



CONSULTANTS
Occupational Hygiene & Environment

PRE-RENOVATION HAZARDOUS BUILDING MATERIALS SURVEY

Provincial Commander Office Renovation Project OPP Orillia General Headquarters

777 Memorial Avenue
Orillia, Ontario
L3V 6H1

Presented to:

Colliers Project Leaders Inc.
Suite 101 – 5255 Orbitor Drive
Mississauga, Ontario
L4W 5M6



August 2024

**Project No.: 1103395-274117
OHE Project No.: 29999**

Submitted by:

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OHE Consultants (OHE) was retained by Colliers Project Leaders Inc. (Client) to conduct a Hazardous Building Materials Survey (HBMS) to support the Provincial Commander Office Renovation Project in OPP Orillia General Headquarters (GHQ) located at 777 Memorial Avenue, Orillia, Ontario (herein referred to as the “Subject Location”).

The field work was carried out on July 23, 2024 by Larysa Kokarovtseva, Senior Occupational Hygienist, of OHE. The survey consisted of a visual inspection for the presence of hazardous building materials, including designated substances, and testing and sampling of materials suspected to contain hazardous building materials, particularly asbestos and lead.

Should suspect hazardous materials be discovered in any of the areas which could not be accessed (as part of the survey) during renovation and demolition activities, the work shall stop until such materials are assessed and sampled to determine the next course of action.

A summary of the hazardous building materials survey findings is presented below:

Asbestos

- Asbestos-containing materials were not identified in the samples collected at the Subject Location.

Lead

- Lead was present on the wipe sample collected from the sprinkler pipe in Room 3-049 at the Subject Location. The concentration of the lead in the wipe sample collected from the sprinkler pipe was below the lead clearance standard recommended by US Navy Environmental Health Center (USNEHC).
- May be present in:
 - wiring connectors
 - electric cable sheathing
 - solder joints on copper piping.

Mercury

- Presumed present:
 - as vapour in fluorescent light bulbs
 - in mercury-vapour lamps
 - as a component in electrical equipment, such as
 - silent, position-dependent switches.

Silica

- Presumed present: as fillers for paints and mastic in bricks, ceramics, masonry, concrete and mortar.

Polychlorinated Biphenyls (PCBs)

- Fluorescent light fixtures were observed at the Subject Location during the survey. Based on the age of the building, ballasts associated with the fluorescent light fixtures are not suspected to contain PCBs.

Ozone Depleting Substances (ODS)

- Suspected present in: refrigerator

Mould and Water Damaged Building Materials

- Not observed

Hazardous building materials may be present in areas not accessible for view and identification. In situations where hazardous building materials extend into a non-accessible area, the materials were assumed to also be present in those areas and have been reported as such. Contractors and maintenance personnel should be warned of the possibility of undisclosed hazardous building materials in enclosed areas. All hazardous building materials discovered in these areas should be treated as such until proven otherwise as per all applicable regulations and guidelines.

Hazardous building materials including asbestos may be present in various building materials which were not sampled as part of the survey since they were excluded from the scope of work due to inaccessibility. These materials include, but are not limited to, gaskets; fire-rated doors; high voltage wiring, transformers and associated equipment; and refractory materials within boilers and furnaces. All excluded materials shall be assumed asbestos-containing until proven otherwise by bulk sampling and analysis.

OHE's recommendations, based on the findings of the survey, are as follows:

- Provide a copy of this report to contractors bidding on or performing work within the Subject Location.
- Renovations and/or demolition operations that are likely to generate lead-containing dust shall be carried out in accordance with the Ontario Ministry of Labour document Guideline: Lead on Construction Projects.

Type 1 operation procedures should be followed to complete the work in the following locations:

- Room 3-049, Above the ceiling space.
- Renovations and/or demolition operations that are likely to disturb mercury-containing materials or equipment shall be carried out in accordance with all applicable guidelines and regulations.
- Renovations and/or demolition operations that are likely to generate silica-containing dust shall be carried out in accordance with all applicable guidelines and regulations.
- Examine all equipment suspected to contain ODSs prior to disposal to determine its content. Equipment identified to contain ODSs should be transported and disposed of following procedures specified in applicable regulations.
- Disposal of hazardous building materials shall be completed as per all applicable guidelines and regulations.
- Should suspect hazardous building materials be discovered during any demolition or renovation work in the Subject Location, the contractor shall stop all work in the vicinity of the suspect hazardous material and immediately notify personnel from both the Client and OHE Consultants.

This executive summary provides a brief overview of the survey findings. It is not intended to substitute for the complete survey report, nor does it discuss specific issues documented in the report. The executive summary should not be used as a substitute to reading the complete report.

This report is not a scope of work/specifications document for the abatement/remediation of hazardous materials and shall not be used for such purposes.

1. INTRODUCTION

OHE Consultants (OHE) was retained by Colliers Project Leaders Inc. (Client) to conduct a Hazardous Building Materials Survey (HBMS) to support the Provincial Commander Office Renovation Project in OPP Orillia General Headquarters (GHQ) located at 777 Memorial Avenue, Orillia, Ontario (herein referred to as the “Subject Location”).

In accordance with Section 30 of the Ontario Occupational Health and Safety Act, Designated Substances and other potentially hazardous building materials must be identified prior to construction or demolition that may disturb such materials. The following is a list of designated substances:

Asbestos	Benzene
Lead	Acrylonitrile
Mercury	Coke Oven Emissions
Silica	Arsenic
Isocyanates	Ethylene Oxide
Vinyl Chloride	

In addition to the above listed designated substances, the scope of the survey also included visual inspection for the presence of the following:

Polychlorinated Biphenyls (PCBs)
Ozone Depleting Substances (ODS)
Mould and Water Damaged Building Materials

The field work was carried out on July 23, 2024 by Larysa Kokarovtseva, Senior Occupational Hygienist, of OHE.

The asbestos bulk samples were analyzed by EMC Scientific Inc., an independent and NVLAP accredited laboratory.

The lead wipe samples were analyzed by EMSL Canada Inc., an independent and AIHA, ELLAP accredited laboratory.

1.1 Scope of Work

The scope of work of the survey consisted of the following:

1. A review of previous environmental reports for the Subject Location (if provided prior to conducting the field work);
2. Meeting with key on-site personnel (if provided by the Client) to obtain information about the various operations and processes carried out at the Subject Location in the past;
3. Room-by-room inspection of accessible areas including spaces above suspended ceilings, suspended floors, access hatches, mechanical chases, or similar type locations. Minor demolition of walls, ceilings, floors, etc. to investigate concealed conditions was not part of the scope of work;
4. Bulk sampling and analysis of suspect materials for the presence of asbestos following the requirements of Ontario Regulation 278/05 as required;
5. Sampling of accessible painted surfaces and dust for lead content. The lead survey also included an inventory of paint that is peeling off and require remediation;
6. Visual inspection for the presence of the other hazardous building materials listed above. If identified, such materials were reported as suspected until tested. Testing of these materials was not part of the scope of this survey; and
7. Preparation and provision of this report which includes the methodologies, drawings (if they were initially provided by the Client), results, findings, conclusions, recommendations and site photographs.

