March 15, 2017

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

Attention: **Mr. Adam Toplician,**
Facilities Technologist/Designer
atoplician@uwaterloo.ca

Re: WR# 38131 - Results of Bulk Sample Analysis for Determination of Asbestos Content
Limited to Sampling Fireproofing Material & Ceiling Tile
University of Waterloo, Carl A. Pollock Hall (CPH) Corridor 3879
200 University Avenue West, Waterloo, Ontario (Site)

1.0 BACKGROUND

On March 14, 2017, Safetech Environmental Limited (SEL) collected bulk samples of suspect asbestos-containing materials from the north end of Carl A. Pollock Hall (CPH) corridor 3879 which is located at 200 University Avenue West in Waterloo, Ontario. Refer to the attached Figure 1 for the approximate location of bulk sampling. The bulk samples were submitted to an independent laboratory for the determination of asbestos content.

As reported, a worker was drilling anchor holes into a concrete block wall for installing / fastening a mechanical pipe which extended from a pre-defined work area to the third floor corridor (3879) of Carl A. Pollock Hall. During this work, the worker noticed the presence of sprayed-on fireproofing above the ceiling (on structures, as overspray and as debris on the top of the false ceiling) and questioned the asbestos-content of the fireproofing material. As a result, the work stopped and the suspect condition was reported to U of W Plant Operations for further assessment.

Upon our arrival, the asbestos content of the fireproofing could not be clearly defined and the existing asbestos building material database for the university included both asbestos-containing and non-asbestos fireproofing materials types for this specific location (i.e. corridor 3879). Therefore, fireproofing samples were collected in accordance with O. Reg. 278/05 for verification of asbestos content at this specific work location.

In addition, the asbestos content of the lay-in acoustic ceiling tiles could not be verified during our site visit. Therefore, SEL collected bulk samples of the ceiling tile within the specific work location in accordance with O. Reg. 278/05. This report provides the results of our bulk sampling and offers recommendations for continued work.

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

Bulk samples of spray-on fireproofing material and lay-in acoustic ceiling tile were retrieved by SEL in accordance with Section 3 and Table 1 of O. Reg. 278/05. For the approximate sampling location please refer to *Figure 1: Bulk Sample Analysis for Determination of Asbestos Content – CPH 3879*. The number of samples collected for this material was based on the type and quantity. Each individual sample was placed in a labelled, sealable sampling bag for transportation to EMC Scientific Inc., an independent laboratory.

Analysis for asbestos content was performed by EMC Scientific Inc. 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
CPH Corridor 3879 – North End
200 University Avenue West, Waterloo, Ontario
Sample Collection Date: March 14, 2017

Sample No.	Material Description	Sample Location	Asbestos Content	Material Classification
S01a	Spray-on Fireproofing	Corridor 3879 – North End	None Detected	Non-ACM
S01b				
S01c				
S02a	2’ x4’ Ceiling Tile, Patterned Pinhole	Corridor 3879 – North End	None Detected	Non-ACM
S02b				
S02c				

5.0 CONCLUSIONS & DISCUSSION

As results summarized in Table I indicate, no asbestos was detected in any of the bulk samples of spray-on fireproofing or ceiling tile within the specific work area reported by the University of Waterloo project representatives. Therefore, it is very unlikely that an asbestos disturbance or exposure occurred as a result of the drilling work reported.

Section 30(1) of the Ontario Occupational Health and Safety Act (OHSA), Revised Statues of Ontario 1990, as amended, requires a building owner to determine if there are any designated substances present at a project site prior to any construction or demolition activity. In addition, sections 30(2), (3) and (4) require the Owner and constructors for a project to provide the findings in this report as part of the tendering information for any tendered project or to prospective contractors (and subcontractors) of a project before entering into a binding contract. If these regulatory requirements have not been met for this project then we recommend stopping all work to conduct a detailed assessment for these potential hazardous materials to ensure that an accidental disturbance or exposure does not occur. This shall also include any extra work areas identified as the project progresses. SEL can assist U of W with this assessment, if requested.

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

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: Figure 1: *Bulk Sample Analysis for Determination of Asbestos Content – CPH 3879*
Laboratory Certificate of Analysis

