

Asbestos Reassessment Report

Carl A Pollock Hall (Building No. 29)
200 University Avenue West, Waterloo, Ontario

Prepared for:

University of Waterloo
200 University Ave W.
Waterloo, Ontario, N2I 3GI

Attention: Robert Mullins
Safety Officer

February 8, 2021

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EXECUTIVE SUMMARY

University of Waterloo (Client) retained Pinchin Ltd. (Pinchin) to conduct an asbestos building materials reassessment of Carl A Pollock Hall (Building No. 29) located at the University of Waterloo Campus. The reassessment was performed on January 19, 2021.

The objective of the reassessment was to evaluate the condition and quantity of previously reported asbestos-containing materials (ACM), as detailed in the client supplied University of Waterloo Asbestos Management Database and develop corrective action plans as required for the purposes of long-term management. The results of this assessment are not intended for construction, renovation, demolition or project tendering purposes.

The reassessment included all accessible locations where asbestos building materials were previously identified; excluding exterior finishes and the roof area.

SUMMARY OF RECOMMENDATIONS

Remediate the materials identified in the Summary of Recommended Remediation presented in Appendix II.

Perform a reassessment of asbestos materials on an annual basis. The next reassessment of ACM should be performed annually based on the requirements stipulated in Ontario Regulation 278/05.

Remove all ACM prior to alteration or maintenance work or if ACM may be disturbed by the work. Follow appropriate asbestos precautions for the classification of work being performed.

Update the asbestos management database upon completion of any abatement and removal of ACM.

O. Reg. 278/05 Type 2 procedures must be utilized for access into ceiling spaces with asbestos-containing sprayed fireproofing present on the structure and also in areas where damaged ACM materials have been identified in the ceiling space.

This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.

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1.0 INTRODUCTION AND SCOPE

University of Waterloo (Client) retained Pinchin Ltd. (Pinchin) to conduct an asbestos building materials reassessment at Carl A Pollock Hall (Building No. 29), located at the University of Waterloo Campus.

The reassessment was performed by Mike Pereira, B.E.S., Project Technologist on January 19, 2021. The surveyor was unaccompanied during the assessment. The building was occupied at the time of the assessment.

The objectives of the reassessment were to document the locations, quantities, and conditions of previously identified asbestos containing building materials and develop corrective action plans as required. This reassessment is only to be used for the purposes of long-term management and routine maintenance. The results of this reassessment are not to be used for construction, renovation, demolition, or project tendering purposes.

1.1 Scope of Assessment

The objective of the reassessment was to evaluate the condition and quantity of previously reported asbestos-containing materials (ACM), as detailed in the client supplied University of Waterloo Asbestos Management Database and to develop corrective action plans as required.

Additional objectives included the following:

- Documentation of any asbestos abatement that was performed since the last reassessment.

2.0 METHODOLOGY

Pinchin reviewed the current data in the University of Waterloo Asbestos Management Database. Pinchin has relied on the findings from the previous year's reassessments and the current client supplied information in the asbestos management database.

The surveyor entered each room, corridor, service area, etc. where ACM's were previously identified. Walls, solid ceilings, flooring, structural items, interior finishes, or exterior finishes were not removed to determine the presence of concealed materials.

The surveyor visually inspected for the condition of ACM previously identified. Where changes were present in condition or where materials have been removed, these changes have been made to the asbestos management database and are reflected in the report.

Asbestos materials were evaluated in order to make recommendations regarding remedial work. The priority for remedial action was based on the Pinchin developed criteria which is based on compliance with current regulations same priority system in the previous reassessment report and is defined in Appendix IA.

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2.1 Limitations on the Scope of Work

The reassessment excluded the following:

- Owner or occupant articles (e.g. stored items, appliances, etc.);
- Underground materials or equipment (e.g. vessels, drums, underground storage tanks, pipes, etc.);
- Building envelope, structural components, inaccessible or concealed materials or other items where sampling may cause consequential damage to the property;
- Energized systems (e.g. internal boiler components, elevators, mechanical or electrical components);
- Controlled products (e.g. stored chemicals, operational or process-related substances); and
- Materials not typically associated with construction (e.g. settled dust, spills, residual contamination from prior spills, etc.).

The reassessment was limited to non-intrusive investigation and testing in areas where asbestos-containing materials were previously identified. Concealed spaces such as those above solid ceilings and within shafts and pipe-chases were accessed via existing access panels only.

