June 16, 2017

University of Waterloo
200 University Avenue West,
Waterloo, Ontario N2L 3G1

Attention: **Mr. Robert Mullins,**
Safety Officer
r2mullins@uwaterloo.ca

Re: Results of Bulk Sample Analysis for Determination of Asbestos Content Limited to Sampling Firespray within Corridor 3883 of Carl Pollock Hall 200 University Avenue West, Waterloo, Ontario (Site)

1.0 BACKGROUND

On June 14th, 2017, Safetech Environmental Limited (SEL) was retained by Mr. Robert Mullins with the University of Waterloo Safety Office to collect a verification bulk sample of asbestos-containing fireproofing material located on steel structures above lay-in acoustic ceiling tiles within Corridor 3883 of the Carl Pollock Hall Building (CPH) which is located at 200 University Avenue West in Waterloo, Ontario. The bulk sample was submitted to an independent laboratory for the determination of asbestos content.

2.0 REGULATIONS FOR ASBESTOS IN BUILDING MATERIALS

Management of asbestos-containing materials in buildings is regulated under Ontario Regulation 278/05, "*Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations*", made under the Occupational Health and Safety Act (O. Reg. 278/05). Under this regulation, an asbestos-containing material (ACM) is defined as a material that contains 0.5 percent or more asbestos by dry weight.

If materials are determined to be asbestos-containing, O. Reg. 278/05 requires that specific procedures be followed for ongoing management of these materials in buildings. Specific measures and procedures are also required to be followed during renovation or demolition projects that have the potential to disturb ACM. The extent of measures and procedures necessary are defined in O. Reg. 278/05 as Type 1, Type 2 or Type 3 operations. The Type of operation required to be followed is dependent on several factors such as type of asbestos, friability of the material, quantity of material disturbed and type of work being conducted. In general, the Type of operation required increases as the risk of exposure increases.

Management of asbestos waste is governed by Ontario Regulation 347, “General – Waste Management”, made under the Environmental Protection Act. Section 17 of this regulation pertains to management of asbestos waste and sets out requirements for the safe handling, transportation and disposal of asbestos waste.

3.0 SAMPLING AND ANALYTICAL METHODOLOGY

A verification bulk sample of asbestos-containing sprayed fireproofing was retrieved by SEL in accordance with Section 3 and Table 1 of O.Reg. 278/05. As the material was previously sampled and identified as an asbestos-containing material only one (1) sample was retrieved for verification purposes. The bulk sample was placed in a labelled plastic sampling bag for transportation to an independent laboratory.

Analysis for asbestos content was performed by the independent laboratory in accordance with the U.S. Environmental Protection Agency (EPA) Test Method EPA/600/R-93-116:Method for the Determination of Asbestos in Bulk Building Materials. June 1993. This method identifies the asbestos fibre content of building materials using polarized light microscopy (PLM) analytical techniques, with confirmation of presence and type of asbestos made by dispersion staining optical microscopy. This analytical method meets the requirements set forth in Section 3 of O.Reg. 278/05.

4.0 RESULTS

Results of analysis for the determination of asbestos content are summarized in Table I. Materials have been classified as “ACM”, “Non-ACM”, “Suspected ACM” or “Presumed Non-ACM” based on analytical results. Materials classified as Suspected ACM or Presumed Non-ACM may require further analysis (depending on site-specific conditions) to verify whether the material should be classified as ACM or Non-ACM. Please refer to the Limitations section of this report (Section 6.0) for additional details. The Laboratory Certificate of Analysis is attached.

TABLE I
Bulk Sample Analytical Results for Determination of Asbestos Content
Carl Pollock Hall - Corridor 3883
200 University Avenue West, Waterloo, Ontario
Sample Collection Date: June 14th, 2017

Sample No.	Material Description	Sample Location	Asbestos Content	Material Classification
S01	White, Fibrous Firespray	Corridor 3883 of CPH. (edge of corridor by pipe straight above the ceiling). Refer to the attached figure for the approximate sample collection location	35% Chrysotile	**Asbestos-Containing Material**

5.0 CONCLUSIONS & DISCUSSION

As results summarized in Table I indicate, the sprayed fireproofing material located above the ceiling within corridor 3883 of Carl Pollock Hall is verified as an asbestos-containing material. Therefore, there are no changes to the existing UW asbestos management database and any work involving this material should follow the requirements for management, disturbance or removal of this material under O. Reg. 278/05.