6.0 LIMITATIONS

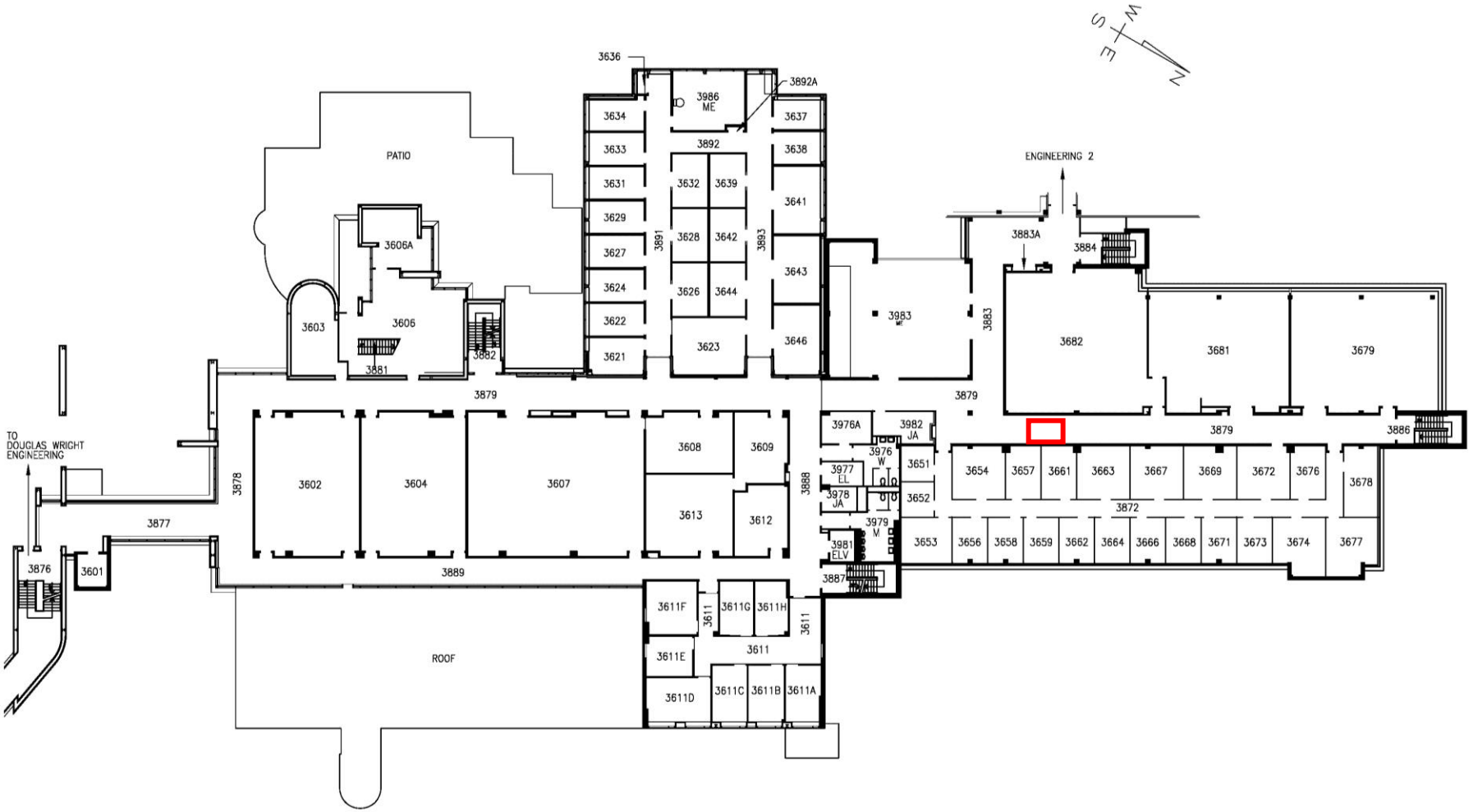
The investigation, assessments and recommendations detailed in this report were carried out in a manner consistent with the level of care and skill normally exercised by reasonable members of the environmental and industrial hygiene consulting profession currently practicing under similar conditions 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.



LEGEND:

Approximate sample location.

PROJECT:
200 University Avenue W., Waterloo, ON
Bulk Sample Analysis for Determination of Asbestos Content – CPH 3879

DATE: March 15, 2017 DRAWING BY: K. Moor

WR #:38131 APPROVED BY: J.Gore

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

emcscientific
INCORPORATED

Laboratory Analysis Report

To:

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

EMC LAB REPORT NUMBER: A29869
Job/Project Name: CPH Corridor 3879
Analysis Method: Polarized Light Microscopy – EPA 600
Date Received: Mar 15/17 **Date Analyzed:** Mar 15/17
Analyst: Arabee Sathiaseelan, *Assistant Laboratory Manager*

Job No: 2-112217
Number of Samples: 6
Date Reported: Mar 15/17

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)		
				Asbestos Fibres	Non-asbestos Fibres	Non-fibrous Material
S01a	A29869-1	Grey fireproofing	Grey, fibrous material	**ND**	70	30
S01b	A29869-2	Grey fireproofing	Grey, fibrous material	**ND**	70	30
S01c	A29869-3	Grey fireproofing	Grey, fibrous material	**ND**	70	30
S02a	A29869-4	2'4' ceiling tile patterned pinhole	Grey, ceiling tile	**ND**	70	30
S02b	A29869-5	2'4' ceiling tile patterned pinhole	Grey, ceiling tile	**ND**	70	30
S02c	A29869-6	2'4' ceiling tile patterned pinhole	Grey, ceiling tile	**ND**	70	30

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%.