linoleum often contains asbestos. The MSU code for such items is "SHEET" -- Resilient Sheeting.

GENERAL INSPECTION PROCEDURES

In an effort to determine the location and amount of any suspect ACM in the buildings an extensive inspection procedure was developed and followed. Since the emphasis was placed on the identification and quantification of asbestos products as a prelude to abatement specifications, the procedure emphasized the classification of different types of thermal system insulation and the development of floor plans showing the approximate location of the ACM. A specific form was designed to collect information on asbestos products in each room. These visual inspection survey forms were completed by the inspectors as they reviewed each area of the buildings. The information was then summarized by floor. The completed forms are attached as Appendix C with the summary of products within the buildings as Appendix A.

The actual inspection process began with the review of floor plans and mechanical drawings. A visual inspection of all accessible areas of the building was matched with the collection of appropriate bulk samples. All areas of the building were visually inspected.

Based on the MSU Survey Guidelines, the extensive past experience of the inspectors and an emphasis of the collection of reliable data at a reasonable cost several general assumptions were built into the overall inspection process. These include:

1. The determination that tectum panels, fiberglass pipe and duct insulation, foam rubber pipe insulation, and grit style non-slip flooring are not suspect ACM.

2. The grouping of baseboard and floor tile together for sampling purposes (i.e. in areas where the floor tile tests positive the baseboard is treated as positive).

3. The analysis of floor tile and mastic as a single item since separate removal is usually not feasible.

4. An acknowledgment that gaskets on steam traps and other piping is likely asbestos and does not need to be sampled.

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5. Recognition that window putty samples have been positive at other MSU buildings, and that window gaskets of ACM may be present inside the wall cavity. Putty samples collected by the WMI inspectors were provided to MSU for analysis and are not included as part of this report.

In addition, during the course of the inspection some specific judgments were made by the inspectors based on the conditions present. These include:

1. The observation of significant amounts of asbestos lab equipment (i.e. gloves, aprons, tong covers, hot pads, etc.) much of it extremely friable and/or damaged. It is believed that a considerable quantity of such material is present throughout the lab areas. Even so, the fact that such items are not considered building components and are easily moved from place to place means that an accurate assessment of the quantity, location, and conditions of such items was not possible as part of this report.

2. In order to provide greater accuracy to the quantification of thermal system ACM and subsequent cost estimates, a size categorization was employed. As noted below pipes and their associated fittings were grouped into three categories.

0" - 4" = small
4" - 8" = medium
greater than 8" = large

Any bulk samples that were collected as part of this inspection were coded 487-XX. (XX stands for a sequential two digit numerical code.)

Determination of suspect asbestos containing products was based on visual evidence, bulk samples analysis, age of the material, and professional experience. Approximate location of the suspected asbestos containing material was marked on the diagrams. All pipe insulation was checked by physical touch and visual review of damage points or open ends. All bulk samples of friable materials were collected using wet methods and coring tools. Core holes were then filled with high temperature blue encapsulant. When appropriate the outer jacket was repaired and the sample location identified.

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RESULTS OF VISUAL INSPECTION

Based on the survey of the building, 12 separate asbestos containing materials were confirmed with 13 other suspect materials identified as non-asbestos. All suspect materials at the time of the inspection are listed on the Visual Inspection Form. However, information garnered from follow-up lab analysis is incorporated for ease in interpreting the report. As such, materials that are listed on the forms with N. D. in the "Total % Asbestos Content" column are items that were suspect but proved to contain no asbestos. (N. D. stands for "None Detected". If N. D. is used on the visual inspection form, the "Quantity" space was left blank to avoid confusion in totaling amounts of ACM.)

A specific list of all of the items determined to contain asbestos in Eppley Center is provided below. All identifiable suspect asbestos materials were sampled and tested. No assumptions regarding asbestos content were made.

Pre-formed pipe insulation
Fitting compounds on pre-formed pipe insulation
Fitting compounds on fiberglass insulated pipe on HP steam lines - rust and gray painted in mechanical rooms
Large valves with block and mud - various mechanical systems
Tank insulation - all tanks
9" x 9" floor tile - all colors/patterns
Vinyl flooring sheets
Vinyl stairs
Fluffy texture plaster
12"x12" pinhole ceiling tile
2'x4' pinhole ceiling tile
Fireproofing - gray, coarse spray filler

A specific list of all items determined not to contain asbestos is provided below.

12"x12" floor tile
White, cementitious wall spray-on
Gray, cementitious wall spray-on
Wall plaster, white
Ceiling plaster, white
Wall plaster, gray
Ceiling plaster, gray

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Fittings on fiberglass lines other than HP steam*
Foil and tar covering on fiberglass
Cloth on air handling expansion joints
Fiberglass squares with tar coating
Ceiling drywall
Wall patching plaster
Sheet rock

* Larger valves on fiberglass insulated lines (samples 12, 54, 98, 147, 148, 152) tested positive regardless of the mechanical system. This is due to the use of magnesium silicate block as filler to build up the valves. Since they can be identified by close visual inspection, they are grouped in a separate category. Sample 77 tested positive and appears to have asbestos debris from some source mixed in. Although other fittings from that area and pipe tested negative, all fittings in that plenum should be treated as positive until sampling confirms otherwise.

BULK SAMPLE RESULTS

The information garnered from the collection and analysis of bulk samples by WMI are shown in Appendix E. The bulk sampling log gives a description of the material, location where it was collected, and analysis results. A chart of suspect materials grouped by material type (i.e. homogenous materials) is included as Appendix F. A more detailed description of the component parts of each sample can be found in the lab report attached as Appendix G.

SUMMARY OF ASBESTOS CONDITIONS

Because of the age and function of the building, there are sections where the asbestos containing products are in poor condition. Only a small portion of the damaged material was directly in an air stream, easily accessible or attached to equipment producing constant vibration. As such, the main hazard to the current building occupants comes from activities that would bring them in direct contact with the materials.

A prioritized list of potential asbestos hazards is provided below. The prioritization is based on accepted industrial hygiene standards.

1. Spray filler fireproofing

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2. Damaged fittings

3. Fluffy texture plaster ceilings

ASBESTOS CONTROL RECOMMENDATIONS

Based on the information gathered during this asbestos inspection the following recommendations are offered. It should be noted that the recommendations are presented based on the information regarding building occupancy, use, and soundness provided by the staff at MSU. These recommendations may have to be adjusted if change of ownership, emergency or other factors substantially alter the condition or use of the building.

1. Notify the worker and maintenance or repair personnel of the presence of asbestos containing products in the building. This notification should be given to any outside contractors (i.e. telephone repair personnel, water meter reader, HVAC maintenance personnel, etc.) who are contracted to work within the building, as well as MSU staff. Depending on the specific activity being performed, maintenance or repair personnel may need to utilize personal protective equipment or other engineering controls. Maintenance and contract personnel should be given specific warnings to avoid the high hazard areas noted in the previous section until clean-up or abatement has been accomplished.

2. Plan for the proper removal of any asbestos containing materials prior to the start of renovation activities. Any future construction should not proceed until the asbestos containing materials in the proposed work area is legally and properly removed.

3. Continue the MSU program of asbestos control for areas not included in the current renovation plans starting with areas that pose the greatest hazard.

4. Conduct air monitoring at air plenum vents to determine if fireproofing and damaged fittings within the ground floor east plenum is contaminating the air.

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CONCLUSION

For additional information please contact WMI Environmental Services at P.O. Box 50209, Kalamazoo, MI 49005-0209, phone (616) 382-4154, fax (616) 382-4161.

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