We recommend that this report and bulk sample results append the University's asbestos management database to ensure the document is kept up to date and meets the management requirements of Ontario Regulation 278/05.

Should you require any further information, please contact our office at 519.954.2732.

Sincerely,
SAFETECH ENVIRONMENTAL LIMITED

Prepared by:
Kira Moor, B.Sc.,
Occupational Health and Safety Technician

Reviewed by:
Jeremy J. Gore, C.E.T., EP
General Manager - SWO

Attachments: Laboratory Certificate of Analysis
Figure 1: Sample Location

6.0 LIMITATIONS

The investigation, assessments and recommendations detailed in this report were carried out in a manner consistent with the level of care and skill normally exercised by reasonable members of the environmental and industrial hygiene consulting profession currently practicing under similar conditions in the area. Furthermore, the investigation, assessments and recommendations in this report have been made based on conditions observed at the time of the assessment and are limited to the areas investigated. Unaccounted for conditions may be present in the areas assessed due to concealed conditions within wall/ceiling cavities, etc. or subsurface conditions that can vary from those encountered.

In preparing this report, Safetech Environmental Limited (SEL) relied on information supplied by others, including independent laboratories and testing services. Conclusions made in this report are based on the laboratory analytical results for the bulk samples analyzed. Except as expressly set-out in this report, SEL has not made any independent verification of such information.

The analytical method used meets the requirements of O.Reg. 278/05. However, small asbestos fibres may be missed by PLM due to resolution limitations of the optical microscope. Interfering binder/matrix and/or low asbestos content may also hinder positive identification by PLM. These conditions are common for vermiculite attic insulation (VAI) and non-friable organically bound (NOB) materials such as vinyl floor tiles, roofing materials, mastics and caulking and can lead to “false negative” results. If PLM analytical results for these types of materials indicate no asbestos detected they have been reported as “Presumed Non-ACM”. Due to limitations of the analytical method we cannot confirm that low quantities of asbestos are not present in these samples using solely PLM analysis. Additional analytical procedures should be considered for such materials to rule out false negative results.

Table 1 of Ontario Regulation 278/05 indicates the required minimum number of bulk material samples to be collected from a homogeneous material. Depending on the type of material and size of area, typically 3, 5 or 7 samples should be analyzed and all deemed as negative (i.e. less than 0.5% asbestos) prior to confirming that the material sampled is non-asbestos. A single negative sample result is not considered to be sufficient evidence to confirm a material to be non-asbestos-containing.

This report has been prepared for the sole use of the person or entity to who it is addressed. No other person or entity is entitled to use or rely upon this report without the express written consent of Safetech Environmental Limited and the person or entity to who it is addressed. Any use that a third party makes of this report, or any reliance based on conclusions and recommendations made, are the responsibility of such third parties. SEL accepts no responsibility for damages suffered by third parties as a result of actions based on this report.

emcscientific
INCORPORATED

Laboratory Analysis Report

To:

