

**LIMITED DESIGNATED SUBSTANCE SURVEY
REPORT
(RENOVATION AREAS)**

**Sunnybrook Health Sciences Center K Wing 3rd
Floor Center and East Pod
2075 Bayview Avenue
Toronto, Ontario**

Presented to:
Sunnybrook Health Sciences Center
2075 Bayview Avenue
Toronto, Ontario
M4N 3M5

Attention: Manish Mistry

August 4, 2020

Maple Project No. 18903

EXECUTIVE SUMMARY

Maple Environmental Inc. ('Maple') was retained by Sunnybrook Health Sciences Center to perform a survey for Designated Substances as well as polychlorinated biphenyls (PCBs) and mould within the Center and East Pod of the K Wing of Sunnybrook Hospital located at 2075 Bayview Avenue, Toronto, Ontario (the 'Site'). It is our understanding that the building requires a survey to identify possible hazardous building materials that may be disturbed during the renovations of the selected areas.

The survey was limited to the Center and East POD of the K Wing. The findings of the current survey are summarized below. Please refer to the main body of this report for details on all materials.

Asbestos

Asbestos-containing materials (ACM) identified within the surveyed area at the time of the assessment are as follows:

- Vinyl Sheet Flooring

Suspect asbestos-containing materials identified within the surveyed area at the time of the assessment are as follows:

- Vinyl Floor Tiles

It should be noted that due to the presence of solid walls and ceilings (i.e. masonry walls and above solid ceilings) throughout the survey area, access for viewing within the wall and ceiling cavities was not always possible. Suspect asbestos-containing materials may be present within wall and ceiling cavities that were not identified but are suspected to be present in this report. Caution should be taken when demolishing solid walls and ceilings within the areas being surveyed.

Lead

Samples of the predominant paint colours indicated that general oil based green, brown/tan, beige and peach paint are considered to be Low-Level Lead (virtually safe) and red paints are considered to be Lead-based.

It should be noted that lead may also be present in wiring connectors, electric cable sheathing, solder joints on copper piping, ceramic glazes, lead sheeting, masonry mortar, and as sub-surface layers to the most recent paint layers currently applied, where present at the Site.

Mercury

Mercury vapour is present in all fluorescent light tubes.

Silica

Free crystalline silica, present as common construction sand, is present in all concrete and masonry products where present within the surveyed areas.

Mould

Minor mould growth (~5 square feet) was observed on the underside of sink millwork within K3E14, K3E16 and K3E23.

It is possible that mould growth is present in concealed areas such as wall or ceiling cavities, pipe chases, etc. or in areas not currently assessed by Maple.

PCBs

The fluorescent lamp fixtures observed contained T8 fluorescent light tubes. T8 fixtures have electronic ballasts and are considered as not containing PCB.

Recommendations

Based on the Laboratory Analytical Results and observations made on Site, Maple provides the following recommendations.

- Remove all asbestos-containing materials that may be disturbed during the planned renovation using the appropriate asbestos abatement procedures as outlined in Section 5.0 of the Report.
- Low Level Lead paints (0.1% or less) are considered virtually safe provided that;
 - airborne lead concentrations are kept below 0.05 mg/m³
 - general dust suppression and worker hygiene procedures are utilized
 - torching or other activities that create fumes are not completed
- Disturbance of paints that are considered Lead-Based should be completed using Lead abatement procedures as appropriate in accordance with EACO and Ministry of Labour Guidelines as outlined in Section 5.0 of the Report.
- Further, prior to disposal it is recommended that materials containing lead should be sampled and analyzed for Metals/Inorganics using the Toxicity Characteristic Leaching Procedure (TCLP) as described under O. Reg. 347. The testing is required to determine waste classification in accordance with Ontario Regulation 347 of R.R.O. 1990 made under the Environmental Protection Act amending Reg. 558/00.
- Remove all mercury containing components (including fluorescent light tubes) prior to renovations if the materials are being removed. These components should be removed intact and disposed of appropriately.
- Proper dust suppression techniques and other safety precautions to control possible generation of silica dust from the demolition of concrete and masonry products present in the surveyed area should follow those outlined in the Ministry of Labour Guideline- Silica on Construction Projects, 2004.
- Using Level 1 mould remediation procedures consider removal and replacement of the impacted millwork within the surveyed area.

Appropriate procedures for asbestos, lead, mercury, silica, and mould must be observed if these materials are likely to be disturbed by scheduled renovations. Please refer to Section 5.0 of the report to review the required procedures.

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	APPLICABLE ONTARIO REGULATIONS.....	1
2.1	DESIGNATED SUBSTANCES AND OTHER HAZARDOUS MATERIALS	1
2.2	ONTARIO REGULATION 278/05 (ASBESTOS).....	2
2.3	ONTARIO REGULATION 347	2
2.4	ONTARIO REGULATION 362	2
3.0	SURVEY SCOPE AND METHODOLOGY.....	3
3.1	ASBESTOS-CONTAINING BUILDING MATERIALS (ACM)	3
3.2	LEAD	5
3.3	MERCURY	5
3.4	OTHER DESIGNATED SUBSTANCES.....	5
3.5	MOULD.....	5
3.6	POLYCHLORINATED BIPHENYLS	5
3.7	LIMITATIONS AND OMISSIONS FROM SCOPE.....	6
3.8	DRAWINGS	6
3.9	PREVIOUS REPORTS.....	6
4.0	INVENTORY FINDINGS.....	6
4.1	ASBESTOS.....	6
4.2	LEAD	10
4.3	MERCURY	10
4.4	SILICA	11
4.5	ISOCYANATES	11
4.6	VINYL CHLORIDE MONOMER	11
4.7	BENZENE	11
4.8	ACRYLONITRILE.....	11
4.9	COKE OVEN EMISSIONS.....	11
4.10	ARSENIC.....	11
4.11	ETHYLENE OXIDE.....	11
4.12	MOULD.....	11
4.13	POLYCHLORINATED BIPHENYLS (PCBs).....	11
5.0	RECOMMENDATIONS.....	11
5.1	ASBESTOS.....	11
5.2	LEAD	12
5.3	MERCURY	12
5.4	SILICA	13
5.5	MOULD.....	13
6.0	LIMITATIONS.....	13
<u>APPENDICES</u>		
APPENDIX I	LABORATORY ANALYSIS REPORT - ASBESTOS	
APPENDIX II	LABORATORY ANALYSIS REPORT - LEAD	
APPENDIX III	DRAWINGS	

1.0 INTRODUCTION

Maple Environmental Inc. ('Maple') was retained by Sunnybrook Health Sciences Center to perform a survey for Designated Substances as well as polychlorinated biphenyls (PCBs) and mould within the third floor of the Center and East Pod of the K Wing of Sunnybrook Hospital located at 2075 Bayview Avenue, Toronto, Ontario (the 'Site'). It is Maple's understanding that the building requires a survey to identify possible hazardous building materials that may be disturbed during the renovations of the areas surveyed.

The survey was limited to the third floor of the Center and East Pod of K Wing.

Section 30 of the Ontario Occupational Health and Safety Act requires that the following Designated Substances be included in a Designated Substance Survey:

Asbestos

Lead

Mercury

Silica

Isocyanates

Vinyl Chloride Monomer

Benzene

Acrylonitrile

Coke Oven Emissions

Arsenic

Ethylene Oxide

Additional detailed information with respect to asbestos was collected at the time of the survey to ensure compliance with Ontario Regulation 278/05.

The assessment was performed by Daniel Prosia of Maple on July 31, 2020.

2.0 APPLICABLE ONTARIO REGULATIONS

Applicable Ontario Regulations for each of the materials included in the investigation are briefly described below.

2.1 Designated Substances and Other Hazardous Materials

Section 30 of the Occupational Health and Safety Act requires building owners or their agents (architects, general contractors, etc.) to prepare or have prepared a Designated Substance report for specified potentially hazardous materials possibly present in a facility. The owner must ensure that a prospective constructor has received a Designated Substance report before entering into a binding contract with the contractor. The owner is liable to the contractor for damages and costs arising from unreported materials (of which the owner should reasonably have been aware) and could also be subject to orders and fines from the Ministry of Labour.

The disturbance of asbestos materials on construction projects is controlled by Ministry of Labour Regulation R.R.O. 2005/278. The disposal of asbestos waste is controlled by Ministry of Environment Regulation, R.R.O. 1990/347.

There are no specific Ministry of Labour regulations for control of the other Designated Substances on construction projects. However, the Ministry of Labour actively enforces the general duty clause of the Health and Safety Act which protects workers and provides guidance on exposure monitoring, permissible exposure levels, medical monitoring, etc. for all Designated Substances.

Although Regulations exist for many of the Designated Substances, they apply to industry settings using Designated Substances in manufacturing processes, and do not apply to general property management, renovation or maintenance of buildings.

Polychlorinated Biphenyls ("PCBs") and mould were also included in the investigation, which are not specifically named as Designated Substances. No specific regulations are attached to these materials but are generally governed by the due diligence section of the Health and Safety Act for employers to protect their workers.

2.2 Ontario Regulation 278/05 (Asbestos)

Ontario Regulation 278/05 applies to buildings with regards to maintenance, renovations or demolition work where asbestos-containing materials (ACM) is present and may be disturbed. The Regulation requires that a detailed asbestos inventory be performed in all buildings where friable and non-friable asbestos materials are present. The inventory must be available at the work place and must identify the type of asbestos, and location of asbestos on a room-by-room basis. The following report does not necessarily meet the requirements for an asbestos survey under Ontario Regulation 278/05.

2.3 Ontario Regulation 347

Ontario Regulation 347 applies to the transport of waste from the location of generation to a landfill site authorized to receive specific wastes. The regulation also prescribes procedures on how the specific wastes are to be handled at the landfill site.

The major requirements of the building owner and the person(s) removing the waste are to ensure that:

- The waste is appropriately packaged and labelled;
- The transport vehicle is appropriately placard; and
- The waste is to be transported as directly as possible to the landfill site once it leaves the site.

Some wastes require the owner to register a Generator (of waste) number and many wastes require classification that can restrict or even prohibit their disposal in landfill.

It is important to note that the building owner can be held responsible for the waste until the waste disposal site accepts it.