This report is not a scope of work/specifications document for the abatement/remediation of hazardous materials and shall not be used for such purposes.

1.2 Appendices Outline

The following is an outline of the appendices included in the report:

- Drawings showing sampling locations and the locations of asbestos-containing materials (if identified) are presented in Appendix A;
- The results of the survey for asbestos and lead in the form of a summary table are presented in Appendix B;
- The laboratory analysis reports are presented in Appendix C;
- Select site photographs are presented in Appendix D;
- Background information on hazardous building materials, including a brief discussion of the properties, uses, and hazards associated with exposure, is attached in Appendix E;
- A summary of applicable provincial regulations and guidelines pertaining to hazardous building materials is attached in Appendix F;
- Survey methodology including bulk samples analysis methodology and assessment of hazardous building materials methodology is attached in Appendix G;
- Limitations of the project are attached in Appendix H; and
- Historical data (if applicable) is attached in Appendix I.

1.3 Building(s) Description

	Building 1
Name	OPP Orillia GHQ
Address	777 Memorial Avenue, Orillia, Ontario
Current usage	OPP
Square footage	Survey was limited to the Provincial Commander Office and Commissioner's Lounge on the 3 rd floor.
Number of Floors	Five (5)
Number of Units	NA
Year Built	1995
Roof Mechanical penthouse (yes/no)	NA
Number of underground levels	NA
General interior finishes	Block walls, drywall, concrete floor, vinyl floor tiles, carpet, concrete deck, suspended ceiling tiles

NA = Not Applicable

2. FINDINGS AND DISCUSSION

2.1 ACMs

Material Description	Observed (yes/no)	Sample(s) Numbers	Asbestos % And Type	Friable/ Non-Friable	Condition	Location
Sealant, Grey	Yes	29999-1A-C	ND			Hallway Adjacent to Room 3-026, Around HVAC Duct

ND – None Detected

2.2 Lead

Five (5) wipe samples for lead were collected at the Subject Location. Lead was detected in one (1) wipe sample collected on the sprinkler pipe in the ceiling space in in Room 3-049. The concentration of the lead in the wipe sample collected from the sprinkler pipe was below the lead clearance standard recommended by US Navy Environmental Health Center (USNEHC). Lead was not detected in the remaining four (4) wipe samples collected in the ceiling space and within the wall cavity at the Subject Location. A detailed description of the sample locations is presented in Table B2 found in Appendix B.

Lead may be present in wiring connectors and electric cable sheathing, in lead piping, in solder joints on copper piping, in ceramic building products such as floor or wall tiles.

2.3 Mercury

Mercury-containing thermostats were not observed during the survey at the Subject Location.

Mercury is presumed to be present as a vapour in fluorescent light bulbs and mercury-vapour lamps.

Mercury is presumed to be present as a component in electrical equipment, such as silent, position dependent switches.

2.4 Silica

Silica is presumed to be present in materials such as fillers for paints and mastic and in bricks, ceramics, masonry, concrete and mortar.

Silica-containing materials should be handled in accordance with applicable guidelines and regulations. No adverse effects from exposure to silica are likely to occur unless silica in the material is reduced to a respirable size and the airborne concentrations exceed the 8-hour time-weighted average.

2.5 Isocyanates

The material was not identified at the site and is not expected to be found.

2.6 Vinyl Chloride

The material was not identified at the site and is not expected to be found.

2.7 Benzene

The material was not identified at the site and is not expected to be found.

2.8 Acrylonitrile

The material was not identified at the site and is not expected to be found.

2.9 Coke Oven Emissions

The material was not identified at the site and is not expected to be found.

2.10 Arsenic

The material was not identified at the site and is not expected to be found.

2.11 Ethylene Oxide

The material was not identified at the site and is not expected to be found.

2.12 PCBs

Fluorescent light fixtures were observed at the Subject Location during the survey. Based on the age of the building (constructed in 1995), ballasts associated with the fluorescent light fixtures are not suspected to contain PCBs.

2.13 Ozone Depleting Substances

Refrigerator was observed at the Subject Location. The refrigerator should be treated as containing ozone depleting substances unless proven otherwise.

ODS-containing equipment should be handled using the appropriate type of procedures as specified in the applicable guidelines and regulations.

2.14 Mould and Water Damaged Building Materials

Mould and water damaged building materials were not observed at the Subject Location during the survey.

Hazardous building materials may be present in areas not accessible for view and identification. In situations where hazardous building materials extend into a non-accessible area, the materials were assumed to also be present in those areas and have been reported as such. Contractors and maintenance personnel should be warned of the possibility of undisclosed hazardous building materials in enclosed areas. All hazardous building materials discovered in these areas should be treated as such until proven otherwise as per all applicable regulations and guidelines.

3. RECOMMENDATIONS

OHE's recommendations, based on the findings of the survey, are as follows:

- Provide a copy of this report to contractors bidding on or performing work within the Subject Location.
- Renovations and/or demolition operations that are likely to generate lead-containing dust shall be carried out in accordance with the following guidelines and regulations:
 - Ontario Ministry of Labour Guideline: Lead on Construction Projects.
 - Type 1 operation procedures should be followed to complete the work in the following locations: Room 3-049, Above the ceiling space;
 - Designated Substances Regulation, O. Reg. 490/09;
 - Regulation for Construction Projects, O. Reg. 213/91; and
 - General – Waste Management Regulation, O. Reg. 347/90.
- Renovations and/or demolition operations that are likely to disturb mercury-containing materials or equipment shall be carried out in accordance with the following guidelines and regulations:
 - Designated Substances Regulation, O. Reg. 490/09;
 - Regulation for Construction Projects, O. Reg. 213/91; and
 - General – Waste Management Regulation, O. Reg. 347/90.
- Renovations and/or demolition operations that are likely to generate silica-containing dust shall be carried out in accordance with the following guidelines and regulations:
 - Ontario Ministry of Labour Guideline: Silica on Construction Projects;
 - Designated Substances Regulation, O. Reg. 490/09;
 - Regulation for Construction Projects, O. Reg. 213/91; and
 - General – Waste Management Regulation, O. Reg. 347/90.
- Examine all equipment suspected to contain ozone depleting substances prior to disposal to determine their content. Equipment identified to contain ozone depleting substances should be transported and disposed of following procedures specified in applicable regulations.

- Disposal of hazardous materials shall be conducted in accordance with all applicable regulations and guidelines.

- Should suspect hazardous building materials be discovered during any demolition or renovation work in the above mentioned location, the contractor shall stop all work and immediately notify personnel from the Client and OHE.

4. GENERAL STATEMENT OF LIMITATIONS

The information and opinions rendered in this report are for use exclusively by the Client and is subject to the terms, conditions and limitations as set out in the proposal/scope of work. OHE Consultants reserves the right to review and comment on any interpretation of the data or conclusions derived by the Client. OHE Consultants will not provide this report or other associated information to any party other than the Client unless the disclosure of the information is required by law or is requested in writing by the Client. Any required notifications (internal or external) about information contained in this report shall be the sole responsibility of the Client.

