June 28, 1996

REPORT: Full Building Survey

TO: Tim Nelson, Facilities Management's Asbestos Coordinator, 400 Donhowe Building
    Bill Chose, Manager, Zone 1, Facilities Management, 202 Facilities Management Bldg

FROM: Dale Livingston, Asbestos Group, Environmental Health and Safety, W-140 Boynton Health Service, 410 Church Street, S.E., Minneapolis, MN 55455

SUBJECT: Asbestos Material Survey - Veterinary Science Building
    EH&S Project No: 374-96-057
    Client Project No: for database

Scope of Work: A full building asbestos material survey was conducted on June 10, 1996 through June 28, 1996. The purpose of the survey was to identify asbestos-containing materials (ACM) as defined by the Environmental Protection Agency (EPA), the Occupational Health & Safety Administration (OSHA), and the Minnesota Department of Health (MDH). Any material that is greater than 1% asbestos is considered to be ACM. The intent of the survey was to identify both friable and non-friable suspect ACM, identify non-friable ACM that may become friable under demolition or renovation conditions, and to provide approximate cost estimates for the removal of identified ACM in Veterinary Science Building.

Project Description: Two hundred ninety (290) bulk samples of suspect ACM were collected on-site and one hundred eighty-one (181) were analyzed via polarized light microscopy (PLM) by Milan Asbestos Laboratory for asbestos content. Results of analyses are listed in Appendix I of this report. Appendix I is formatted to provide a room by room inventory of suspect ACM, the asbestos content of each material listed, and friability. An explanation of the tables and abbreviations used in the tables is included with Appendix I. Appendix II is a room by room listing of only those suspect materials that tested >1% asbestos. Minnesota Department of Health (MDH) Asbestos Rules regulate only friable ACM (material may be reduced to powder or dust under hand pressure) while the EPA regulates ACM that may become friable under demolition or renovation conditions. A previous limited asbestos building survey of Veterinary Science Building was performed by University of Minnesota Environmental Health & Safety on October 18, 1994. Information from the previous survey was included as part of this survey.

The following friable or potentially friable materials tested positive as ACM in the building:

- <4" white fibrous pipe insulation (PI)(1)
- <4" pipe fitting insulation (PFI) on white fibrous line (2)
- <4" aircell PI (3)
- <4" fibrous PFI on aircell line (4)
- <4" felt w/tar PI (5)
- <4" PFI on felt w/tar line (6)
• <4" fibrous PFI on FG w/tar line (8)
• 4"-8" white fibrous PI (11)
• 4"-8" PFI on white fibrous line (12)
• 4"-8" aircell PI (13)
• 4"-8" fibrous PFI on aircell line (14)
• 4"-8" felt w/tar PI (15)
• 4"-8" fibrous PFI on felt w/tar line (16)
• 9"-14" white fibrous PI (21)
• 9"-14" PFI on white fibrous line (22)
• white fibrous tank (32)
• 9"x9" floor tile, grey w/black & white smears (41)
• 9"x9" floor tile, black w/white smears (42)
• 9"x9" floor tile, beige w/brown & white streaks (43)
• 9"x9" floor tile, dark brown w/brown & white streaks (44)
• 9"x9" floor tile, dark grey w/black & white smears (45)
• 9"x9" floor tile, cream w/olive smears (46)
• 9"x9" floor tile, grey w/white smears (47)
• 9"x9" floor tile, cream w/tan beige streaks (48)
• 9"x9" floor tile, white w/black specks(49)
• 9"x9" floor tile, light grey w/black & white (50)
• 12"x12" floor tile, dark grey w/black & white smears (70)
• 12"x12" floor tile, cream, white, tan (72)
• 1'x2' floor tile, black border (80)
• 12"x12" floor tile, white w/black streaks (81)
• 2'x2' ceiling tile, pawprint (114)
• 2'x4' ceiling tile, pinhole wormhole (121)
• black lab top (131)
• galbestos (134)
• sink undercoating (135)
• debris (138)
• transite hood (139)
• grey pipe putty (147)
• floor tile under carpet (Assumed) (202)
• floor tile adhesive (202.5)

The following suspect materials tested none detected (ND) as ACM in the building:

• <4" fiberglass PI w/tar (7)
• <4" fiberglass PI (9)
• <4" fibrous PFI on FG line (10)
• 4"-8" fibreglass PI (19)
• 4"-8" fibrous PFI on FG line (20)
• 9"-14" fiberglass PI (23)
• 9"-14" fibrous PFI on FG line (24)
• black foam PI (25)
• fiberglass tank insulation (29)
• fiberglass duct insulation (31)
• ceiling plaster (34)
• wall plaster (35)
• red brick mortar (36)
• clay tile mortar (37)
• concrete block mortar (38)
• sheetrock & taping compound (39)
The following non-friable with low potential to become friable materials tested positive as ACM:
The following nonfriable, with low potential to become friable, material tested <1% asbestos:

- ceiling tile adhesive (100.5)

For room locations of above noted materials, refer to Appendices. Sample numbers of the above materials are located in the parenthesis following the sample descriptions.

**Observations and Recommendations:**

1.0 Department of Environmental Health & Safety (DEHS):

Please refer to condition assessments for specific damaged areas. In general, materials were found to be in good shape and do not pose significant health concerns to the building occupants.