2.4 Ontario Regulation 362

Ontario Regulation 362, made under the Ontario Environmental Protection Act applies to the waste management and transport of PCB waste from the location of generation to a landfill site authorized to receive specific wastes. The regulation also prescribes procedures on how the specific wastes are to be handled at the landfill site.

3.0 SURVEY SCOPE AND METHODOLOGY

The survey was limited to the third floor of the Center and East Pod of K Wing. The methodology included the assessment for hazardous materials and how the assessment was performed is outlined below.

In order to determine the location of materials included in the assessment, the project technologist entered the room where practical (i.e. where access was possible without the demolition of walls, roof or ceilings or destruction of flooring). Representative views were made above accessible suspended ceiling systems. Cavities within solid ceiling and wall systems were accessed via existing access panels only. The inventory did not include demolition of building systems or finishes to check on possible hidden conditions.

3.1 Asbestos-Containing Building Materials (ACM)

The scope of the survey included all friable asbestos products and all major non-friable asbestos materials. The term friable is applied to a material that can be readily reduced to dust or powder by hand or moderate pressure. Asbestos materials that are friable have a much greater potential to release airborne asbestos fibres when disturbed.

Typical friable asbestos materials include: sprayed fireproofing or thermal insulation, textured (stippled) plaster, and thermal mechanical insulation. Typical non-friable materials include: asbestos cement (transite) products, vinyl floor tiles, asbestos textiles and gaskets. Additional materials such as ceiling tiles, drywall joint compounds and vinyl sheet flooring are classified as non-friable, but because of their ability to release dust when disturbed are considered as "potentially friable" for the purpose of this report.

Bulk samples of materials suspected to contain asbestos were collected for analysis during the survey. Specifically, a small volume of material was removed either from a damaged section of suspect material or taken from intact material. In these latter cases, the material from which the sample was collected was sealed with tape to temporarily prevent fibre release. Samples were placed in plastic bags and sealed until receipt by an independent laboratory. To ensure quality results, the independent laboratory chosen successfully participates in an "Asbestos Proficiency Analytical Testing Program". As such, these independent laboratories are responsible for their findings.

Bulk samples were collected in accordance with regulatory sampling requirements and with sufficient frequency to obtain a general pattern of asbestos use within the building. Due to building renovations or modifications that may have occurred in the past, the consistency of the application of asbestos materials may not be uniform throughout the entire Site. It is important to note that without sampling each individual wall, pipe section, ceiling tile etc. it is not possible to identify the asbestos content of every material present in the selected areas. For this reason, visually similar materials are considered to be homogenous with those already sampled elsewhere in the building without additional analysis.

O. Reg. 278/05 prescribes that a minimum number of samples be collected of materials suspected to contain asbestos. These minimum sampling requirements are summarized in Table 1, below.

Table 1 - Suspect ACM Bulk Sampling Requirements

Type of Material	Quantity of Material Present	Minimum # of Bulk Samples Required
Surfacing Materials (i.e. sprayed fireproofing, drywall joint compound, texture coat, and plaster)	Up to 90 sq. m. (1000 sq. ft.)	3
	From 90 sq. m. (1000 sq. ft.) to 450 sq. m. (5000 sq. ft.)	5
	Greater than 450 sq. m. (5000 sq. ft.)	7
All other potential ACM	Any	3

Excluding surfacing materials, the laboratory was instructed to cease analysis within Sample Groups of homogenous materials when one of the samples in the group is found to contain asbestos. For example, if three samples of a type of vinyl floor tile are collected (as required by O. Reg. 278/05) and submitted for analysis and the first sample is positively identified as containing asbestos, the balance of the sample group is not analysed.

EMC Scientific Inc. ('EMC'), an independent laboratory, was selected to analyse the collected bulk suspect asbestos samples. EMC successfully participates in an "Asbestos Proficiency Analytical Testing Program" and as such, is responsible for its findings. EMC followed the Code of Practice for the identification of asbestos in bulk material, as detailed in O. Reg. 278/05. Bulk samples were analysed using the Polarized Light Microscopy ("PLM") Technique with Dispersion Staining. The identification of asbestos fibre in bulk material is based on a collective set of parameters dependent on the unique shape and crystallographic properties of each fibre as viewed through the microscope. This method is useful for the qualitative identification of asbestos and the semi-quantitative determination of asbestos content in bulk materials expressed as a percent of projected area. The method identifies types of asbestos and also measures percent of asbestos as perceived by the analyst in comparison to standard area projections or trained experience.

The recommendations made as part of this report with respect to asbestos have taken into consideration: the condition and accessibility of the material, vibration, air movement, and general activities likely to occur within the vicinity of the ACM.

In each area or room inventoried, the technician recorded the quantity, condition (GOOD, FAIR, or POOR) of each suspect asbestos-containing material.

The definitions for condition and accessibility of the asbestos-containing items are as follows:

GOOD	Material is intact with no visible signs of damage.
FAIR	Material is visibly damaged but can be repaired.
POOR	Material is damaged beyond repair and likely needs to be removed.

Where ACM is found to be in GOOD condition and not likely to deteriorate or fall, the general recommendation would be to re-evaluate the condition of the material on an annual basis (required by O. Reg. 278/05). This recommendation can be subject to change if the material is located in a manner that persons untrained in asbestos awareness could physically damage it.

Where ACM is found to be damaged (i.e. FAIR or POOR condition), a recommendation to have the material cleaned-up, repaired, removed, enclosed, or encapsulated is offered. The recommendation will also indicate which asbestos procedure should be used to perform the remedial work (i.e. Type 1, Type 2, Type 3, or Glove Bag Removal Methods).

3.2 Lead

The investigation included the collection and analysis of all major paint colour applications for the presence of lead in the paint. Other materials that possibly contain lead were identified by known historic use, where relevant. The lead in paint samples were analysed by EMSL Canada ('EMSL'), using atomic absorption spectrophotometry. EMSL is AIHA (American Industrial Hygiene Association) and NIOSH (National Institute of Occupational Safety and Health) accredited for this type of analysis. The Laboratory Analysis Report for lead in paint samples is included with this Report as Appendix II.

3.3 Mercury

The assessment included a visual identification of fluorescent light tubes, switches, electrical controls, heating system thermostats, thermometers, and other components historically known to contain mercury.

3.4 Other Designated Substances

Other materials listed in Section 1.0 of this Report were identified on a visual basis where present, as part of the current assessment. It should be noted that no manufacturing or heavy industrial activities are known by Maple to occur at the Site. Therefore, Designated Substances associated with these activities (i.e. those other than Asbestos, Lead, Mercury, and Silica) would not be expected to be present in the selected areas.

3.5 Mould

The assessment for mould was conducted in accordance with standard industry practice as set out in the Canadian Construction Association (CCA) "Mould Guidelines for the Canadian Construction Industry" for a visual assessment. Although there are no regulatory requirements in Ontario for such an assessment, the CCA Guidelines, and similar guidelines from other agencies have been accepted as the industry standard by most experts, consultants, the Ontario Ministry of Labour, and the Canadian Construction Association.

All guidelines and protocols for mould investigations indicate that investigations should be performed largely on a visual basis with limited collection of bulk and/or air samples. The Ontario Ministry of Labour has consistently enforced the removal of all mould from buildings regardless of mould genus or species, and therefore bulk samples or air samples for confirmation of mould are not typically collected for investigative purposes where mould is visible.

3.6 Polychlorinated Biphenyls

Manufacturers labels/codes collected from fluorescent lamp ballasts suspected of containing Polychlorinated Biphenyls ("PCBs") are compared with Environment Canada's document titled "Identification of Lamp Ballasts Containing PCBs", which identifies PCB-containing ballasts.

3.7 Limitations and Omissions from Scope

Due to the nature of building construction some limitations exist as to the possible thoroughness of any building materials inventory. The field observations, measurements, and analysis are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. Maple warrants that the findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the performance of the inventory.

It is possible that conditions may exist which could not be reasonably identified within the scope of the inventory or which were not apparent during the Site investigation. Maple believes that the information collected during the investigation concerning the property is reliable. No other warranties are implied or expressed.

During a standard ACM inventory performed for the purposes of regulatory compliance, it is industry practice to exclude certain suspect asbestos-containing materials from sampling. These materials are often excluded from sampling due to the risk of compromising the health and safety of the technician, other building occupants, or the integrity of the systems with which these materials are associated. Examples of such materials include; elevator brakes, roofing felts and mastics, high voltage wiring, mechanical packing and gaskets, underground services or piping, fire-doors, window caulking and levelling compound. Where observed, these materials were presumed to be ACM.

3.8 Drawings

Drawings included in Appendix III will indicate the locations of any major applications of an asbestos-containing material with the exception of mechanical insulations, drywall, plaster finishes and transite (which cannot be accurately depicted on drawings). The information depicted on the drawings is not to scale and is only meant to provide a general representation of the locations of asbestos-containing materials.

3.9 Previous Reports

Where possible, Maple utilized the observations and representative bulk sampling results from previous Survey Reports that were made available at the time of the survey. Maple utilized sampling data from the following sources:

- December, 2013 – Maple Environmental Inc. Project 13907 – DSUB Report;

4.0 INVENTORY FINDINGS

The findings of the survey are presented separately below for each of the eleven Designated Substances as well as microbial growth (mould), and polychlorinated biphenyls. Asbestos is further detailed by typical applications of asbestos.

4.1 Asbestos

The following is a brief discussion of the extent to which ACM was identified in the surveyed area. The discussion is organized under the headings of materials that are generally suspected of containing asbestos. The sample numbers refer to the laboratory analysis report presented as Appendix I and summarised in Table 2 below.

Thirteen (13) bulk samples were collected for the determination of asbestos content and submitted to the lab to be analysed. Due to the presence of more than one phase of material in some of the original samples the laboratory may have performed multiple analyses for some samples. In addition, some of the samples may not have been analysed due to the positive confirmation of asbestos in a previous sample of the same material during analysis. As a result, a total of eighteen (18) samples were analyzed.