Nothing under the agreement (written or verbal) with the Client shall be construed to give any other rights or benefits to anyone other than the Client and OHE Consultants, and all duties and responsibilities undertaken pursuant to the agreement will be for the sole and exclusive benefit of the Client and OHE Consultants and not for the benefit of any other party. Client agrees not to disclose to any third party data, reports or information provided by OHE Consultants without prior written consent, and OHE Consultants shall have no liability to the Client for claims resulting from such disclosure. However, the Client may use the written report and associated documents to indicate the status of the property to current owners or government requiring the report.

OHE Consultants collected the information provided in this report for the benefit of its Client. OHE Consultants' Client may upon authorization release the information to third parties, who may use and rely upon this report to their discretion. Any use of, or reliance upon, the information by a party other than the Client shall be solely at the risk of the third party and without legal recourse against OHE Consultants.

The scope of this report is limited to possible hazardous building materials found within (or part of) the subject spaces included in the survey only. The survey only considered issues of the building structure, mechanical equipment, and their finishes. The survey did not consider current or past use of the property or occupant articles within the building (i.e. furniture, stock items, etc.), nor does it report on possible contaminants in the soil and groundwater of the site, vessels,

drums, underground storage tanks, etc. The survey consisted of accessible areas only; samples were not collected if accessibility was restricted. OHE Consultants exercised normal skills of a reasonably qualified environmental consultant as part of obtaining the information presented in this report. The findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry at the time of the performance of the work utilizing trained technical staff and professionals.

The information are only representative of the time period when the actual work was carried out. It is possible, due to the nature of building construction, that conditions may exist which could not be reasonably identified within the scope of the assessment or which were not apparent during the site investigation.

The information presented in the report shall not be construed as legal opinion. In addition, the information shall not be used to evaluate health risks of building occupants associated with exposure to identified hazardous building materials – such evaluations shall be carried out by a licensed medical professional who specializes in such evaluations. Over time, the regulations, standards and guidelines which are outlined in the report could be amended/updated, and accordingly may not apply at a future date.

No representation, warranties or guaranties, expressed or implied, are made with respect to any goods or services provided as part of this assessment/report, and any implied warranties or guaranties for a particular purpose are expressly disclaimed.

Dated August 2024

OHE Consultants

Occupational Hygiene & Environment

Original Signed by:

Prepared by:
Larysa Kokarovtseva, B.A.Sc., CIH
Senior Occupational Hygienist

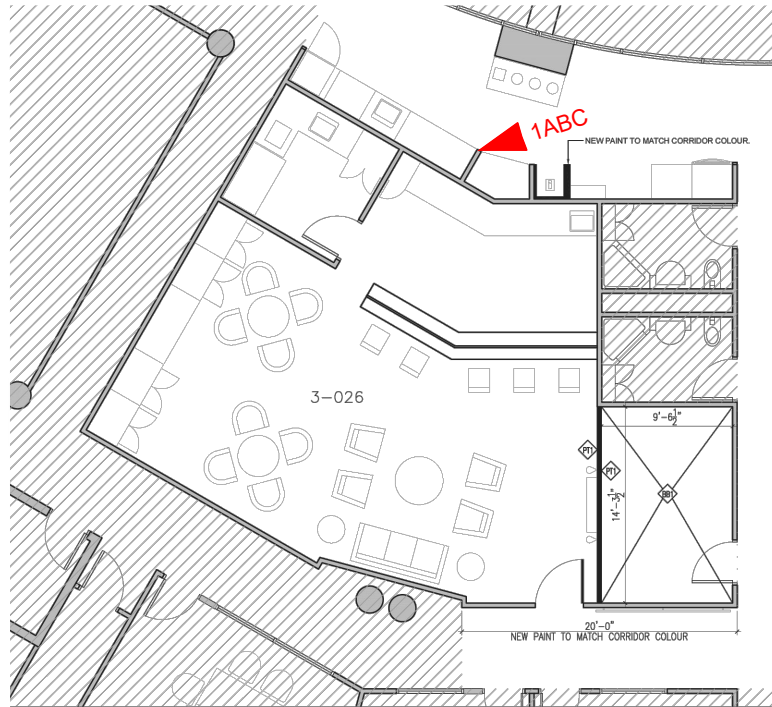
Original Signed by:

Reviewed by:
Yunny Desiana Lee, M.P.H., CIH
Senior Project Manager

Original Signed by:

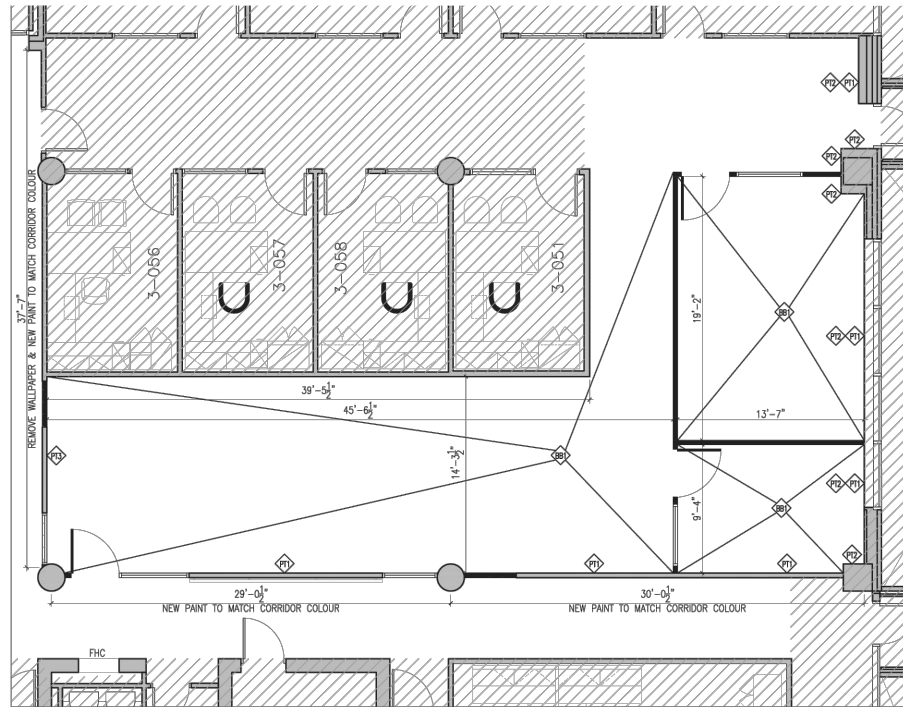
Reviewed by:
Michal Zitnik, M.H.Sc., ROH, CIH
Vice President