2.2 Laboratory Analyses for Asbestos

Pinchin submits the bulk samples to a NVLAP[1] accredited laboratory for analysis. The analysis is performed in accordance with Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, July 1993. If collected, analytical sample results are present in the Appendix.

The asbestos analysis is completed using a stop positive approach. Only one result of greater than the regulated criteria (0.5%) is required to determine that a material is asbestos-containing, but all samples must be analysed to conclusively determine that a material is non-asbestos. The laboratory stops analysing samples from a homogeneous material once a result greater than the regulated criteria is detected in any of the samples of that material. All samples of a homogeneous material are analysed if no asbestos is detected. In some cases, all samples are analysed in the sample set regardless of result. Where building materials are described in the report as non-asbestos, or described as containing no asbestos, this is subject to the limitations of the analytical method used and should be understood to mean no asbestos was detected.

[1] National Voluntary Laboratory Accreditation Program

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3.0 REASSESSMENT FINDINGS

Refer to the appendices for the results of this reassessment.

4.0 RECOMMENDATIONS

4.1 General

Perform a detailed intrusive assessment prior to building renovation or demolition operations. The assessment should include destructive testing (i.e. coring and/or removal of building finishes and components), sampling of other hazardous materials (lead, mercury, PCBs, mould, etc.), and materials not tested in this study (i.e. roofing materials, caulking, mastics).

4.2 Remedial Work

Remediate the materials identified in the Summary of Recommended Remediation presented in Appendix II.

4.3 On-going Management and Maintenance

Perform a reassessment of asbestos materials on an annual basis. The next re-assessment of ACM should be performed annually based on the requirements stipulated in Ontario Regulation 278/05.

Remove all ACM prior to alteration or maintenance work or if ACM may be disturbed by the work. Follow appropriate asbestos precautions for the classification of work being performed.

Update the asbestos management database upon completion of any abatement and removal of ACM.

O. Reg. 278/05 Type 2 procedures must be utilized for access into ceiling spaces with asbestos-containing sprayed fireproofing present on the structure and also in areas where damaged ACM materials have been identified in the ceiling space.

5.0 TERMS AND LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

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6.0 REFERENCES

The following legislation and documents were referenced in completing the assessment and this report:

1. Asbestos on Construction Projects and in Buildings and Repair Operations, Ontario Regulation 278/05.
2. Designated Substances, Ontario Regulation 490/09.

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Template: Master Report for Asbestos Reassessment, HAZ, April 23, 2019

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APPENDIX IA

Basis of Evaluation and Recommendations

1.0 EVALUATION CRITERIA AND BASIS OF RECOMMENDATIONS

The detailed asbestos assessment provides information regarding the location, condition, accessibility and friability of the asbestos-containing materials (ACM). In order to make recommendations for compliance with current regulations, Pinchin developed the following criteria.

2.0 EVALUATION OF CONDITION

2.1 Friable Sprayed or Trowelled Fireproofing, Thermal Insulation and Texture Finishes (Surfacing Materials)

To evaluate the condition of ACM sprayed or trowelled on fireproofing, sprayed or trowelled thermal insulation (non-mechanical), or texture, decorative or acoustic finishes, the following criteria are applied:

Good	Surface of material shows no significant signs of damage, deterioration or delamination. Good condition includes unencapsulated or unpainted fireproofing or texture finishes, where no or limited delamination or damage is observed, or encapsulated fireproofing or texture finishes where the encapsulant or paint has been applied after the damage or fallout occurred.
Poor	A sprayed material that shows signs of significant damage or is significantly delaminating or deteriorating. This may be limited to surface delamination or some portion of the substrate may be exposed.

In Locations where damage exists in isolated areas, both good and poor condition may be applicable. The extent of each condition will be recorded. Fair condition is not utilized in the evaluation of ACM sprayed or trowelled fireproofing, sprayed or trowelled thermal insulation (non-mechanical), or texture, decorative or acoustic finishes.

The evaluation of the above products above ceilings may be limited by the number of observations and by building components such as ducts or full height walls that obstruct the above ceiling observations.

2.2 Friable Mechanical or Thermal System Insulation (TSI)

To evaluate the condition of mechanical insulation on vessels, boilers, breeching, ducts, pipes, fan units, equipment etc. the following criteria are applied:

Good	Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor damage (i.e. scuffs or stains), but the jacketing is not penetrated.
Fair	Minor penetrating damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges from minor to none. Damage can be repaired.

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Poor	Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired. Includes components where insulation may have been removed incompletely.