Table 2 - Summary of Analysis of Asbestos Bulk Samples

Sample No.	Room Name	Sample Description	Result
S01A	K3C16	Drywall Joint Compound	None Detected
S01B	K3C08	Drywall Joint Compound	None Detected
S01C	K3C02	Drywall Joint Compound	None Detected
S01D	K3C21	Drywall Joint Compound	None Detected
S01E	K3E31	Drywall Joint Compound	None Detected
S01F	K3E18A	White Drywall Joint Compound	None Detected
		Grey Joint Compound	None Detected
S01G	K3E COR 02	Drywall Joint Compound	None Detected
S02A	K3C35	Vinyl Sheet Flooring - 01	Chrysotile 60%
S02B	K3C23	Vinyl Sheet Flooring - 01	Not Analyzed
S02C	K3C COR 01	Vinyl Sheet Flooring - 01	Not Analyzed
S03A	K3C COR 01	Vinyl Sheet Flooring - 02	None Detected
		Vinyl Backing	None Detected
		Yellow Mastic	None Detected
S03B	K3C COR 01	Vinyl Sheet Flooring - 02	None Detected
		Vinyl Backing	None Detected
		Yellow Mastic	None Detected
S03C	K3C COR 01	Vinyl Sheet Flooring - 02	None Detected
		Vinyl Backing	None Detected
		Yellow Mastic	None Detected

Asbestos-containing materials (ACM) are present in the form of vinyl sheet flooring. Details for all confirmed and suspect asbestos-containing materials are presented below under the headings of the most typical asbestos applications in buildings.

It should be noted that due to the presence of solid walls and ceilings (i.e. masonry block walls and above solid ceilings) throughout the survey area, access for viewing within the wall and ceiling cavities was not always possible. Suspect asbestos-containing materials may be present within wall and ceiling cavities that were not identified but are suspected to be present in this report. Caution should be taken when demolishing solid walls and ceilings within the areas being surveyed.

4.1.1 Sprayed Fireproofing

No sprayed fireproofing was identified within the surveyed area at the time of the assessment.

4.1.2 Thermal Mechanical Insulation (Friable)

Non-asbestos mechanical insulations are present throughout the surveyed area.

Piping Systems:

No asbestos-containing pipe systems were identified within the surveyed area at the time of the assessment.

Pipe systems observed within the surveyed area were either not insulated or were insulated with fibreglass, which is not suspected to contain asbestos.

Duct Systems

Duct systems observed throughout the surveyed area were observed to be either un-insulated or were insulated with foil-face fibreglass insulation which is not suspected to contain asbestos.

Mechanical Equipment

Wall mounted radiant heaters and air handling units were observed to be externally un-insulated.

4.1.3 Texture Finish (Friable)

No textured finishes were identified within the surveyed area at the time of the assessment.

4.1.4 Acoustic Ceiling Tiles (Potentially Friable)

A non-asbestos acoustic ceiling tile system was identified within the surveyed area at the time of the assessment.

- AT-01 (2x4 Pinholes):

No bulk samples of AT-01 were collected as a date stamp manufacture code (11/06/99) was present on the backside of the tile indicating that the tiles were recently manufactured and therefore not suspected to contain asbestos.

4.1.5 Vinyl Sheet Flooring (Potentially Friable)

Three (3) visually distinct types of vinyl sheet flooring finishes were observed in the surveyed area. A brief description of each type of flooring is outlined below.

- VSF-01 (Light Brown with Dark Brown Squares)

VSF-01 was observed through the surveyed area. Three (3) representative samples of vinyl sheet flooring were collected (Sample Set S02) and analyzed for asbestos. Analysis of Sample Set S02 found that the samples contain **60% Chrysotile asbestos**.

- VSF-02 (Light Brown with Yellow Squares)

VSF-02 was observed under utility sinks within the Corridor of the Central Pod. Three (3) representative samples of vinyl sheet flooring were collected (Sample Set S03) and analyzed for asbestos. Analysis of Sample Set S03 found that the samples do not contain asbestos.

- VSF-03 (Dark Blue with Grey Flecks)

No bulk samples of VSF-03 were collected as building personnel notified Maple that the materials were recently manufactured and are therefore not suspected to contain asbestos.

4.1.6 Vinyl Floor Tile (Non-Friable)

Three (3) visually distinct types of vinyl floor tiles systems were observed in the surveyed area. A brief description of each type of vinyl floor tile is outlined below.

- **VFT-01 (12x12 Light Green)**

No bulk samples were collected of VFT-01 as building personnel notified Maple that the material was not to be disturbed during the proposed renovation and as such should not be sampled.

- **VFT-02 (12x12 Dark Green)**

No bulk samples were collected of VFT-02 as building personnel notified Maple that the material was not to be disturbed during the proposed renovation and as such should not be sampled.

- **VFT-03 (12x12 Beige)**

No bulk samples were collected of VFT-03 as building personnel notified Maple that the material was not to be disturbed during the proposed renovation and as such should not be sampled.

Asbestos-containing vinyl floor tiles are present elsewhere within the building. Sampling of vinyl floor tiles is recommended for the determination of asbestos prior to any disturbance.

4.1.7 Asbestos Cement Products "Transite" (Non-Friable)

No transite cement products were identified within the surveyed area at the time of the assessment.

4.1.8 Drywall Joint Compound (DJC) (Potentially Friable)

Non-asbestos drywall joint compound was identified within the surveyed area at the time of the assessment.

Seven (7) representative samples (Sample Set S01) of drywall joint compound were collected and analyzed for determination of asbestos content. Analysis of Sample Set S01 found that the samples do not contain asbestos.

While sample results indicated all drywall joint compound sampled within the surveyed area do not contain asbestos, it should be noted that the concentration of asbestos within drywall joint compound is historically known to be potentially inconsistently distributed. Further, it is possible that various phases of construction and renovations have occurred at the Site. Therefore, the number of samples collected may not be representative of all drywall joint compound finishes on Site. Prior to the disturbance of any drywall finishes, it is recommended that additional area specific bulk samples be collected.

4.1.9 Plaster (Potentially Friable)

No plaster finishes were identified within the surveyed area at the time of the assessment.

4.1.10 Vermiculite (Friable)

No vermiculite insulation was observed to be present within the surveyed area at the time of the assessment. It should be noted that loose fill vermiculite insulation can often be present within voids of masonry and possibly some pre-manufactured surveyed area components that would not be identified during the course of this assessment.

4.2 Lead

Five (5) bulk paint samples were collected for determination of lead content and submitted to EMSL for analysis during the assessment. The sample number refers to the Certificate of Analysis Report presented as Appendix II and summarised in Table 3 below.

Table 3 - Summary of Analysis of Lead-in-Paint Samples

Sample No.	Locations	Sample Description	Result (%)
Pb-01	Centre Pod Corridor	Green Paint	<0.0082
Pb-02	Centre Pod Corridor	Brown/Tan Paint	0.023
Pb-03	Centre Pod K3C14	Red Paint	1.2
Pb-04	East Pod Corridor 2	Beige Paint	<0.0081
Pb-05	East Pod Corridor 2	Peach Paint	<0.008

No regulations currently exist in Ontario defining the lower limit of lead-containing material. The Ontario Ministry of Labour (MOL) has issued a guideline for lead abatement, entitled Guideline – Lead on Construction Projects (2004) which is considered enforceable. The Guideline does not specify what constitutes a material as “lead-containing”. Instead, it outlines procedures based on the concentration of airborne lead encountered during removal, as well as provides procedures and/or specific operations for lead-containing material removal. However, the Environmental Abatement Council of Ontario (EACO) Lead Guideline for Construction, Renovation, Maintenance or Repair document classifies paint as either Low-Level, Lead-Containing, or Lead-Based as follows:

TABLE 4	
EACO Classification of Lead Paint	
Concentration of Lead (%)	Definition
0.1 or less	Low Level Lead (Virtually Safe)
Greater than 0.1 but less than 0.5	Lead-Containing
0.5 or greater	Lead-Based

Based on these criteria and the results of the sample analysis, general oil based green, brown/tan, beige and peach paint are considered to be Low-Level Lead (virtually safe). Red paints are considered to be Lead-based.

4.3 Mercury

Mercury vapour is present in all fluorescent light tubes.

4.4 Silica

Free crystalline silica, present as common construction sand, is present in all concrete and masonry products where present in the Select areas surveyed.

4.5 Isocyanates

Free isocyanate compounds would not be expected to be found in a non-manufacturing facility.

4.6 Vinyl Chloride Monomer

Vinyl chloride monomer would not be expected to be found in a non-manufacturing facility.

4.7 Benzene

Benzene would not be expected to be found in a non-manufacturing facility.

4.8 Acrylonitrile

Acrylonitrile would not be expected to be found in a non-manufacturing facility.

4.9 Coke Oven Emissions

Coke oven emissions would not be expected to be found in a non-manufacturing facility.

4.10 Arsenic

Arsenic would not be expected to be found in a non-manufacturing facility.

4.11 Ethylene Oxide

Ethylene oxide would not be expected to be found in a non-manufacturing facility.

4.12 Mould

Minor mould growth (~5 square feet) was observed on the underside of sink millwork within K3E14, K3E16 and K3E23.

It is possible that mould growth is present in concealed areas such as wall or ceiling cavities, pipe chases, etc. or in areas not currently assessed by Maple. The client should notify Maple should any water damage or suspect mould growth be discovered.

4.13 Polychlorinated Biphenyls (PCBs)

The fluorescent lamp fixtures observed contained T8 fluorescent light tubes. T8 fixtures have electronic ballast and are considered as not containing PCB.

5.0 RECOMMENDATIONS

5.1 Asbestos

Asbestos materials within the site include vinyl sheet flooring finishes as well as suspect vinyl floor tiles.

General recommendations for each of the confirmed asbestos-containing and suspect asbestos-containing materials are as follows.

Removal or disturbance of ACM vinyl floor tiles requires the use of Type 1 Asbestos procedures (provided no power tools are used and the material is wetted). If power tools are required Type 3 Asbestos procedures must be applied.

Removal or disturbance of ACM vinyl sheet flooring requires the use of Type 2 or Type 3 Asbestos procedures as appropriate.

It is important to note that due to the presence of solid wall and ceiling systems, the assessment was not able to confirm or deny the presence of ACM within wall and ceiling cavities. The presence of concealed ACM should be assumed as well as within rooms that were not accessible during the assessment. It is possible that ACM is present that was not identified in this report.

5.2 Lead

Green, brown/tan, beige and peach paint finishes sampled were found to contain Low Levels of Lead (Virtually Safe).