DRAWINGS



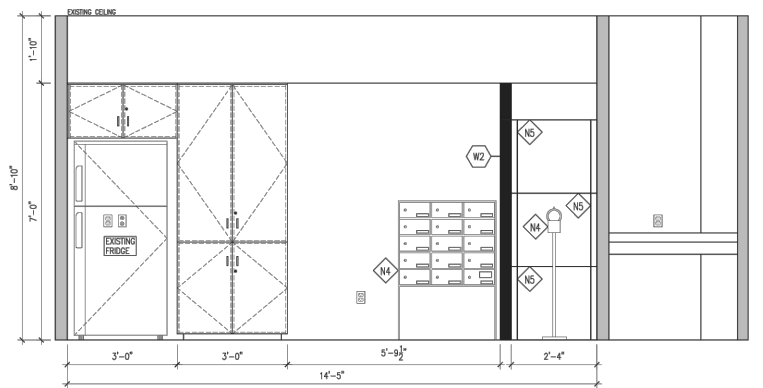
1 PROPOSED ROOM 3-026 FINISH FLOOR PLAN

A3 SCALE: 3/16" = 1'-0"



2 PROPOSED ROOM 3-049 / 3-059 / 3-060 FINISH FLOOR PLAN

A3 SCALE: 3/16" = 1'-0"



3 PROPOSED KITCHEN ELEVATION

A3 SCALE: 1/2" = 1'-0"

Legend:

Asbestos Bulk Sample Location

Notes:

Locations of site features are approximate and may vary from that shown.

Drawing Title:

Asbestos Bulk Sample Locations

Client Address:

Colliers Project Leaders Inc.
5255 Orbiter Drive, Suite 101
Mississauga, ON

Project Location:

Provincial Commander Office
777 Memorial Avenue
Orillia, ON

Project No: 29999



Date: Aug. 2024

Drawing No:

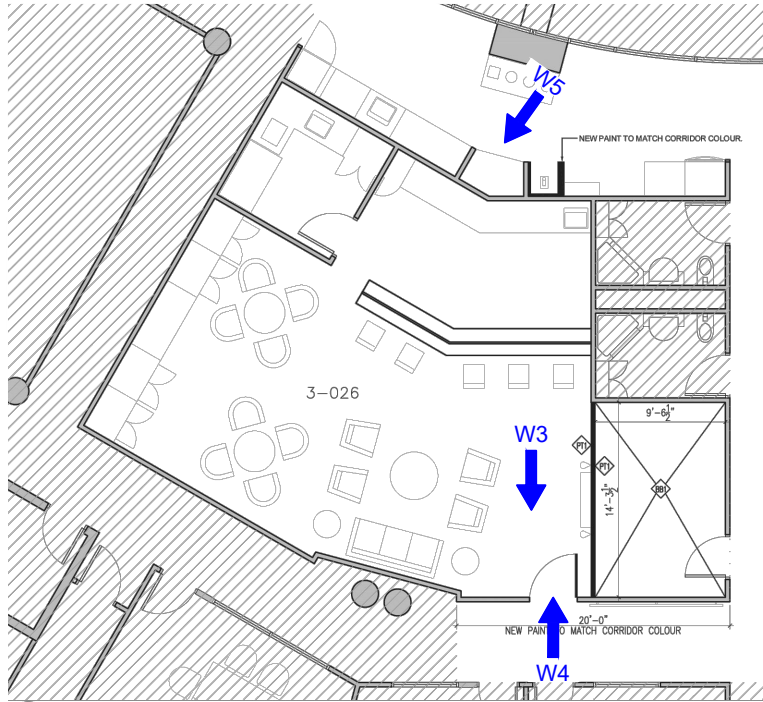
Scale: NTS

Drawn By: OA

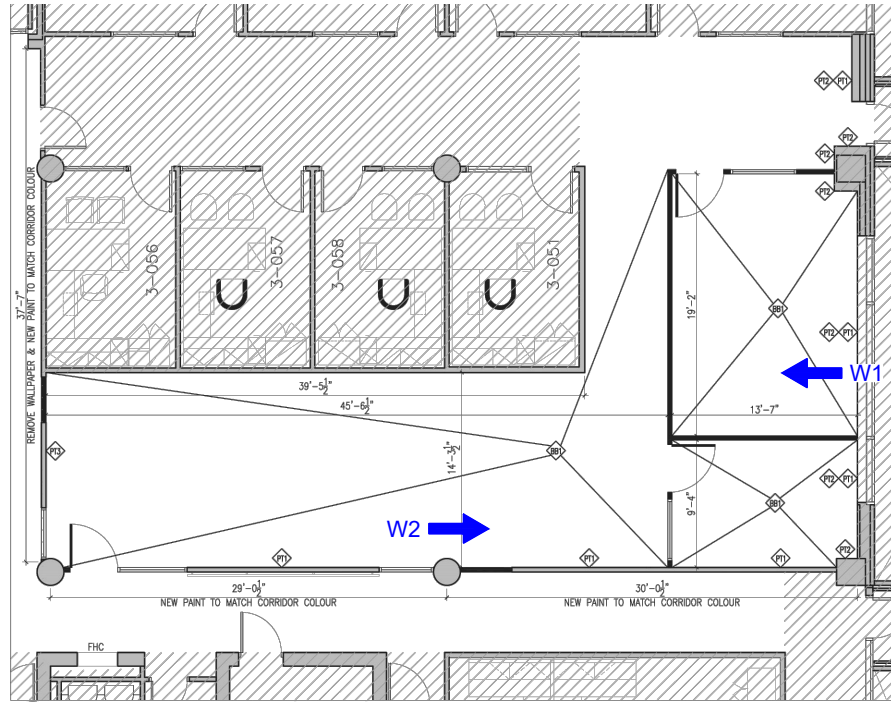
Approved By: MZ

1.1

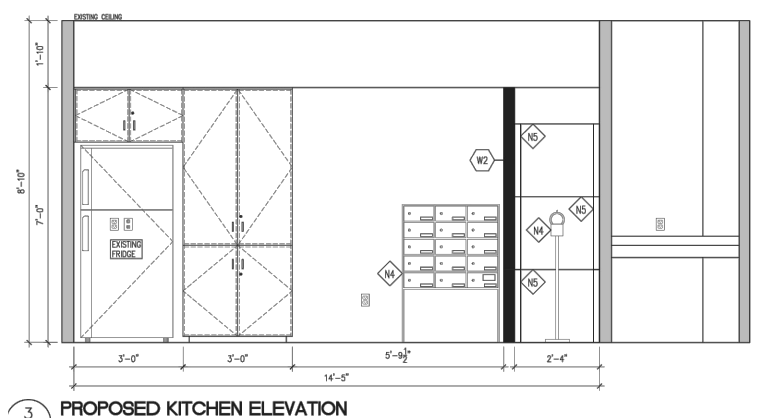




1
A3 PROPOSED ROOM 3-026 FINISH FLOOR PLAN
SCALE: 3/16" = 1'-0"



2
A3 PROPOSED ROOM 3-049 / 3-059 / 3-060 FINISH FLOOR PLAN
SCALE: 3/16" = 1'-0"



3
A3 PROPOSED KITCHEN ELEVATION
SCALE: 1/2" = 1'-0"

Legend:

wx → Lead Wipe Sample Location

Notes:
Locations of site features are approximate and may vary from that shown.