The evaluation of mechanical insulation may be limited by the number of observations made and building components such as ducts or full height walls that obstruct observations. It is often not possible to observe each foot of mechanical insulation from all angles.

2.3 Potentially Friable Materials and Miscellaneous Friable Materials

Potentially friable ACM are products that are basically non-friable while in place, but have the potential to generate friable dust upon removal or if significantly disturbed without appropriate procedures. These products may become friable but may become friable if damaged. Potentially friable materials include materials such as acoustic ceiling tiles and plaster. To evaluate the condition of potentially friable materials, the following criteria are applied:

Good	No significant damage or deterioration. Still serving its intended use as a building material or finish.
Fair	Showing signs of some cracking or breakage, but is not deteriorating (e.g. cracked plaster, broken but in place ceiling tile, missing tile or section of plaster etc.). The condition is such that it is still serving its intended use as a building material or finish but may require repair for mainly cosmetic purposes.
Poor	Significant deterioration or breaking apart of the material. Material has deteriorated to the point it is not serving its intended use as building material or finish. Material has deteriorated to a point it has become friable. Normally potentially friable ACM in Poor condition is not repairable and requires at least localized removal and replacement.

2.4 Non-Friable Materials

Non-friable ACM cover a wide range of products with a wide variation in their tendency to release dust or asbestos fibres to the air. Many of these materials, (particularly where the matrix is an unweathered bitumen, asphalt or tar material) do not release fibres except in very unusual circumstances or during significant disturbance (e.g. use of abrasive power tools). Others with a cementitious matrix (asbestos-cement products) can more readily release dust due to abrasion, demolition, weathering, etc. The potential for asbestos release from non-friable ACM is always lower than from friable ACM. To evaluate the condition of non-friable Materials, the following criteria are applied:

Good	No significant damage or deterioration. Still serving its intended use as a building material or finish.

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Fair	Showing signs of some cracking or breakage, but is not deteriorating (e.g. cracked vinyl floor tile, missing piece of tile or transite, etc.). The condition is such that it is still serving its intended use as a building material or finish but may require repair for mainly cosmetic purposes.
Poor	Significant deterioration or breaking apart of the material to the point at which it cannot be repaired and it will require at least local removal. Material has deteriorated to the point it is not serving its intended use as building material or finish. Material may have deteriorated to a point where traffic or disturbance may cause it to become friable.

2.5 Evaluation of ACM Debris

The identification of the exact location or presence of debris on the top of ceiling tiles is limited by the number of observations made and the presence of building components such as ducts or full height walls that obstruct observations.

The presence of fallen or dislodged ACM is noted separately from the ACM source and is referred to as Debris. Debris may be friable if from a friable ACM source or a badly deteriorated non-friable ACM source. Debris may also be non-friable (such as fallen pieces of transite sheet or mastic fittings, or broken, dislodged floor tiles).

Debris	Debris may be friable or non-friable, but is always identified as debris.

2.6 Evaluation of Presumed Asbestos-Containing Material (PACM)

Presumed asbestos-containing materials (PACM), are building materials that may contain asbestos but were not sampled or analyzed due to inaccessibility or the need to perform destructive testing to obtain a reasonable sample set. Evaluation of these materials is based on the assumption that these PACM are asbestos-containing.

A list of PACM is provided in the report and they are generally not included in the detailed room by room reports. Typically they are excluded because they are inaccessible or present in very small quantities. If PACM are evaluated, Pinchin uses the criteria that correspond with the type (and friability) of the material listed above.

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3.0 EVALUATION OF ACCESSIBILITY

The accessibility of building materials known or suspected of being ACM is rated according to the following criteria:

Access (A)	Common areas of the building within reach of all building users (approximately 8 '-9' from floor or standard ceiling height). Includes other areas where occupant activities may result in disturbance of material that is not normally within reach from floor level, but may be disturbed by common activities (e.g. gymnasiums, workshops, warehouses)
Access (B)	Areas of the building accessed primarily by Maintenance/Caretaking/Janitorial Staff and within reach without use of a ladder. Includes areas within reach in Boiler Rooms, Electrical Rooms, Janitors Closets, Elevator Rooms, Mechanical Rooms, etc. Includes materials within reach from fixed ladders or catwalks, mezzanines, and accessible pipe chases.
Access (C) and Visible	Areas of the building above 8' - 9' where use of a ladder or scaffold is required to reach the ACM. Only includes ACM that are visible to view without the removal or opening of other building components such as ceiling tiles or service access panels. Visible column on HMIS sheets will say YES.
Access (C) and not Visible	Areas of the building above 8' - 9' where use of a ladder or scaffold is required to reach the ACM. Includes ACM that are not visible to view and require the removal of a building component to see, such as ceilings tiles or access panels to view and access. Includes rarely entered crawl spaces, attic spaces, etc. Observations will be limited to the extent visible from the access points. Visible column on HMIS sheets will say NO.
Access (D)	Areas of the building behind inaccessible solid ceiling systems, walls or equipment etc. where demolition of the ceiling, wall or equipment etc. is required to reach the ACM. Material inaccessible due to height or location or is only accessed under unusual situations. Evaluation of condition and extent of ACM is limited or impossible, depending on the surveyor's ability to visually examine materials in Access D.