Low Level Lead paints (0.1% or less) are considered virtually safe provided that;

- airborne lead concentrations are kept below 0.05 mg/m³
- general dust suppression and worker hygiene procedures are utilized
- torching or other activities that create fumes are not completed

Red paints are lead-based. Follow appropriate procedures if disturbed or removed.

Disturbance of paints that are considered Lead-Based should be completed using Lead abatement procedures as appropriate in accordance with EACO and Ministry of Labour Guidelines and are generally as follows;

- Class 1 Lead abatement procedures (removing paint by means of chemical stripper or heat gun, removal of lead sheeting),
- Class 2A Lead abatement procedures (removal of lead paint using power tools equipped with HEPA vacuum attachment, removal by scraping or sanding using non-powered hand tools, or manual demolition of plaster finishes)
- Class 3A Lead abatement procedures (removal using power tools, welding or torching,
- Class 3B Lead abatement procedures (for abrasive blasting).

Further, prior to disposal it is recommended that materials containing lead should be sampled and analyzed for Metals/Inorganics using the Toxicity Characteristic Leaching Procedure (TCLP) as described under O. Reg. 347. The testing is required to determine waste classification in accordance with Ontario Regulation 347 of R.R.O. 1990 made under the Environmental Protection Act amending Reg. 558/00.

5.3 Mercury

Mercury vapour is present in all fluorescent light tubes. All fluorescent light tubes should be handled and disposed of appropriately.

5.4 Silica

Proper dust suppression techniques and other safety precautions to control possible generation of silica dust from the demolition of concrete and masonry products present in the building should follow those outlined in the Ministry of Labour Guideline- Silica on Construction Projects, 2004.

5.5 Mould

Using Level 1 mould remediation procedures consider cleaning or removal of the affected millwork throughout the surveyed area.

6.0 LIMITATIONS

Due to the nature of building construction some limitations exist as to the possible thoroughness of the subject investigation. The field observations are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. Maple warrants that the findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the performance of the assessment.

It is possible that conditions may exist which could not be reasonably identified within the scope of the investigation or which were not apparent during the site investigation. Maple believes that the information collected during the investigation period concerning the property is reliable. No other warranties are implied or expressed.

Information provided by Maple is intended for Client use ONLY. Any use by a third party, of reports or documents authored by Maple, 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. Maple accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted.

The liability of Maple or its staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. Maple will not be responsible for any consequential or indirect damages. Maple will only be liable for damages resulting from negligence of Maple; all claims by the Client shall be deemed relinquished if not made within two years after last date of services provided.

Please contact Maple Environmental Inc. at (905) 257-4408 for inquiries regarding this project.

MAPLE ENVIRONMENTAL INC.

Environment, Health and Safety Consultants

Prepared By:



Daniel Prosia
Project Technologist

Reviewed By:



Kyle Prosser
Senior Project Manager

APPENDIX I

LABORATORY ANALYSIS REPORT - ASBESTOS

Laboratory Analysis Report

To:

Daniel Prosia
Maple Environmental Inc.
482 South Service Road East, Suite 116
Oakville, Ontario
L6J 2X6

EMC LAB REPORT NUMBER: A60677

Job/Project Name: SHSC K Wing

Analysis Method: Polarized Light Microscopy – EPA 600

Date Received: Jul 31/20

Date Analyzed: Aug 4/20

Analyst: Dina Yousif, *Analyst*

Reviewed By: Malgorzata Sybydlo, *Laboratory Manager*

Job No: 18903

Number of Samples: 13

Date Reported: Aug 4/20

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
S01A	A60677-1	Drywall joint compound	White, joint compound	ND			100
S01B	A60677-2	Drywall joint compound	White, joint compound	ND			100
S01C	A60677-3	Drywall joint compound	White and off white, joint compound	ND			100
S01D	A60677-4	Drywall joint compound	White, joint compound	ND			100
S01E	A60677-5	Drywall joint compound	White, joint compound	ND			100
S01F	A60677-6	Drywall joint compound	2 Phases:				
			a) Grey, joint compound	ND			100
			b) White, joint compound	ND			100
S01G	A60677-7	Drywall joint compound	White, joint compound	ND			100
S02A	A60677-8	Vinyl sheet flooring-01	Off white, vinyl backing	Chrysotile	60		40
S02B	A60677-9	Vinyl sheet flooring-01	NA	NA			
S02C	A60677-10	Vinyl sheet flooring-01	NA	NA			
S03A	A60677-11	Vinyl sheet flooring-02	3 Phases:				
			a) Off white, vinyl flooring	ND			100
			b) Grey, vinyl backing	ND		55	45
			c) Yellow, mastic	ND		1	99

EMC LAB REPORT NUMBER: A60677

Client's Job/Project Name/No.: 18903

Analyst: Dina Yousif, *Analyst*

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
S03B	A60677-12	Vinyl sheet flooring-02	3 Phases: a) Off white, vinyl flooring b) Grey, vinyl backing c) Yellow, mastic	ND		55	100
				ND		1	45
				ND			99
S03C	A60677-13	Vinyl sheet flooring-02	3 Phases: a) Off white, vinyl flooring b) Grey, vinyl backing c) Yellow, mastic	ND		55	100
				ND		1	45
				ND			99

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%.

APPENDIX II

LABORATORY ANALYSIS REPORT – LEAD

**EMSL Canada Inc.**

2756 Slough Street, Mississauga, ON L4T 1G3

Phone/Fax: (289) 997-4602 / (289) 997-4607

<http://www.EMSL.com>torontolab@emsl.com

EMSL Canada Or 552009089

CustomerID: 55MAPL78

CustomerPO: 18903

ProjectID:

Attn: **Daniel Prosia**
Maple Environmental, Inc.
482 South Service Road East
Suite 116
Oakville, ON L6J 2X6

Phone: (905) 257-4408
Fax: (905) 257-8865
Received: 7/31/2020 04:26 PM
Collected: 7/31/2020

Project: **18903 SHSC K Wing 3****Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)***

<i>Client SampleDescription</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Weight</i>	<i>RDL</i>	<i>Lead Concentration</i>
Pb-01 552009089-0001	7/31/2020 Site: Green Paint	8/4/2020	0.2442 g	0.0082 % wt	<0.0082 % wt
Pb-02 552009089-0002	7/31/2020 Site: Brown/Tan Paint	8/4/2020	0.1966 g	0.010 % wt	0.023 % wt
Pb-03 552009089-0003	7/31/2020 Site: Red Paint	8/4/2020	0.2463 g	0.041 % wt	1.2 % wt
Pb-04 552009089-0004	7/31/2020 Site: Beige Paint	8/4/2020	0.2472 g	0.0081 % wt	<0.0081 % wt
Pb-05 552009089-0005	7/31/2020 Site: Peach Paint	8/4/2020	0.2489 g	0.0080 % wt	<0.0080 % wt

Rowena Fanto, Lead Supervisor
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.

Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON AIHA-LAP, LLC - ELLAP #196142

Initial report from 08/04/2020 12:16:19

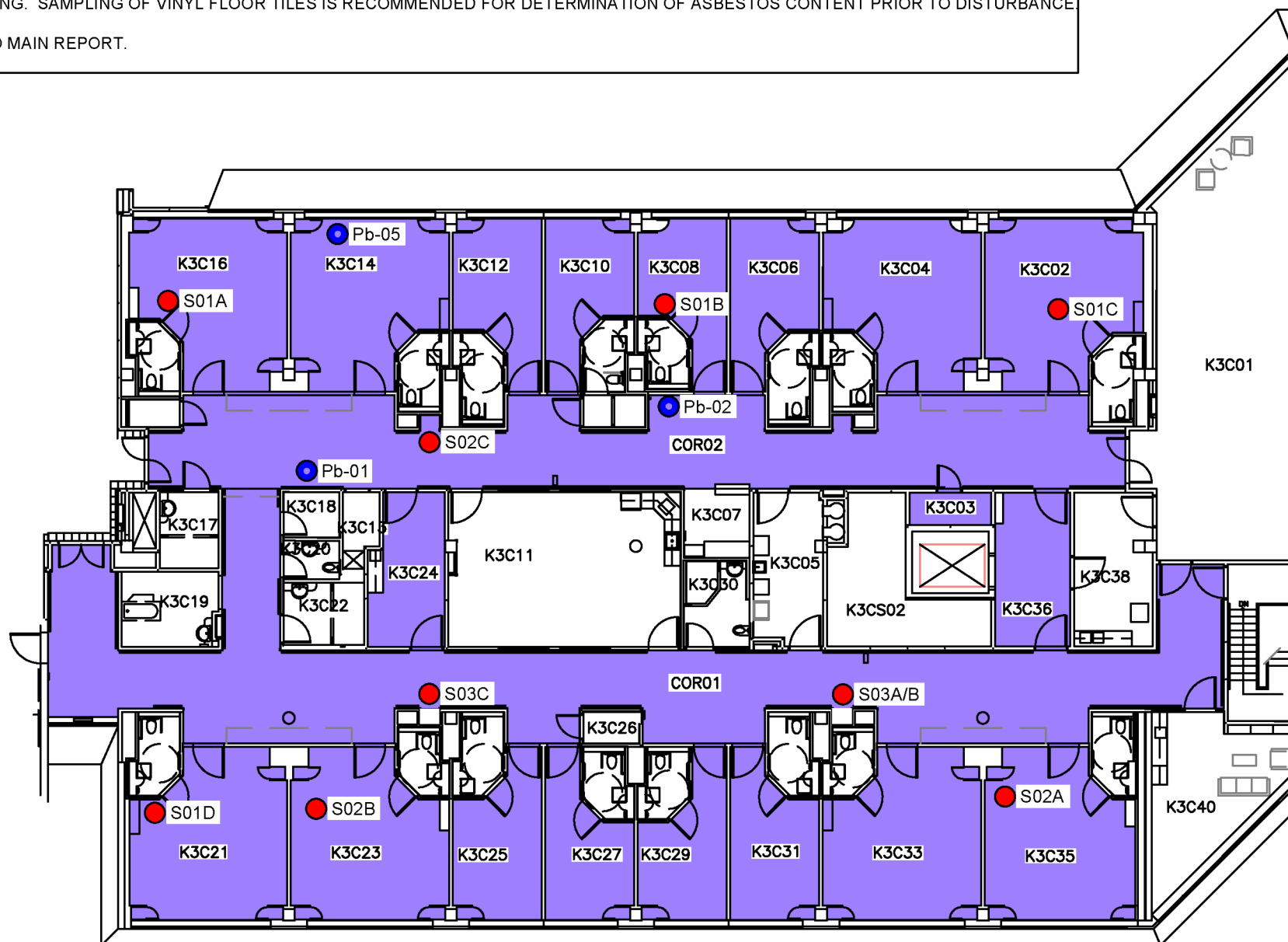
APPENDIX III

DRAWINGS

NOTE:

1) ASBESTOS CONTAINING VINYL FLOOR TILES ARE PRESENT WITHIN THE BUILDING. ALL VINYL FLOOR TILES ARE CONSIDERED ASBESTOS CONTAINING. SAMPLING OF VINYL FLOOR TILES IS RECOMMENDED FOR DETERMINATION OF ASBESTOS CONTENT PRIOR TO DISTURBANCE.