Drawing Title:

Lead Wipe Sample Locations

Client Address:

Colliers Project Leaders Inc.
5255 Orbitor Drive, Suite 101
Mississauga, ON

Project Location:

Provincial Commander Office
777 Memorial Avenue
Orillia, ON

Project No: 29999



Date: Aug. 2024

Drawing No:

Scale: NTS

Drawn By: OA

Approved By: MZ

2.1



RESULTS

Table B.1

Summary of Bulk Sample Analysis Results for the Presence of Asbestos by Polarized Light Microscopy (PLM) with Dispersion Staining

Collected on July 23, 2024

OHE Sample Number	Sample Description	Sample Location	Analysis Results (% and Type of Asbestos)
29999-1A	Sealant, Grey	Hallway Adjacent to Room 3-026, Around HVAC Duct	None Detected
29999-1B	Sealant, Grey	Hallway Adjacent to Room 3-026, Around HVAC Duct	None Detected
29999-1C	Sealant, Grey	Hallway Adjacent to Room 3-026, Around HVAC Duct	None Detected

Table B.2

Summary of Bulk Samples Analysis Results for the Presence of Lead in Dust by Flame Atomic Absorption Spectrometry (FAAS)

Collected on July 23, 2024


OHE Sample Number	Sample Description	Sample Location	Lead Concentration (µg/ft²)	Lead Concentration (µg/100cm²)
29999-W-1	Wipe	Room 3-049, Ceiling Space, HVAC Duct	<92.9	<10
29999-W-2	Wipe	Room 3-049, Ceiling Space, Sprinkler Pipe	167.2	18
29999-W-3	Wipe	Room 3-026, Ceiling Space, Top of Suspended Ceiling Tile (SCT)	<92.9	<10
29999-W-4	Wipe	Room 3-026, West Wall Cavity	<92.9	<10
29999-W-5	Wipe	Hallway Adjacent to Room 3-026, HVAC Duct	<92.9	<10

LABORATORY ANALYSIS REPORTS

Laboratory Analysis Report

To:

Fred Atrash
OHE Consultants Inc.
311 Matheson Boulevard East
Mississauga, Ontario
L4Z 1X8

EMC LAB REPORT NUMBER: A107170
Job/Project Name:
Analysis Method: Polarized Light Microscopy – EPA 600
Date Received: Jul 25/24 **Date Analyzed:** Aug 1/24
Analyst: Chengming Li
Reviewed By: Jayoda Perera 

No. of Phases Analyzed: 3
Job No: 29999
Number of Samples: 3
Date Reported: Aug 1/24

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)		
				Asbestos Fibres	Non-asbestos Fibres	Non-fibrous Material
29999-1A	A107170-1	Sealant, grey / Hallway Adjacent to Room 3-026, Around HVAC Duct	Grey, caulking	ND		100
29999-1B	A107170-2	Sealant, grey / Hallway Adjacent to Room 3-026, Around HVAC Duct	Grey, caulking	ND		100
29999-1C	A107170-3	Sealant, grey / Hallway Adjacent to Room 3-026, Around HVAC Duct	Grey, caulking	ND		100

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%.



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	552411559
CustomerID:	55OHEI93
CustomerPO:	29999
ProjectID:	

Attn: **Fred Atrash**
OHE Consultants
311 Matheson Blvd. East
Mississauga, ON L4Z 1X8

Phone: (905) 890-9000
Fax: (905) 890-9005
Received: 7/25/2024 11:58 AM
Collected: 7/23/2024

Project: **29999**

Test Report: Lead in Dust by Flame AAS (SW 846 3050B/7000B)*

Client SampleDescription	Collected	Analyzed	Area	RDL	Lead Concentration
29999-W1	7/23/2024	7/25/2024	100 cm ²	10 µg/100 cm ²	<10 µg/100 cm ²
552411559-0001	Site: Room 3-049, Ceiling Space, HVAC Duct				
29999-W2	7/23/2024	7/25/2024	100 cm ²	10 µg/100 cm ²	18 µg/100 cm ²
552411559-0002	Site: Room 3-049, Ceiling Space, Sprinkler Pipe				
29999-W3	7/23/2024	7/25/2024	100 cm ²	10 µg/100 cm ²	<10 µg/100 cm ²
552411559-0003	Site: Room 3-026, Ceiling Space, Top of SCTs				
29999-W4	7/23/2024	7/25/2024	100 cm ²	10 µg/100 cm ²	<10 µg/100 cm ²
552411559-0004	Site: Room 3-026, West Wall Cavity				
29999-W5	7/23/2024	7/25/2024	100 cm ²	10 µg/100 cm ²	<10 µg/100 cm ²
552411559-0005	Site: Hallway Adjacent to Room 3-026, HVAC Duct				
29999-BI	7/23/2024	7/25/2024	N/A	10 µg/wipe	<10 µg/wipe
552411559-0006	Site: Field Blank				

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 Dust by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 10 ug/wipe. Ug/wipe = ug/ft2 x area sampled in ft2. Unless noted, results in this report are not blank corrected. The lab is not responsible for data reported in ug/ft2 which is dependent upon the area provided by non-lab personnel. "<" (less than) result signifies that 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 Accredited #196142

Initial report from 08/01/2024 09:31:31

SITE PHOTOGRAPHS

Site Photographs
OHE Project No.: 29999

Photograph 1. View of the sprinkler pipe in the ceiling space in Room 3-049. Lead was present on the wipe sample collected.



**BACKGROUND INFORMATION ON
HAZARDOUS BUILDING MATERIALS**

ASBESTOS

Asbestos is a term applied to a family of fibrous minerals divided into two geological groups, serpentine and amphibole. These minerals are naturally occurring and are found in every mountain formation throughout the world. Only six forms of asbestos were used commercially. These are chrysotile, the only serpentine asbestos type, and amosite, crocidolite, anthophyllite, tremolite and actinolite which are the amphibole asbestos type.

There are over 3,000 separate uses of asbestos identified in existing literature. Uses are dependent upon the physical and chemical properties of a particular asbestos type. The desirable properties of asbestos fibres differ with each type of asbestos and include:

Fire retardance	Resistance to acids and alkalis	High tensile strength
Filter action	Thermal insulating qualities	Friction and wear resistance
Cohesion	Reinforcement	Filler

Asbestos is rarely found in pure form in a product and all products are divided into two broad categories: "friable materials" and "non-friable materials or manufactured products". "Friable materials" are defined as materials that, when dry, can be crumbled, pulverized or powdered by hand pressure. This classification includes materials such as sprayed fireproofing, thermal insulation applications, acoustical texturized material and refractory or non-friable materials that have been made to become friable through degradation.

"Non-friable materials" are generally hard and do not readily release fibres. Most asbestos-containing materials (ACMs) are found in this category and are typically included in materials such as cement products, felts, cloths, floor and roof coverings, friction products and ceiling tiles.

Asbestos fibres, when inhaled, may cause various respiratory diseases primarily including Asbestosis, Mesothelioma and Lung Cancer which all can cause an early death. Based on the health effects of exposure to asbestos fibres, the use of asbestos has become regulated across Canada and some products are now prohibited. Essentially, the location of ACMs must be identified and a written report kept and maintained of the ACMs locations so that work undertaken on these materials is conducted in a safe manner and any damaged ACMs or debris is repaired or removed.