4.0 ACTION MATRIX AND DEFINITIONS

Pinchin's evaluation of the viability of a specific asbestos control option is based on the consideration of the friability, condition, accessibility and visibility of a material. The logic used is that damaged ACM located in an area frequently accessed by all building occupants is of a higher priority than damaged ACM located in an infrequently accessed service area. The action matrix considers the potential for fibre release (primarily from friable ACM) and the possible concerns from regulatory bodies and many building occupants to all damaged ACM (including non-friable).

In any building with asbestos, many current regulations require an Asbestos Management Program be implemented. Depending on the condition and the accessibility, more active measures such as repair or removal may be recommended. The following matrix provides guidance for recommended Actions in the absence of renovation or demolition. In the event of construction or maintenance activity which will disturb ACM more aggressive control or removal will be required.

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4.1 Action Matrix

The following tables outline the action decisions based on the relationship of assessed factors. Table I applies to friable ACM. Table II applies to non-friable ACM.

Table I Decision Matrix for Friable ACM

	Condition			
Access	**Good**	**Fair**	**Poor**	**Debris**
(A)	Action 5[1]	Action 5[2]	Action 3	Action 1
(B)	Action 7	Action 6[3]	Action 3	Action 1
(C) Visible	Action 7	Action 6	Action 3	Action 2
(C) Not Visible	Action 7	Action 7	Action 4	Action 2
(D)	Action 7	Action 7	Action 7	Action 7

Table II Decision Matrix for Potentially Friable and Non-Friable ACM

	Condition			
Access	**Good**	**Fair**	**Poor**	**Debris**
(A)	Action 7	Action 7[4]	Action 3	Action 1
(B)	Action 7	Action 7	Action 3	Action 1
(C) Visible	Action 7	Action 7	Action 4	Action 2
(C) Not Visible	Action 7	Action 7	Action 4	Action 2
(D)	Action 7	Action 7	Action 7	Action 7

4.2 Action Definitions

The following are the definitions in the Action Matrix Table presented above:

Action Definitions	
Action 1	Clean-Up of ACM Debris Restrict access that is likely to cause a disturbance of the ACM Debris and clean up ACM Debris. Utilize appropriate asbestos precautions.

[1] If friable ACM in access (A)/Good condition is not proactively removed Action 7 (Manage) is recommended.

[2] If friable ACM in access (A)/Fair condition is not proactively removed repair is recommended.

[3] If friable ACM in access (B)/Fair condition is likely to be disturbed after repair proactive removal is recommended.

[4] Action 7 is recommended for all non-friable ACM in Fair condition however some clients may wish to repair or take some action primarily for cosmetic reasons

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Action Definitions	
Action 2	Precautions for Access Which may Disturb ACM Debris Use appropriate means to isolate the debris or to limit entry to the area which may disturb the material. At locations where ACM Debris can remain in place in lieu of removal or clean-up (e.g. Debris on top of ceiling tiles or behind lockable door), Utilize appropriate asbestos precautions to enter the area if this will disturb debris. The precautions will be required until the ACM Debris has been cleaned up.
Action 3	ACM Removal Remove ACM. Utilize asbestos procedures appropriate to the scope of the removal work. Until it is removed, restrict access to the material so it is not disturbed.
Action 4	Precautions for Work Which may Disturb ACM in Poor Condition. Utilize appropriate asbestos precautions if ACM may be disturbed by work on or near ACM. This does not require restricting access to the area, only control of work which may contact or disturb the ACM. Removal is the only viable option if work will disturb ACM.
Action 5	Proactive ACM Removal Remove friable ACM where the presence of friable asbestos in Good condition is not desirable. If friable ACM in Fair condition is not removed then Repair friable ACM.
Action 6	ACM Repair Repair friable ACM in Fair condition which is not likely to be damaged again or disturbed by normal use of the area or room. Pinchin recommends proactive removal if friable ACM is likely to be damaged or disturbed during normal use of the area or room
Action 7	Asbestos Management Program with Routine Surveillance Implement an Asbestos Management Program, including routine surveillance of ACM. Reassess materials regularly (typically once per year).