REFER TO MAIN REPORT.



PROJECT NO.:
18903

Drawn By:
D. Prosia

Checked By:
K. Prosser

SAMPLE LOCATIONS

SYMBOL	DESCRIPTION
●	ASBESTOS BULK SAMPLE: S-##
●	LEAD BULK SAMPLE: Pb-##

CONFIRMED & SUSPECTED ACM

SYMBOL	DESCRIPTION
■	VINYL SHEET FLOORING
NOTE	VINYL FLOOR TILE

Designated Substance Survey

**Sunnybrook Health Sciences Centre
 K-Wing
 2075 Bayview Avenue
 Toronto, Ontario**

**Centre POD Layout
 3rd Floor**

SCALE

NTS

SHEET

DS-01

DATE:

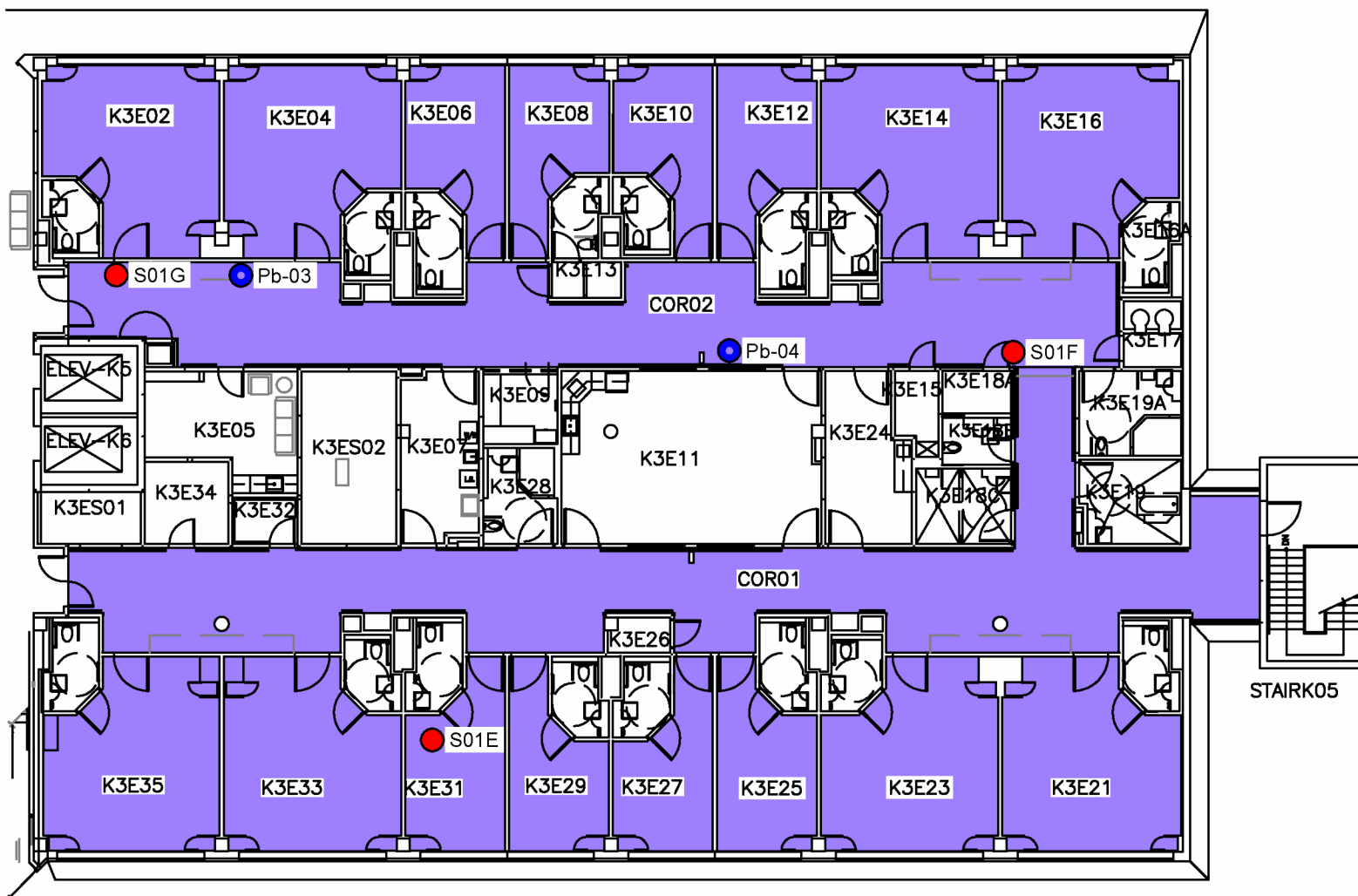
August 4, 2020



NOTE:

1) ASBESTOS CONTAINING VINYL FLOOR TILES ARE PRESENT WITHIN THE BUILDING. ALL VINYL FLOOR TILES ARE CONSIDERED ASBESTOS CONTAINING. SAMPLING OF VINYL FLOOR TILES IS RECOMMENDED FOR DETERMINATION OF ASBESTOS CONTENT PRIOR TO DISTURBANCE.

REFER TO MAIN REPORT.



PROJECT NO.:
18903

Drawn By:
D. Prosia

Checked By:
K. Prosser

SAMPLE LOCATIONS

SYMBOL	DESCRIPTION
●	ASBESTOS BULK SAMPLE: S-##
●	LEAD BULK SAMPLE: Pb-##

CONFIRMED & SUSPECTED ACM

SYMBOL	DESCRIPTION
■	VINYL SHEET FLOORING
NOTE	VINYL FLOOR TILE

Designated Substance Survey

**Sunnybrook Health Sciences Centre
 K-Wing
 2075 Bayview Avenue
 Toronto, Ontario**

**East POD Layout
 3rd Floor**

SCALE

NTS

SHEET

DS-02

DATE:

August 4, 2020



**LIMITED DESIGNATED SUBSTANCE SURVEY
REPORT
K2C CEILING SPACE**

**Sunnybrook Health Sciences Center
K-Wing Hematology Project
2075 Bayview Avenue
Toronto, Ontario**

Presented to:
Sunnybrook Health Sciences Center
2075 Bayview Avenue
Toronto, Ontario
M4N 3M5

Attention: Valentiu Cadar

November, 2023

Maple Project No. 21292

EXECUTIVE SUMMARY

Maple Environmental Inc. ('Maple') was retained by Sunnybrook Health Sciences Center (SHSC) to perform a survey for Designated Substances as well as polychlorinated biphenyls (PCBs) and mould within the 2nd Floor Center Pod of the K Wing of Sunnybrook Hospital located at 2075 Bayview Avenue, Toronto, Ontario (the 'Site'). It is our understanding that the area requires a survey to identify possible hazardous building materials that may be disturbed during renovations of K3C that will impact ductwork in the ceiling space of K2C. It should be noted that a Designated Substance Survey prepared by Maple of K3C dated August 4, 2020 is presented under separate cover. The current survey was limited to specific areas of ductwork present in the ceiling space of K2C as identified by others. The findings of the current survey are summarized below. Please refer to the main body of this report and the August 2020 report for details on all materials.

Asbestos

The following ACM was identified within the K-Wing Second Floor Centre Pod during the current survey:

- Duct Mastic

It should be noted that asbestos-containing vinyl sheet flooring is present in the K3C Work Area that could be impacted by disturbance of ductwork in K2C where ductwork penetrates the floor system.

It should be noted that due to the presence of solid walls and ceilings (i.e. masonry walls and above solid ceilings) throughout the survey area, access for viewing within the wall and ceiling cavities was not always possible. Suspect asbestos-containing materials may be present within wall and ceiling cavities that were not identified but are suspected to be present in this report. Caution should be taken when demolishing solid walls and ceilings within the areas being surveyed.

Lead

No major paint applications were identified in association with the ceiling and ceiling space of K2C and therefore no Lead samples were collected as part of the current assessment.

It should be noted that lead may also be present in wiring connectors, electric cable sheathing, solder joints on copper piping, ceramic glazes, lead sheeting, masonry mortar, and as sub-surface layers to the most recent paint layers currently applied, where present at the Site.

Mercury

Mercury vapour is present in all fluorescent light tubes.

Silica

Free crystalline silica, present as common construction sand, is present in all concrete and masonry products where present within the surveyed areas.

Mould

No visible mould growth was observed within the K2C ceiling space during the subsequent survey.

It is possible that mould growth is present in concealed areas such as wall or ceiling cavities, pipe chases, etc. or in areas not currently assessed by Maple.

PCBs

The fluorescent lamp fixtures observed contained T8 fluorescent light tubes. T8 fixtures have electronic ballasts and are considered as not containing PCB.

Recommendations

Based on the Laboratory Analytical Results and observations made on Site, Maple provides the following recommendations:

- Remove all asbestos-containing materials that may be disturbed during the planned renovation using the appropriate asbestos abatement procedures as outlined in Section 5.0 of the Report.
- Remove all mercury containing components (including fluorescent light tubes) prior to renovations if the materials are being removed. These components should be removed intact and disposed of appropriately.
- Proper dust suppression techniques and other safety precautions to control possible generation of silica dust from the demolition of concrete and masonry products present in the surveyed area should follow those outlined in the Ministry of Labour Guideline- Silica on Construction Projects, 2004.

Appropriate procedures for asbestos, lead, mercury, silica, and mould must be observed if these materials are likely to be disturbed by scheduled renovations. Please refer to Section 5.0 of the report to review the required procedures.