Rooms 104A, 117A, 304A and 345J and a wall hatch located in Room 339 were not accessible at the time of the survey. Room 104A is an electrical vault room and limited observations were performed through a hole in the concrete block wall of the room. Room 117A and 345J were posted as biohazard areas with restricted access. In addition, the spaces above the ceiling tiles in Rooms 239A, 239B, 239C, 239D, 334A, 334D, 343D, 346A, 346D, 436A, 450, 450A, 450B, and 450C, in Hall 425-450 and Hall 450-456, and in the South Entry were not accessible. Those areas which were not accessed during this survey should be entered and surveyed by certified personnel at the time of any renovation or demolition activities and where contained abatement would need to be performed. Observations and sampling should be performed by certified personnel to determine if asbestos-containing materials are located in those areas.

2.0 Facilities Management:

Please refer to the floor plans included with this report for room numbers. The floor plans indicate the room numbers used in this survey.

During this survey, DEHS personnel observed the removal of the carpet in Rooms 247A-L, 257A, 257B, 257C, 257D, 257E, 257F, 257G, and Room 257 Hall. Based on analysis of samples of carpet mastic and floor tile and floor tile adhesive located under the carpet which were collected from these rooms, it was determined that the floor tile contained asbestos and the carpet mastic and floor tile adhesive did not contain asbestos. The floor tile was removed in accordance with the University of Minnesota Maintenance Plan by the Facilities Management Asbestos Abatement Department.

Transite sheets located in Room 113 appear to be in storage and are not fixtures in the room.

Based upon analysis, canvass vibration joints were determined not to contain asbestos. However, a tar material was present on one of the canvass vibration joint samples which was collected and the tar was determined to contain asbestos.

Based upon analysis, a ceiling tile adhesive (sample 100.5) was determined to contain less than one percent (<1%) asbestos (see Appendix I of the report). The current Occupational Safety and Health Administration (OSHA) definition of a non-regulated asbestos material is anything that contains less than one percent (<1%) asbestos by area.
All quantities in this survey are estimations and should not be considered exact measurements when used on abatement bids.

Broken fluorescent light tubes were observed to be stored in Chase D located on the second floor. The broken light tubes should be disposed of in compliance with current regulations.

3.0 General:

Although no roofing sampling was done, complete roof sampling is recommended at a time when a qualified roofing contractor is on-site to patch core sample holes in roofing, or prior to roof removal or demolition.

Due to limited access points in the ceilings, some spaces above ceiling tiles were completely inaccessible or only slightly visible. As a result, the quantities listed reflect the visibility available at the time of the survey.

Due to limited access points in the walls, some pipe chases were completely inaccessible or only slightly visible. As a result, the quantities listed reflect the visibility available at the time of the survey.

The floor tiles and mastics under carpet that were assumed to be asbestos containing were either inaccessible to sampling or unidentifiable. The floor tile and mastic under carpet should be sampled prior to being disturbed. DEHS suggests three samples of miscellaneous materials be taken and analyzed in accordance with OSHA regulations.

Cost Information: The approximate cost for the removal of all ACM is itemized below. These figures are based on the assumption that all friable and potentially friable ACM are going to be removed. For project specific removal costs, contact this office with your project requirements and unit costs can be calculated for the impacted areas.

<table>
<thead>
<tr>
<th>MATERIAL TYPE</th>
<th>LOW RANGE</th>
<th>HIGH RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• thermal system insulation</td>
<td>$298,926</td>
<td>$383,574</td>
</tr>
<tr>
<td>• floor coverings and adhesives</td>
<td>$95,998</td>
<td>$191,996</td>
</tr>
<tr>
<td>• ceiling tiles</td>
<td>$11,487</td>
<td>$22,974</td>
</tr>
<tr>
<td>• miscellaneous materials</td>
<td>$57,576</td>
<td>$94,022</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$463,987</td>
<td>$692,566</td>
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All ACM removal must be performed by a Minnesota licensed asbestos abatement contractor. All asbestos removal shall be performed within the specified procedures as outlined in the University of Minnesota Technical Specification for Asbestos Abatement. Please note that removal costs are highly variable and dependent on such factors as contractor availability, accessibility of work areas and site specific work plans.

Air monitoring is required for many asbestos-related projects. Environmental Health and Safety (EH&S) is available to provide this service. The estimated cost for EH&S to complete air monitoring requirements for specific projects will be made available upon request. The cost of air monitoring is a function of contractor on-site days and may vary dependent upon project specific scope of work. EH&S will provide labor, equipment and project oversight as necessary. Project management and contract administration will be provided by the Facilities Management Project Development Group.
EH&S also recommends that throughout the general renovation activities associated with this building, precautions and work practices should be implemented to minimize nuisance dust levels. Dust suppression techniques (misting the air with water and keeping materials wet) should be required of the general contractor.

At the time of renovation and/or demolition, any areas where contained abatement would need to be performed and those areas not having been accessed during this survey should be entered and surveyed by certified personnel. In the case this may constitute an uncontrolled abatement procedure DEHS would suggest nine samples of surfacing materials and at least three of thermal or miscellaneous materials be taken and analyzed to be considered non-asbestos containing material in accordance with OSHA regulations.

In accordance with OSHA regulations, areas which contain asbestos materials are required to be labeled at the access points (i.e. the outside of mechanical rooms, etc.)

If there is any further information required, or other questions arise regarding this request, please contact Dale Livingston at 626-2317.

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