Master Template: Methodology Annex A to Appendix I Evaluation Criteria, HAZ, September 30, 2016

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APPENDIX IB

Asbestos Fair/Poor Condition Summary List (2021)

UNIVERSITY OF Waterloo

Building:	Figures:	Notes:	
Carl A. Pollock Hall		**HM** - Homogenous Material - Homogeneous with previously sampled material	All quantities listed are considered approximate and should be verified prior to any renovation or demolition work within the areas.
Date Built:		**SL** - Sample Location - Material Sampled	
1971		**VC** - Visually Confirmed - Deemed ACM based on surveyor recognition	
Building Size:		**AMP** - Asbestos Management Plan	
120,500 SF		**ACM** - Asbestos-Containing Material	

Room Number	Room Description	Inspected Item	Inspected Material	Material Description	Material Detailed Location	Friability	Quantity	Condition	Sample / Identification Summary	Sample ID	Sample Report Date	% Asbestos & Fibre Type	Asbestos Classification	Recommended Action	General Notes
1330	Electrical Room	Ceiling	Ceiling Tile 2' x 4'	Patterned Pinhole	Ceiling	NF	8 SF	Poor	HM	33293-CPH-S04ABC	3/19/2009	1.3% Chrysotile	ACM	Remove	Wate stained ceiling tiles
3983	Mechanical Room	Structure	Firespray	-	Above Ceiling	F	2 SF	Poor	HM	33293-CPH-S03	3/18/2009	60% Chrysotile	ACM	Clean	Approx 2 ft2 of debris presnt on mechanical equipment

APPENDIX II

Summary of Recommended Remediation

ABATEMENT ITEM #01 2021- 01

Location #:	Room 1330 Electrical Room		
Inspection Date:	01/19/21		
Material	2'x4" acoustic ceiling tiles		
Condition	Poor		
Accessibility	B		
Action Level:	3		
Type of ACM Operation:	Type 1 Removal		
Recommended Operation:		**Action**	**Quantity**
	X	Removal	8 SF
		Repair	
		Encapsulation	
		Debris Clean-up	
Notes:	Observed 3 asbestos-containing acoustic ceiling tiles with visible water damage.		



ABATEMENT ITEM #02 2021- 01

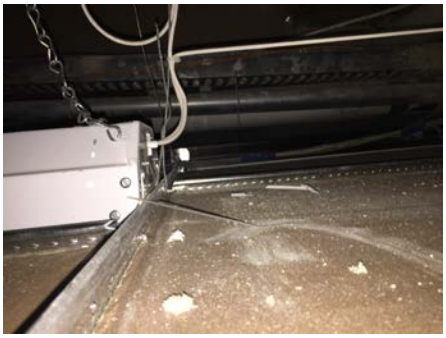
Location #:	Room 3983 Mechanical Room		
Inspection Date:	01/19/21		
Material	Sprayed fireproofing debris		
Condition	Poor		
Accessibility	B		
Action Level:	3		
Type of ACM Operation:	Type 2 Debris Clean up. Type 2 precautions required to enter room until debris clean-up completed.		
Recommended Operation:		**Action**	**Quantity**
		Removal	
		Repair	
		Encapsulation	
	X	Debris Clean-up	2 SF
Notes:	Sprayed fireproofing debris present on top of mechanical equipment		



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ABATEMENT ITEM #03 2021- 01

Location #:	Throughout the Building		
Inspection Date:	01/19/21		
Material	Sprayed fireproofing debris		
Condition	Poor		
Accessibility	C (Visible)		
Action Level:	3		
Type of ACM Operation:	Type 2 Precautions to enter or work in ceiling space		
Recommended Operation:		**Action**	**Quantity**
		Removal	
		Repair	
		Encapsulation	
		Debris Clean-up	
Notes:	Sprayed fireproofing overspray and debris was observed on piping, conduit, on top of lay-in ceiling tiles, etc. in the ceiling spaces throughout majority of the building (refer to the database for all locations). Sprayed fireproofing debris was observed on top of ceiling tiles is various locations and is presumed to be present on-top of acoustic ceiling tiles throughout the building where sprayed fireproofing is present. O. Reg. 278/05 Type 2 procedures are required to enter or work within these ceiling spaces.		



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