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	APPLICABLE ONTARIO REGULATIONS.....	1
3.0	SURVEY SCOPE AND METHODOLOGY.....	3
3.1	ASBESTOS-CONTAINING BUILDING MATERIALS (ACM)	3
3.2	LEAD.....	5
3.3	MERCURY	5
3.4	OTHER DESIGNATED SUBSTANCES.....	5
3.5	MOULD	5
3.6	POLYCHLORINATED BIPHENYLS.....	6
3.7	LIMITATIONS AND OMISSIONS FROM SCOPE	6
3.8	DRAWINGS.....	6
3.9	PREVIOUS REPORTS	6
4.0	INVENTORY FINDINGS	7
4.1	ASBESTOS	7
4.2	LEAD.....	10
4.3	MERCURY	10
4.4	SILICA	10
4.5	ISOCYANATES	10
4.6	VINYL CHLORIDE MONOMER.....	10
4.7	BENZENE.....	11
4.8	ACRYLONITRILE	11
4.9	COKE OVEN EMISSIONS.....	11
4.10	ARSENIC	11
4.11	ETHYLENE OXIDE	11
4.12	MOULD	11
4.13	POLYCHLORINATED BIPHENYLS (PCBs).....	11
5.0	RECOMMENDATIONS	11
5.1	ASBESTOS	11
5.2	LEAD.....	ERROR! BOOKMARK NOT DEFINED.
5.3	MERCURY	12
5.4	SILICA	12
5.5	MOULD	ERROR! BOOKMARK NOT DEFINED.
6.0	LIMITATIONS	12

APPENDICES

APPENDIX I

LABORATORY ANALYSIS REPORT - ASBESTOS

APPENDIX II

DRAWINGS

1.0 INTRODUCTION

Maple Environmental Inc. ('Maple') was retained by Sunnybrook Health Sciences Center (SHSC) to perform a survey for Designated Substances as well as polychlorinated biphenyls (PCBs) and mould within the 2nd Floor Center Pod of the K Wing of Sunnybrook Hospital located at 2075 Bayview Avenue, Toronto, Ontario (the 'Site'). It is our understanding that the area requires a survey to identify possible hazardous building materials that may be disturbed during renovations of K3C that will impact ductwork in the ceiling space of K2C.

It should be noted that a Designated Substance Survey prepared by Maple of K3C dated August 4, 2020 is presented under separate cover (Maple Project 18903). The current survey was limited to specific areas of ductwork present in the ceiling space of K2C as identified by others.

Section 30 of the Ontario Occupational Health and Safety Act requires that the following Designated Substances be included in a Designated Substance Survey:

Asbestos

Lead

Mercury

Silica

Isocyanates

Vinyl Chloride Monomer

Benzene

Acrylonitrile

Coke Oven Emissions

Arsenic

Ethylene Oxide

Additional detailed information with respect to asbestos was collected at the time of the survey to ensure compliance with Ontario Regulation 278/05.

Richards Reboks from Maple conducted the assessment of the ductwork on the Second Floor of K-Wing Centre Pod in September 2023 which will be removed as part of the project.

2.0 APPLICABLE ONTARIO REGULATIONS

Applicable Ontario Regulations for each of the materials included in the investigation are briefly described below.

2.1 Designated Substances and Other Hazardous Materials

Section 30 of the Occupational Health and Safety Act requires building owners or their agents (architects, general contractors, etc.) to prepare or have prepared a Designated Substance report for specified potentially hazardous materials possibly present in a facility. The owner must ensure that a prospective constructor has received a Designated Substance report before entering into a binding contract with the contractor. The owner is liable to the contractor for damages and costs arising from unreported materials (of which the owner should reasonably have been aware) and could also be subject to orders and fines from the Ministry of Labour.

The disturbance of asbestos materials on construction projects is controlled by Ministry of Labour Regulation R.R.O. 2005/278. The disposal of asbestos waste is controlled by Ministry of Environment Regulation, R.R.O. 1990/347.

There are no specific Ministry of Labour regulations for control of the other Designated Substances on construction projects. However, the Ministry of Labour actively enforces the general duty clause of the Health and Safety Act which protects workers and provides guidance on exposure monitoring, permissible exposure levels, medical monitoring, etc. for all Designated Substances.

Although Regulations exist for many of the Designated Substances, they apply to industry settings using Designated Substances in manufacturing processes, and do not apply to general property management, renovation or maintenance of buildings.

Polychlorinated Biphenyls ("PCBs") and mould were also included in the investigation, which are not specifically named as Designated Substances. No specific regulations are attached to these materials but are generally governed by the due diligence section of the Health and Safety Act for employers to protect their workers.

2.2 Ontario Regulation 278/05 (Asbestos)

Ontario Regulation 278/05 applies to buildings with regards to maintenance, renovations or demolition work where asbestos-containing materials (ACM) is present and may be disturbed. The Regulation requires that a detailed asbestos inventory be performed in all buildings where friable and non-friable asbestos materials are present. The inventory must be available at the work place and must identify the type of asbestos, and location of asbestos on a room-by-room basis. The following report does not necessarily meet the requirements for an asbestos survey under Ontario Regulation 278/05.

2.3 Ontario Regulation 347

Ontario Regulation 347 applies to the transport of waste from the location of generation to a landfill site authorized to receive specific wastes. The regulation also prescribes procedures on how the specific wastes are to be handled at the landfill site.

The major requirements of the building owner and the person(s) removing the waste are to ensure that:

- The waste is appropriately packaged and labelled;
- The transport vehicle is appropriately placard; and
- The waste is to be transported as directly as possible to the landfill site once it leaves the site.

Some wastes require the owner to register a Generator (of waste) number and many wastes require classification that can restrict or even prohibit their disposal in landfill.

It is important to note that the building owner can be held responsible for the waste until the waste disposal site accepts it.

2.4 Ontario Regulation 362

Ontario Regulation 362, made under the Ontario Environmental Protection Act applies to the waste management and transport of PCB waste from the location of generation to a landfill site authorized to receive specific wastes. The regulation also prescribes procedures on how the specific wastes are to be handled at the landfill site.

3.0 SURVEY SCOPE AND METHODOLOGY

The original survey was limited to the third floor of K Wing Center and East Pods. This subsequent survey includes sections of K2C limited to K2C00, K2C21, K2C23, K2C51, K2C53, K2C53A, K2C53B, K2C53C, K2C53D, and Corridor 22C1. The methodology included the assessment for hazardous materials and how the assessment was performed is outlined below.

In order to determine the location of materials included in the assessment, the project technologist entered the room where practical (i.e. where access was possible without the demolition of walls, roof or ceilings or destruction of flooring). Representative views were made above accessible suspended ceiling systems. Cavities within solid ceiling and wall systems were accessed via existing access panels only. The inventory did not include demolition of building systems or finishes to check on possible hidden conditions.

3.1 Asbestos-Containing Building Materials (ACM)

The scope of the survey included all friable asbestos products and all major non-friable asbestos materials. The term friable is applied to a material that can be readily reduced to dust or powder by hand or moderate pressure. Asbestos materials that are friable have a much greater potential to release airborne asbestos fibres when disturbed.

Typical friable asbestos materials include: sprayed fireproofing or thermal insulation, textured (stippled) plaster, and thermal mechanical insulation. Typical non-friable materials include: asbestos cement (transite) products, vinyl floor tiles, asbestos textiles and gaskets. Additional materials such as ceiling tiles, drywall joint compounds and vinyl sheet flooring are classified as non-friable, but because of their ability to release dust when disturbed are considered as "potentially friable" for the purpose of this report.

Bulk samples of materials suspected to contain asbestos were collected for analysis during the survey. Specifically, a small volume of material was removed either from a damaged section of suspect material or taken from intact material. In these latter cases, the material from which the sample was collected was sealed with tape to temporarily prevent fibre release. Samples were placed in plastic bags and sealed until receipt by an independent laboratory. To ensure quality results, the independent laboratory chosen successfully participates in an "Asbestos Proficiency Analytical Testing Program". As such, these independent laboratories are responsible for their findings.

Bulk samples were collected in accordance with regulatory sampling requirements and with sufficient frequency to obtain a general pattern of asbestos use within the building. Due to building renovations or modifications that may have occurred in the past, the consistency of the application of asbestos materials may not be uniform

throughout the entire Site. It is important to note that without sampling each individual wall, pipe section, ceiling tile etc. it is not possible to identify the asbestos content of every material present in the selected areas. For this reason, visually similar materials are considered to be homogenous with those already sampled elsewhere in the building without additional analysis.

O. Reg. 278/05 prescribes that a minimum number of samples be collected of materials suspected to contain asbestos. These minimum sampling requirements are summarized in Table 1, below.

Table 1 - Suspect ACM Bulk Sampling Requirements

Type of Material	Quantity of Material Present	Minimum # of Bulk Samples Required
Surfacing Materials (i.e. sprayed fireproofing, drywall joint compound, texture coat, and plaster)	Up to 90 sq. m. (1000 sq. ft.)	3
	From 90 sq. m. (1000 sq. ft.) to 450 sq. m. (5000 sq. ft.)	5
	Greater than 450 sq. m. (5000 sq. ft.)	7
All other potential ACM	Any	3

Excluding surfacing materials, the laboratory was instructed to cease analysis within Sample Groups of homogenous materials when one of the samples in the group is found to contain asbestos. For example, if three samples of a type of vinyl floor tile are collected (as required by O. Reg. 278/05) and submitted for analysis and the first sample is positively identified as containing asbestos, the balance of the sample group is not analysed.

EMC Scientific Inc. ('EMC'), an independent laboratory, was selected to analyse the collected bulk suspect asbestos samples. EMC successfully participates in an "Asbestos Proficiency Analytical Testing Program" and as such, is responsible for its findings. EMC followed the Code of Practice for the identification of asbestos in bulk material, as detailed in O. Reg. 278/05. Bulk samples were analysed using the Polarized Light Microscopy ("PLM") Technique with Dispersion Staining. The identification of asbestos fibre in bulk material is based on a collective set of parameters dependent on the unique shape and crystallographic properties of each fibre as viewed through the microscope. This method is useful for the qualitative identification of asbestos and the semi-quantitative determination of asbestos content in bulk materials expressed as a percent of projected area. The method identifies types of asbestos and also measures percent of asbestos as perceived by the analyst in comparison to standard area projections or trained experience.