ACRYLONITRILE

Acrylonitrile is explosive, flammable and toxic, found as a colourless or yellow clear liquid. It is used to produce a variety of products including plastics, adhesives, gaskets, seals and hoses. Health effects resulting in acute exposure to acrylonitrile vary from minor symptoms such as eye irritation, itching skin, blisters, headaches, sneezing and vomiting with chronic exposures potentially causing cancers of the stomach, lymph system and brain.

ARSENIC

The common form of arsenic is grey in colour with a metallic appearance. Arsenic has been used in the manufacturing of glass to eliminate the green colour resulting from the impurities of iron compounds. It was also used in the productions of poisons. Arsenic is poisonous in doses significantly larger than 65 mg (1 grain), and poisoning can arise from a single large dose or from repeated small doses.

BENZENE

Benzene is an aromatic organic hydrocarbon existing either as a clear liquid or a vapour. Benzene is a highly flammable and volatile material and was primarily a by-product in petroleum refineries. However, it has also been commonly used to produce styrene, synthetic rubbers, plastics, resins and solvents.

Serious health effects can occur from exposure to benzene, mainly as a result of inhalation of vapours and mists. Ingestion by swallowing and absorption through the skin are also possible routes of exposure. Health effects can result from ingesting food or drink contaminated with benzene. Symptoms can range from irritated eyes, red blistering skin, headaches, nausea and drowsiness. Benzene exposure can also induce blood and bone marrow toxicity.

COKE OVEN EMISSIONS

Coke oven emissions can be either in a condensed form as a brownish thick liquid, or uncondensed form as a vapour. Coke oven emissions are a mixture of coal tar, coal tar pitch, and creosote and contain chemicals such as benzo(a)pyrene, benzanthracene, chrysene, and phenanthrene.

Chronic (long-term) exposure to coke oven emissions in humans results in conjunctivitis, severe dermatitis, and lesions of the respiratory and digestive systems. Epidemiologic studies of coke oven workers have reported an increase in cancer of the lung, trachea, bronchus, kidney, prostate, and other sites.

ETHYLENE OXIDE

Sources of ethylene oxide emissions into the air include uncontrolled emissions or venting with other gases in industrial settings. Other sources of ethylene oxide air emissions include automobile exhaust and its release from commodity-fumigated materials. Individuals may be exposed to ethylene oxide through breathing contaminated air, from smoking tobacco or being in the proximity to someone who is smoking.

Ethylene Oxide has been linked to reproductive and tissue damage and to have teratogenic effects, cytogenetic damage and neurological effects.

ISOCYANATES

Isocyanates are compounds that contain a group of atoms consisting of Nitrogen (N), Carbon (C), and Oxygen (O), which make isocyanates very useful in the manufacturing industry. Isocyanates are commonly used in the production of plastics, foams, and coatings.

Exposure to isocyanates can be through inhalation of vapour, mist or dust, or by direct contact.

Health effects associated with exposure to isocyanates include: decreased lung function, cold and flu-like symptoms, fever and shortness of breath.

LEAD

For thousands of years lead has been used industrially because of its poor conductive property. Lead has been commonly used for electric storage batteries, pigments, paints, and rubber compounds.

Health effects associated with lead exposure can result in damage to the kidneys, gastrointestinal system, nervous system and reproductive system. Symptoms range from vomiting, and abdominal cramps to pains in joints and muscles.

MERCURY

At room temperature mercury is in the form of a silver coloured liquid. Mercury can exist in three forms: elemental (the pure form) organic or inorganic.

Mercury can be absorbed into the body by inhalation, ingestion or absorption through the skin. As a health hazard mercury can affect the respiratory system resulting in coughing and chest pains. Mercury poisoning can also cause kidney damage, skin irritation and may even harm the nervous system.

SILICA

Silica can be found naturally in two forms, crystalline or amorphous material. Crystalline silica is regulated due to its significant toxicity over the amorphous silica. The three most common forms of crystalline silica in the workplace are: quartz, cristobalite and tridymite. The physical properties of silica make it a valuable substance for use in a variety of different industries and processes such as an abrasive and scouring compound, fillers for paint and mastic and optical equipment. Health effects resulting from exposure to crystalline silica range from eye and skin irritation, coughing and sneezing to silicosis, a progressive lung disease.

VINYL CHLORIDE

Vinyl chloride is required in the manufacture of polyvinyl chloride (PVC) and at room temperature is present as a colourless, flammable gas. Vinyl chloride is also known as chloroethene, chloroethylene, and ethylene monochloride, and can result from the breakdown of other substances such as trichloroethane, trichloroethylene, and tetrachloroethylene.

Common exposure is a result of inhaling vinyl chloride from industrial leaks, hazardous waste sites and landfills. Symptoms of breathing vinyl chloride are sleepiness, dizziness or laboured breathing. Chronic exposure can cause liver and nerve damage or cancer.

**SUMMARY OF APPLICABLE
REGULATIONS AND GUIDELINES**

APPLICABLE REGULATIONS AND GUIDELINES

The following is a list of applicable regulations and guidelines:

Designated Substances

A Designated Substances report is completed to fulfil the Owner's requirements under Section 30 of the Ontario Occupational Health and Safety Act. A copy of the report must be provided to the general contractor who in turn must submit the report to all subcontractors prior to the commencement of demolition, construction or renovations.

Ontario Regulation 490/09 "Designated Substances" (O. Reg. 490/09) provides guidance on exposure monitoring, permissible exposure levels, medical monitoring, etc. for all Designated Substances in an industrial setting. There are no specific Ministry of Labour (MOL) regulations for control of the Designated Substances, with the exception of asbestos, on construction projects; however, the MOL actively enforces the general duty clause of the OHS Act to take all reasonable precautions in the circumstances of protection of a worker. It is important to note that Ontario Regulation 213/91 "Construction Projects" (O. Reg. 213/91) applies to construction projects and provides instruction on general requirements, safe work practices, reporting, etc.

ASBESTOS

Three regulations govern the control, handling, transport and disposal of asbestos in Ontario:

- Ontario Regulation 278/05 "Asbestos on Construction Projects and in Buildings and Repair Operations" made under OHS Act (O. Reg. 278/05);
- Ontario Regulation 347/90 "General – Waste Management" (as amended) made under the Environmental Protection Act (O. Reg. 347/90); and
- The regulations respecting "The Handling and Offering for Transport and Transporting of Dangerous Goods".

Ontario Regulation 278/05

Ontario Regulation 278/05 applies to buildings with regards to maintenance, renovations or demolition work where Asbestos-Containing Materials (ACMs) are or may be disturbed.

Under O. Reg. 278/05 a building owner must instate an Asbestos Management Program (AMP) for the building. The major requirements for the AMP including the following:

- Preparation and maintenance of a record of the location of asbestos-containing materials in the building;
- Notification of the building's tenants of the location of such material;
- Establishment of a training program for those employees of the owner who may work in close proximity to and disturb the material;
- Periodic inspection of the material to determine its condition;
- Remedial action on material that has deteriorated following the precautions and procedures prescribed by the regulation as Type 1, Type 2 and Type 3; and
- Removal of asbestos-containing materials to the extent practicable prior to demolition of a building or part thereof.