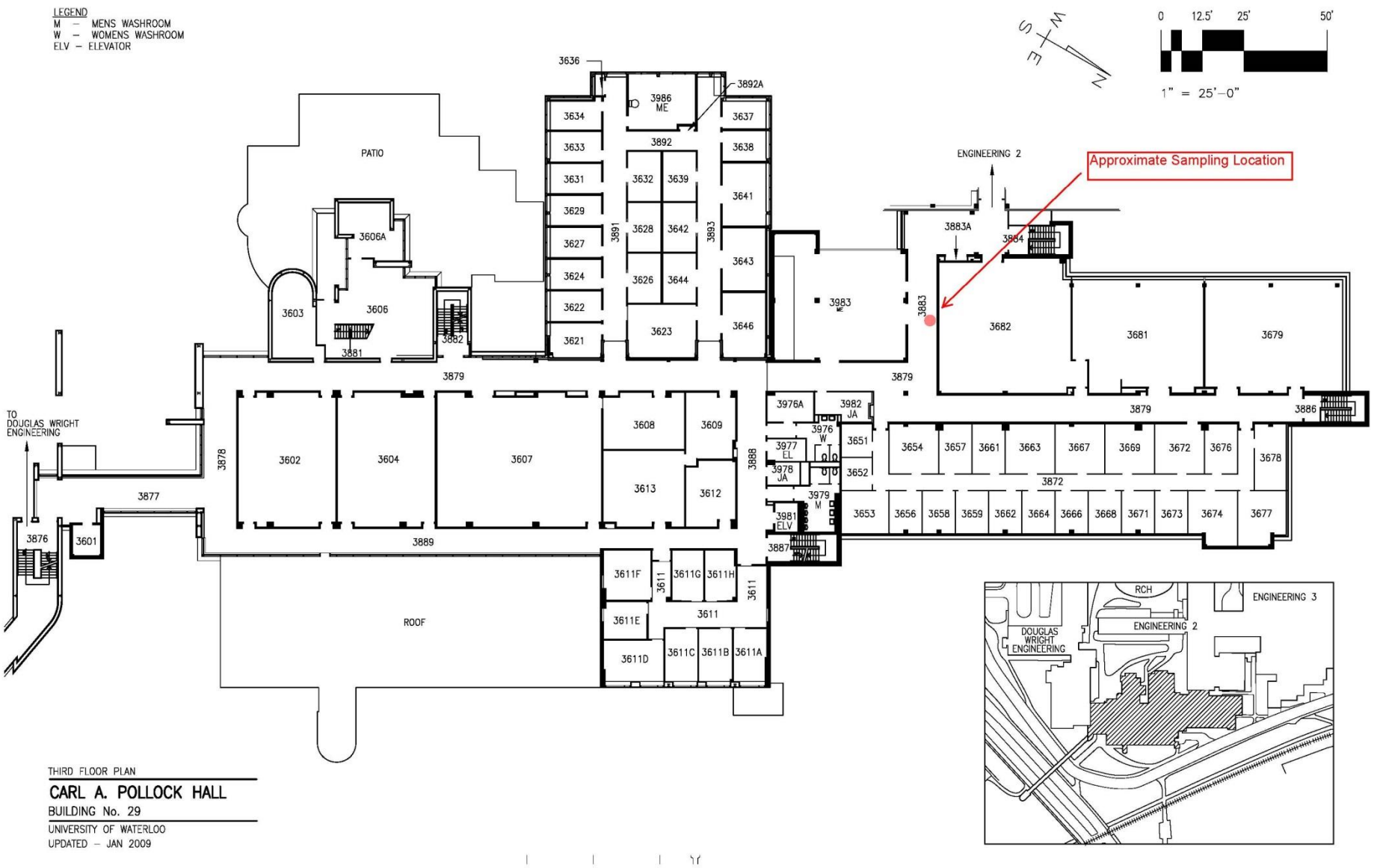
Kira Moor
Safetech Environmental Ltd.
52 McIntyre Place, Unit J
Kitchener, Ontario
N2R 1H9

EMC LAB REPORT NUMBER: A31980
Job/Project Name: CPH 3881
Analysis Method: Polarized Light Microscopy – EPA 600
Date Received: Jun 14/17 **Date Analyzed:** Jun 14/17
Analyst: Kathy Feick, *Analyst*
Reviewed By: Malgorzata Sybydlo, *Laboratory Manager*

Job No: 2-115417
Number of Samples: 1
Date Reported: Jun 14/17

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
S01	A31980-1	Firespray	White, fibrous material	**Chrysotile**	**35**	55	10

Note:
1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result)
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.



LEGEND:

Firespray Sample Location

Figure 1:
200 University Avenue West, Waterloo, Ontario
Corridor 3883 Firespray Sampling

DATE: June 15th, 2017 DRAWING BY: K. Moor

SEL PROJECT #:2-115417 APPROVED BY: J. Gore

Safetech Environmental Limited
52 McIntyre Place, Unit J
Kitchener, ON
N2R 1H9