The recommendations made as part of this report with respect to asbestos have taken into consideration: the condition and accessibility of the material, vibration, air movement, and general activities likely to occur within the vicinity of the ACM.

In each area or room inventoried, the technician recorded the quantity, condition (GOOD, FAIR, or POOR) of each suspect asbestos-containing material.

The definitions for condition and accessibility of the asbestos-containing items are as follows:

GOOD	Material is intact with no visible signs of damage.
FAIR	Material is visibly damaged but can be repaired.
POOR	Material is damaged beyond repair and likely needs to be removed.

Where ACM is found to be in GOOD condition and not likely to deteriorate or fall, the general recommendation would be to re-evaluate the condition of the material on an annual basis (required by O. Reg. 278/05). This recommendation can be subject to change if the material is located in a manner that persons untrained in asbestos awareness could physically damage it.

Where ACM is found to be damaged (i.e. FAIR or POOR condition), a recommendation to have the material cleaned-up, repaired, removed, enclosed, or encapsulated is offered. The recommendation will also indicate which asbestos procedure should be used to perform the remedial work (i.e. Type 1, Type 2, Type 3, or Glove Bag Removal Methods).

3.2 Lead

The investigation included the collection and analysis of all major paint colour applications for the presence of lead in the paint. Other materials that possibly contain lead were identified by known historic use, where relevant. The lead in paint samples were analysed by EMSL Canada ('EMSL'), using atomic absorption spectrophotometry. EMSL is AIHA (American Industrial Hygiene Association) and NIOSH (National Institute of Occupational Safety and Health) accredited for this type of analysis. The Laboratory Analysis Report for lead in paint samples is included with this Report as Appendix II.

3.3 Mercury

The assessment included a visual identification of fluorescent light tubes, switches, electrical controls, heating system thermostats, thermometers, and other components historically known to contain mercury.

3.4 Other Designated Substances

Other materials listed in Section 1.0 of this Report were identified on a visual basis where present, as part of the current assessment. It should be noted that no manufacturing or heavy industrial activities are known by Maple to occur at the Site. Therefore, Designated Substances associated with these activities (i.e. those other than Asbestos, Lead, Mercury, and Silica) would not be expected to be present in the selected areas.

3.5 Mould

The assessment for mould was conducted in accordance with standard industry practice as set out in the Canadian Construction Association (CCA) "Mould Guidelines for the Canadian Construction Industry" for a visual assessment. Although there are no regulatory requirements in Ontario for such an assessment, the CCA Guidelines, and similar guidelines from other agencies have been accepted as the industry standard by most experts, consultants, the Ontario Ministry of Labour, and the Canadian Construction Association.

All guidelines and protocols for mould investigations indicate that investigations should be performed largely on a visual basis with limited collection of bulk and/or air samples. The Ontario Ministry of Labour has consistently enforced the removal of all mould from buildings regardless of mould genus or species, and therefore bulk samples or air samples for confirmation of mould are not typically collected for investigative purposes where mould is visible.

3.6 Polychlorinated Biphenyls

Manufacturers labels/codes collected from fluorescent lamp ballasts suspected of containing Polychlorinated Biphenyls ("PCBs") are compared with Environment Canada's document titled "Identification of Lamp Ballasts Containing PCBs", which identifies PCB-containing ballasts.

3.7 Limitations and Omissions from Scope

Due to the nature of building construction some limitations exist as to the possible thoroughness of any building materials inventory. The field observations, measurements, and analysis are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. Maple warrants that the findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the performance of the inventory.

It is possible that conditions may exist which could not be reasonably identified within the scope of the inventory or which were not apparent during the Site investigation. Maple believes that the information collected during the investigation concerning the property is reliable. No other warranties are implied or expressed.

During a standard ACM inventory performed for the purposes of regulatory compliance, it is industry practice to exclude certain suspect asbestos-containing materials from sampling. These materials are often excluded from sampling due to the risk of compromising the health and safety of the technician, other building occupants, or the integrity of the systems with which these materials are associated. Examples of such materials include; elevator brakes, roofing felts and mastics, high voltage wiring, mechanical packing and gaskets, underground services or piping, fire-doors, window caulking and levelling compound. Where observed, these materials were presumed to be ACM.

3.8 Drawings

Drawings included in Appendix II will indicate the locations of any major applications of an asbestos-containing material with the exception of mechanical insulations, drywall, plaster finishes and transite (which cannot be accurately depicted on drawings). The information depicted on the drawings is not to scale and is only meant to provide a general representation of the locations of asbestos-containing materials.

3.9 Previous Reports

Where possible, Maple utilized the observations and representative bulk sampling results from previous Survey Reports that were made available at the time of the survey.

Maple utilized sampling data from the following sources:

- August, 2020 – Maple Environmental Inc. Project 18903 – K3C Hematology DSUB Report; and
- December, 2013 – Maple Environmental Inc. Project 13907 – Annual Asbestos Reassessment Report.

4.0 INVENTORY FINDINGS

The findings of the survey are presented separately below for each of the eleven Designated Substances as well as microbial growth (mould), and polychlorinated biphenyls. Asbestos is further detailed by typical applications of asbestos.

4.1 Asbestos

The following is a brief discussion of the extent to which ACM was identified in the surveyed area during the original survey and the subsequent survey. The discussion is organized under the headings of materials that are generally suspected of containing asbestos. The sample numbers refer to the laboratory analysis report presented as Appendix I and summarised in Table 2 below.

As part of the current survey for the areas of K2C, six (6) bulk samples were collected for the determination of asbestos content and submitted to the lab to be analysed. In addition, some of the samples may not have been analysed due to the positive confirmation of asbestos in a previous sample of the same material during analysis. As a result, a total of four (4) samples were analyzed.

Table 2 - Summary of Analysis of Asbestos Bulk Samples

Sample No.	Room Name	Sample Description	Result
21292-S01A	Corridor 22C1	Grey Duct Mastic	Chrysotile 2%
21292-S01A	Corridor 22C1	Grey Duct Mastic	Not Analyzed
21292-S01A	Corridor 22C1	Grey Duct Mastic	Not Analyzed
21292-S02A	Room K2C53A	AT02 – 2' x 4' Uniform Pinhole	None Detected
21292-S02B	Room K2C53B	AT02 – 2' x 4' Uniform Pinhole	None Detected
21292-S02C	Room K2C53	AT02 – 2' x 4' Uniform Pinhole	None Detected

Asbestos-containing materials (ACM) identified during the subsequent survey of K2C Ductwork are present in the form of duct mastic. Details for all confirmed and suspect asbestos-containing materials are presented below under the headings of the most typical asbestos applications in buildings.

It should be noted that asbestos-containing materials (ACM) identified during the original survey of K3C are present in the form of vinyl sheet flooring.

It should be noted that due to the presence of solid walls and ceilings (i.e. masonry block walls and above solid ceilings) throughout the survey area, access for viewing within the wall and ceiling cavities was not always possible. Suspect asbestos-containing materials may be present within wall and ceiling cavities that were not

identified but are suspected to be present in this report. Caution should be taken when demolishing solid walls and ceilings within the areas being surveyed.

4.1.1 Sprayed Fireproofing

No sprayed fireproofing was identified within the surveyed area at the time of the assessment.

4.1.2 Thermal Mechanical Insulation (Friable)

Non-asbestos mechanical insulations are present throughout the surveyed area.

Piping Systems:

No asbestos-containing pipe systems were identified within the surveyed area at the time of the assessment.

Pipe systems observed within the surveyed area were either not insulated or were insulated with fibreglass, which is not suspected to contain asbestos.

Duct System Insulation

Duct systems observed throughout the surveyed areas were observed to be either uninsulated or were insulated with foil-face fibreglass insulation which is not suspected to contain asbestos.

Refer to Section 4.1.11 Other materials for more details on the grey asbestos-containing duct mastic observed.

Mechanical Equipment

Wall mounted radiant heaters and air handling units were observed to be externally uninsulated.

4.1.3 Texture Finish (Friable)

No textured finishes were identified within the surveyed area at the time of the assessment.

4.1.4 Acoustic Ceiling Tiles (Potentially Friable)

No asbestos-containing acoustic ceiling tile system was identified within the surveyed area at the time of the assessment. A brief description of each type of acoustic ceiling tile is outlined below:

- AT-01 (2' x 4' Pinhole and Fissures):
No bulk samples of AT-01 were collected as a date stamp manufacture code (11/06/99) was present on the backside of the tile indicating that the tiles were recently manufactured and therefore not suspected to contain asbestos.
- AT-02 (2' x 4' Uniform Pinholes and Mechanically Fastened):
Three (3) representative samples of AT02 were collected (Sample Set 21292 S02A-C) and analyzed for asbestos. Analysis of Sample Set 21292 S02 found that the samples do not contain asbestos.

4.1.5 Vinyl Sheet Flooring (Potentially Friable)

Asbestos-containing vinyl sheet floor was previously identified on K3C (refer to Maple report 18903). Vinyl sheet floor on K2C is also suspected of containing asbestos although not formally assessed as part of the current assessment as it is not likely to be disturbed by work in the ceiling space of K2C.

4.1.6 Vinyl Floor Tile (Non-Friable)

Vinyl floor tile on K2C was not formally assessed as part of the current assessment as it is not likely to be disturbed by work in the ceiling space of K2C.

4.1.7 Asbestos Cement Products "Transite" (Non-Friable)

No transite cement products were identified within the surveyed area at the time of the assessment.

4.1.8 Drywall Joint Compound (DJC) (Potentially Friable)

Drywall joint compound was not formally assessed as part of the current assessment as it is not likely to be disturbed by work in the ceiling space of K2C.

4.1.9 Plaster (Potentially Friable)

No plaster finishes were identified within the surveyed area at the time of the assessment.

4.1.10 Vermiculite (Friable)

No vermiculite insulation was observed to be present within the surveyed area at the time of the assessment. It should be noted that loose fill vermiculite insulation can often be present within voids of masonry and possibly some pre-manufactured surveyed area components that would not be identified during the course of this assessment.

4.1.11 Other (Non-Friable)

Duct Mastic:

On K2C survey area, there was a grey mastic material observed at the flange of the Ductwork where the sections are joined together on the main line.