The regulation prescribes work to be conducted according to three procedure types. The procedure to be followed depends on the type of material and the regulation provides instruction on how the work must be performed.

Ontario Regulation 347/90

Ontario Regulation 347/90 applies to the disposal of all hazardous materials, including asbestos waste, from the location of generation to a landfill site. The regulation also prescribes procedures on how the asbestos waste is to be buried at the landfill site.

The major requirements to the building owner are to ensure that:

- The waste is appropriately packaged and labelled;
- The transport vehicle has an appropriate placard;
- The asbestos waste is transported on the same day as received by the landfill site; and
- The route of travel is the most direct.

The building owners are held responsible for their asbestos waste as prescribed in the regulation until it is accepted by the waste disposal site.

The regulations respecting the Handling and Offering for Transport and Transporting of Dangerous Goods.

These regulations govern the packaging mode of transport labelling, placards and documentation of waste while in transport. The labelling requirements differ from O. Reg. 347/90.

The major requirement to the building owner is to ensure the waste meets the packaging requirements and that a bill of lading accompanies the shipment.

LEAD

As stated previously there are no specific regulations regarding lead on construction projects; however, the MOL published a guideline entitled “Lead on Construction Projects” to raise the awareness of employers and workers to the hazards posed by lead in construction and the measures and procedures that should be taken to control those hazards.

The document provides information on the following:

- Health effects associated with lead exposure;
- Methods for controlling the lead hazard;
- Classification of work; and
- Measure and procedures for working with lead.

The guideline classifies operations involving lead-containing materials into three groups, Type 1, Type 2 and Type 3 operations. The procedure to be followed depends on the anticipated airborne concentration of lead generated during the operation, which is dependent on the type of work performed. The guideline also provides instruction on how the work must be performed.

Presently, there are no regulations which specify the allowable concentration of lead dust on surfaces. There are; however, existing guidelines which can be used when evaluating surfaces potentially contaminated with lead. US Navy Environmental Health Center (USNEHC), in their Technical Manual NEHC-TM6290.99-10, Indoor Firing Ranges Industrial Hygiene Technical Guide, recommends a clearance standard of 200 µg/ft² on interior floors and horizontal surfaces.

Ontario Regulation 833 for Control of Exposure to Biological or Chemical Agents (Reg. 833) made under the Occupational Health and Safety Act legally enforces established Occupational Exposure Limits (OELs) for a variety of agents. The OELs were developed to protect workers from hazardous concentrations that may compromise their health. Reg. 833 provides agent specific 8-hour, 15-minute, and/or maximum (ceiling) OELs. For lead, the current OEL includes an 8-hour Time-Weighted Average Limit (TWA) of 0.05 mg/m³.

SILICA

Again, there are no specific regulations regarding silica on construction projects; however, the MOL published a guideline entitled “Silica on Construction Projects” to raise the awareness of employers and workers to the hazards posed by silica in

construction and the measures and procedures that should be taken to control those hazards.

- Health effects associated with silica exposure;
- Methods for controlling the silica hazard;
- Classification of work; and
- Measure and procedures for working with silica.

The guideline classifies operations involving silica-containing materials into three groups, Type 1, Type 2 and Type 3 operations. The procedure to be followed depends on the anticipated airborne concentration of silica generated during the operation, which is dependent on the type of work performed. The guideline also provides instruction on how the work must be performed.

METHODOLOGY

GENERAL SURVEY METHODOLOGY

The survey consisted of an extensive examination of accessible areas of the building to identify hazardous building materials. Suspected hazardous building materials were assessed based on the surveyor's knowledge regarding the historical use of hazardous building materials in buildings, through published data and through previous experiences.

Accessible is defined as an area above a suspended ceiling tile, within an access hatch or behind a closed door, not impeded by any structure, article or thing. An area enclosed by cement block, plaster, solid lumber, etc., where minor demolition is required to gain entry is considered non-accessible. The walkthrough survey was augmented with layout drawings where available.

OHE's surveyors completed a Room by Room sheet which details the findings in each room entered. The Room by Room sheet details the room number and/or room description including the materials observed in the room and the condition of the material. The Room by Room sheet also records sampling information, quantity of the material(s), accessibility of the material(s) and the recommended control action.

OHE's approach to the work followed accepted industry procedures as well as our own in-house protocols. The examination of materials was largely performed visually with some occasion where physical contact was necessary to assess the condition or examine for underlying layers.

ASBESTOS SURVEY METHODOLOGY

This following information summarizes the bulk sampling methodology, analysis methodology and the methodology used for the assessment of the condition of Asbestos-Containing Materials (ACMs).

Bulk Sampling Methodology

Bulk samples were collected for subsequent analysis during the building survey. A small volume of material (approximately one teaspoon full) was removed either from a damaged section of suspect material or cut out of intact material and then temporarily repaired by sealing with tape to prevent fibre release. Tools used in sample collection were washed after each use to prevent cross-contamination. Collected samples were placed in sealed plastic bags and shipped to an independent laboratory for analysis.

Bulk Sample Analysis Methodology

Bulk samples of suspect ACMs were analyzed in accordance with a US EPA method for the determination of asbestos content in bulk materials, EPA Method 600/R-93/116 as per requirements of O. Reg. 278 which specifies this method be used to establish whether a material is considered to be an ACM (i.e., contains $\geq 0.5\%$ asbestos by dry weight) and for establishing its asbestos content and the type of asbestos.

The EPA Method requires that the samples be analyzed using the Polarized Light Microscopy (PLM) technique. The percentage of asbestos in the sample is measured as perceived by the analyst in comparison to standard area projections and is greatly influenced by the analyst's experience. The method is useful for the qualitative identification of asbestos (type) and the semi-quantitative (% estimates) determination of asbestos content in bulk samples.

The asbestos bulk samples were analyzed by an independent and NVLAP accredited laboratory. To ensure quality results, the independent laboratory chosen must successfully participate in an "Asbestos Proficiency Analytical Testing Program" and as such, this laboratory is responsible for their findings.

ASSESSMENT OF ACMS METHODOLOGY

The assessment of ACMs involves the evaluation of a number of factors by the surveyor including:

- Asbestos content
- Condition of the material
- Accessibility
- Water damage
- Activity and vibration
- Presence in air plenum/direct air stream

Where ACMs are found to be in good condition, firmly bound and not likely to deteriorate or fall, the recommended procedure is to evaluate the condition of the material on a periodic basis (which should be at least once every twelve-month period as required by O. Reg. 278/05 unless specified more frequently) in order to detect gradual deterioration. This process is referred to as an "Operation and Maintenance Program".

Damaged material is identified by surface crumbling, blistering, water stains, gouges, marring or being otherwise abraded. The accumulation of powder dust or debris similar in appearance to the suspect material can be used as confirmatory evidence.