Three (3) representative samples of duct mastic were collected (Sample Set 21292 S01) and was analyzed for asbestos content. Analysis of Sample Set S01A found that the mastic contained **2% Chrysotile asbestos**. The mastic was concealed by the flange as shown in Figures 1 and 2.



Figure 1



Figure 2

The grey duct mastic material was observed to be in GOOD condition at the time of the assessment.

4.2 Lead

No major paint applications were identified in association with the ceiling and ceiling space of K2C and therefore no Lead samples were collected as part of the current assessment.

4.3 Mercury

Mercury vapour is present in all fluorescent light tubes.

4.4 Silica

Free crystalline silica, present as common construction sand, is present in all concrete and masonry products where present in the Select areas surveyed.

4.5 Isocyanates

Free isocyanate compounds would not be expected to be found in a non-manufacturing facility.

4.6 Vinyl Chloride Monomer

Vinyl chloride monomer would not be expected to be found in a non-manufacturing facility.

4.7 Benzene

Benzene would not be expected to be found in a non-manufacturing facility.

4.8 Acrylonitrile

Acrylonitrile would not be expected to be found in a non-manufacturing facility.

4.9 Coke Oven Emissions

Coke oven emissions would not be expected to be found in a non-manufacturing facility.

4.10 Arsenic

Arsenic would not be expected to be found in a non-manufacturing facility.

4.11 Ethylene Oxide

Ethylene oxide would not be expected to be found in a non-manufacturing facility.

4.12 Mould

No visible mould was observed in the areas surveyed for the K2C Work Area.

It is possible that mould growth is present in concealed areas such as wall or ceiling cavities, pipe chases, etc. or in areas not currently assessed by Maple. The client should notify Maple should any water damage or suspect mould growth be discovered.

4.13 Polychlorinated Biphenyls (PCBs)

The fluorescent lamp fixtures observed contained T8 fluorescent light tubes. T8 fixtures have electronic ballast and are considered as not containing PCB.

5.0 RECOMMENDATIONS

5.1 Asbestos

Asbestos materials within the areas investigated in the ceiling space of K2C include duct mastic. It should be noted that vinyl sheet flooring is present on K3C that may be impacted by work on ducting where it penetrates the floor system.

General recommendations for each of the confirmed asbestos-containing and suspect asbestos-containing materials are as follows:

- Removal or disturbance of ACM duct mastic requires the use of Type 1 Asbestos Abatement Procedures (provided no power tools are used and the material is wetted). If power tools are required Type 3 Asbestos Abatement Procedures must be applied.
- Removal or disturbance of ACM vinyl sheet flooring requires the use of Type 2 or Type 3 Asbestos Abatement Procedures as appropriate.

It is important to note that due to the presence of solid wall and ceiling systems, the assessment was not able to confirm or deny the presence of ACM within wall and ceiling cavities. The presence of concealed ACM should be assumed as well as within

rooms that were not accessible during the assessment. It is possible that ACM is present that was not identified in this report.

5.2 Mercury

Mercury vapour is present in all fluorescent light tubes. All fluorescent light tubes should be handled and disposed of appropriately.

5.3 Silica

Proper dust suppression techniques and other safety precautions to control possible generation of silica dust from the demolition of concrete and masonry products present in the building should follow those outlined in the Ministry of Labour Guideline- Silica on Construction Projects, 2004.

6.0 LIMITATIONS

Due to the nature of building construction some limitations exist as to the possible thoroughness of the subject investigation. The field observations are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. Maple warrants that the findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the performance of the assessment.

It is possible that conditions may exist which could not be reasonably identified within the scope of the investigation or which were not apparent during the site investigation. Maple believes that the information collected during the investigation period concerning the property is reliable. No other warranties are implied or expressed.

Information provided by Maple is intended for Client use ONLY. Any use by a third party, of reports or documents authored by Maple, 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. Maple accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted.

The liability of Maple or its staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. Maple will not be responsible for any consequential or indirect damages. Maple will only be liable for damages resulting from negligence of Maple; all claims by the Client shall be deemed relinquished if not made within two years after last date of services provided.

Please contact Maple Environmental Inc. at (905) 257-4408 for inquiries regarding this project.

MAPLE ENVIRONMENTAL INC.

Environment, Health and Safety Consultants

Prepared By:



**Richards Reboks,
Senior Project Technologist**

Reviewed By:



**Kyle Prosser
Senior Project Manager**

APPENDIX I

LABORATORY ANALYSIS REPORT - ASBESTOS

Laboratory Analysis Report

To:

Richards Reboks
Maple Environmental Inc.
482 South Service Road East, Suite 116
Oakville, Ontario
L6J 2X6

EMC LAB REPORT NUMBER: A96241

Job/Project Name: SHSC, K2C, Hematology

Analysis Method: Polarized Light Microscopy – EPA 600

Date Received: Sep 26/23

Date Analyzed: Sep 29/23

Analyst: Fabio Anunciacao

Reviewed By: Malgorzata Sybydlo

Job No: 21292

Number of Samples: 6

Date Reported: Sep 29/23

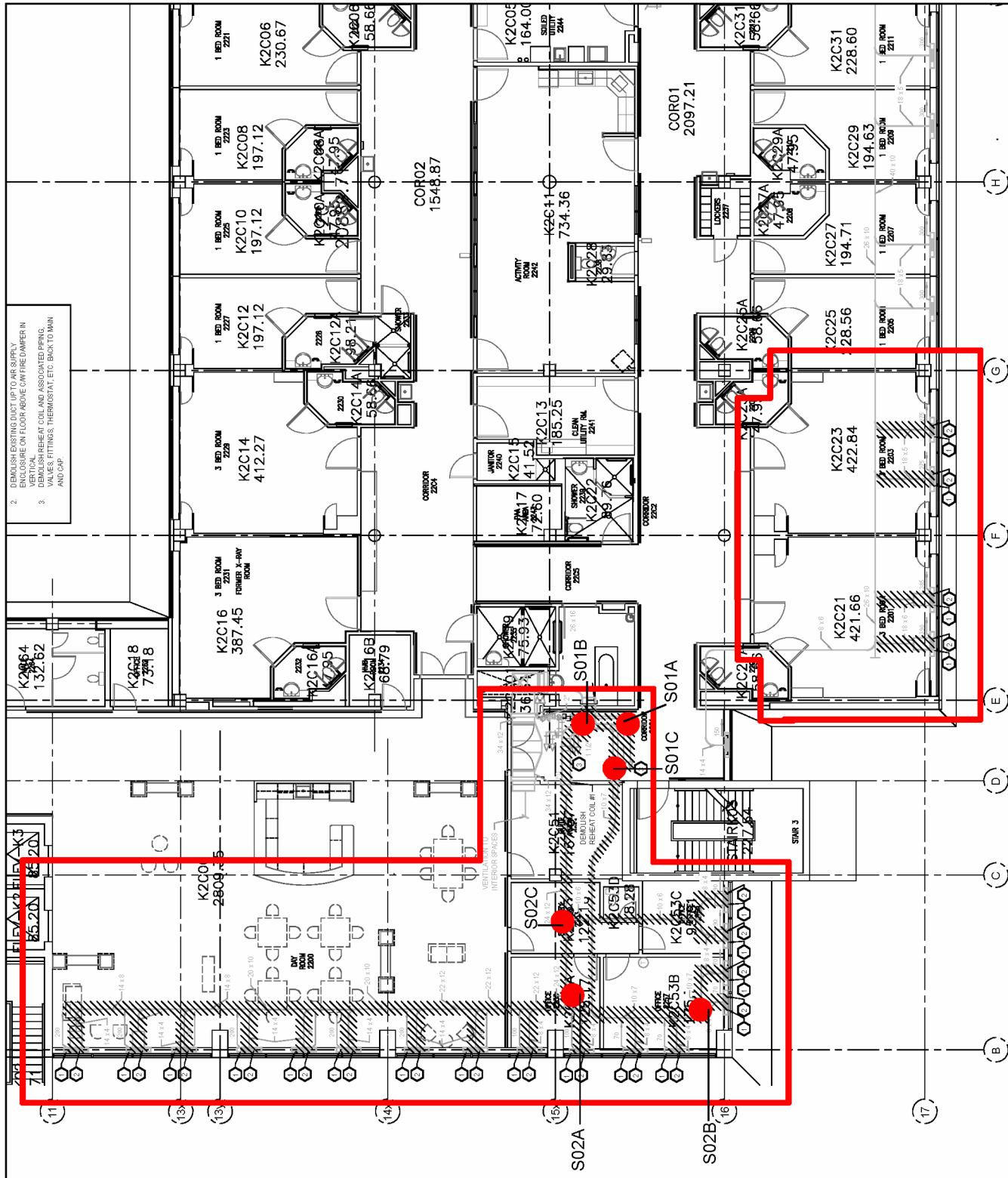
Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
S01A	A96241-1	Grey duct mastic	Grey, caulking	Chrysotile	2		98
S01B	A96241-2	Grey duct mastic	NA	NA			
S01C	A96241-3	Grey duct mastic	NA	NA			
S02A	A96241-4	AT02- 2' x 4' uniform pinhole, mech fastened	Beige, ceiling tile	ND		75	25
S02B	A96241-5	AT02- 2' x 4' uniform pinhole, mech fastened	Beige, ceiling tile	ND		75	25
S02C	A96241-6	AT02- 2' x 4' uniform pinhole, mech fastened	Beige, ceiling tile	ND		75	25





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%.

APPENDIX II

DRAWINGS



 MAPLE ENVIRONMENTAL INC. <small>ENVIRONMENT, HEALTH & SAFETY CONSULTANTS</small> 483 South Service Rd. E - Suite 116 Oakville, Ontario L6L 2K6 Tel: (905) 257-4408 Fax: (905) 257-8865 www.MapleEnvironmental.com	PROJECT NO.:		21292	
	Drawn By:		S. Knight	
	Checked By:		R. Reboks	
	SYMBOL	SAMPLE LOCATIONS	SYMBOL	CONFIRMED & SUSPECTED ACM
		ASBESTOS BULK SAMPLE: S-##	NOTE	DUCT/MASTIC
		SURVEY AREA		
				Designated Substance Survey Sunnybrook Health Sciences Centre Hematology - K-Wing 2075 Bayview Avenue Toronto, Ontario Third Floor Plan
		SCALE NTS SHEET DS-01		 DATE: October 4, 2023