In situations where the ACMs are found to have deteriorated or likely to fall, the following are the four abatement options that may be specified in this report:

Cleaning

The cleaning of asbestos-containing debris may be performed using a High Efficiency Particulate Air (HEPA) filter vacuum cleaner or by damp wiping techniques. All fallen asbestos material must be cleaned upon discovery. In situations where the material will continue to fall due to deterioration, damage or abrasion, additional corrective work is required, i.e., the material must be repaired, permanently enclosed or removed.

Repairs

This option is usually selected in situations where damage to the ACMs are of a minor nature and is not likely to reoccur due to accessibility or activity. This method of repair is chosen in situations where performing the repair activities will not cause significant disturbance to the underlying material. Typical repairs include the repair of thermal insulation by the application of mastic (paint adhesive) to lagging (canvas cloth). The repair of sprayed fireproofing or acoustical texturized material can involve the application of an encapsulant to limited areas of abraded or damaged material. If this option is followed, the sprayed material must be capable of supporting the additional weight of the encapsulant.

Enclosure

An enclosure consists of the construction of a physical barrier, typically constructed from drywall or metal sheeting. This option is applicable in situations where the removal of materials with asbestos is not practicable, is of a high financial cost, or where damage is likely to occur without a protective barrier. Where the installation of the barrier is likely to disturb the ACMs, the work must be performed in isolation from the building's normal environment.

Removal

This option is recommended in situations where the ACMs are damaged beyond repair and the material is highly likely to be damaged due to nearby activities, by renovation or during demolition. The precautions employed may vary depending on the volume of the material to be removed and whether the material is friable or not. Typical programs can include the use of glove bags for limited amounts of thermal pipe insulation or minor amounts of fireproofing may be removed within a small polyethylene lined enclosure. For larger amounts of asbestos, more stringent protocols are used and consist of attached shower facilities, the establishment of a negative pressure differential, a filtration system for the air and monitoring for exposure to asbestos fibres.

LEAD-IN DUST SURVEY METHODOLOGY

This following information summarizes the sampling and analysis methodology used during the survey for lead in dust.

Wipe Sampling Methodology

The wipe sampling was carried out following the National Institute for Occupational Safety and Health (NIOSH) Method 9100. The wipe sampling was conducted using Ghost wipes. The wipes are pre-packaged and moistened using de-ionized water. The wipes were used to wipe a surface area of approximately 10 centimetre (cm) x 10 cm using a template. After the area was wiped, the wipe was transferred into a clean, labeled container for transportation to the laboratory. The samples were submitted to EMSL Canada Inc., an independent, AIHA accredited laboratory, for analysis. The samples were analyzed for lead using Flame Atomic Absorption Spectrophotometry (FAAS) analytical procedures following the United States Environmental Protection Agency (US EPA) SW 846 Method 3050B/7000B.

Bulk Sampling Methodology

No bulk samples were collected during the survey.

METHODOLOGY FOR THE INVESTIGATION OF PCB-CONTAINING EQUIPMENT

The investigation typically includes a representative and random examination of fluorescent lamp ballasts and transformers. Information collected from the labels of light ballasts is cross referenced with the Environment Canada publication entitled "Identification of Lamp Ballasts Containing PCBs" (Revised August 1991). The investigation is restricted to the equipment observed and excludes PCB-containing components that may be concealed. Due to safety precautions, only the exterior of electrical equipment is inspected. If the equipment labels do not provide enough information on the contents with respect to the subject substances, the findings are noted and recommendations regarding the next course of action are provided.

METHODOLOGY FOR THE INVESTIGATION OF OZONE DEPLETING SUBSTANCES (ODS)

The investigation for ODSs included equipment and building systems that are suspected to contain ODSs, including but not limited to, chillers, coolers, refrigerators and HVAC systems. The investigation was restricted to the equipment observed and excludes components that may be concealed. Due to safety precautions, only the exterior of devices, equipment and building systems were inspected. If the equipment labels did not provide enough information on the contents with respect to the subject

substances, the findings were noted and recommendations regarding the next course of action were provided.

METHODOLOGY FOR THE INVESTIGATION OF MOULD AND WATER DAMAGED BUILDING MATERIALS

The investigation for mould and water damaged building materials included a visual inspection along accessible building finishes (e.g. walls, floors, ceilings, etc.).

GE Protimeter Survey Master Moisture Meter

The moisture content of building materials was assessed using a GE Protimeter Survey master moisture meter. This moisture meter was used to assess the moisture content (%MC) and/or wood moisture equivalent (%WME) of porous building materials which reportedly had been impacted by water. In search mode, the moisture meter is held at 25° angle against the surface in question to detect relative %MC/WME beneath the surface of the material in question. In measure mode, the moisture meter pin electrodes are inserted into the suspect substrate to obtain the (%MC/WME) of various material(s) between the electrodes. The values obtained are compared against reference value(s) (“the control”) of known “dry” building material(s). The reported values are summarized in the table below:

Less than 17% MC/WME	“DRY”	Optimal state
17-20% MC/WME	“AT RISK”	Moist conditions that may or may not support mould amplification*
Greater than 20% MC/WME	“WET” or “SATURATED”	High water activity and the likelihood of mould amplification*

* Mould amplification is dependent upon current environmental conditions and the composition of the building materials.

METHODOLOGY FOR THE INVESTIGATION OF OTHER HAZARDOUS SUBSTANCES

The scope of work for the subject survey also consisted of a visual inspection for the presence of other potentially hazardous building materials and substances including mercury, silica, manmade mineral fibres, and urea formaldehyde foam insulation.

PROJECT LIMITATIONS

PROJECT LIMITATIONS

Hazardous building materials may be present in areas not accessible for view and identification. In situations where hazardous building materials extend into a non-accessible area, the materials were assumed to also be present in those areas and have been reported as such. Contractors and maintenance personnel must be warned of the possibility of undisclosed hazardous building materials in enclosed areas. All hazardous building materials discovered in these areas must be treated as a hazardous building material until proven otherwise by sampling and analysis as per all applicable regulations and guidelines.

Asbestos is assumed to be present in various building materials which were not sampled as part of the survey since they were excluded from the scope of work. These materials include, but are not limited to vermiculite in solid block walls; materials located above solid ceilings and in manufactured wall panels; high voltage wiring; mechanical packing, ropes and gaskets; exterior cladding, soffit and fascia boards on building; roofing materials; and paper and refractory materials within boilers. In cases of demolition and/or renovation, all excluded materials (i.e., suspected ACMs) shall be assumed asbestos-containing until proven otherwise by bulk sampling and analysis.

In cases where asbestos was identified in some but not all samples of similar materials, all such material was assumed and reported to contain asbestos. When a renovation is planned, we recommend a detailed sampling of suspected asbestos-containing material to confirm the presence of asbestos. Materials that are removed through renovations must be replaced with non-asbestos-containing materials only. This must be documented. Confirmatory sampling will not be required on any new products if the manufacturer supplies written confirmation that these materials are asbestos-free.

HISTORICAL DATA

INTENTIONALLY DELETED