



# **GREY COUNTY COMMUNITY HOUSING**

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## **Designated Substance Survey**

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**Project Location:**  
Holstein, Ontario

**Prepared for:**  
Grey County  
595 9<sup>th</sup> Avenue East  
Owen Sound, ON N4K 3E3

**May 23, 2014**

**MTE File No.: 39085-100**



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## **1.0 INTRODUCTION**

MTE Consultants Inc. (MTE) was retained by the Corporation of the County of Grey (Grey County) to conduct a Designated Substance Survey for a number of multi-unit housing locations throughout Grey County. The various properties were subdivided by Grey County into “local municipalities.” This report pertains to County–owned/operated properties in Holstein, Ontario. For the purposes of this investigation approximately ten percent (10%) of all multi-unit locations were inspected.

This report pertains to the building at 392051 Grey Road 109, which contains 16 apartment units.

The purpose of the survey was to identify the presence of Designated Substances within the buildings in accordance with Section 30 of the Occupational Health & Safety Act (OHSA), in advance of renovation activities. This report meets the requirements of Section 30 of the OHSA and the requirements of an asbestos survey as prescribed by Ontario Regulation 278/05 (O. Reg. 278/05).

Background and supplemental technical information on Designated Substances (including MTE’s assessment methodologies) is provided in Appendix A. The reader should reference the information presented in Appendix A as part of this report.

## **2.0 SCOPE OF WORK**

The Scope of Work for this assessment was initiated by the County through RFP-HOU-01-14 and was completed by MTE in accordance with MTE proposal dated February 4, 2014. The Scope of Work included the following activities:

- Review of historic documentation with regards to Designated Substances for each building(where available);
- Visual inspection of all accessible areas within the buildings and all accessible exterior finishes and elements to identify suspect Designated Substances;
- Limited invasive inspection within concealed areas to identify potential Designated Substances;
- Collection of bulk building material samples suspected to contain asbestos;
- Collection of paint chip/scrape samples suspected to contain lead including varying colours and layers, where deemed applicable;
- Submission of samples to an accredited and/or qualified laboratory for analysis;
- Interpretation of laboratory results;
- Preparation of a photographic log; and
- Preparation of final report with Figures and associated Tables for use by the County.

### 3.0 METHODOLOGY AND ASSESSMENT CRITERIA

This survey was conducted by visual and laboratory identification methods for the assessment of Designated Substances and their corresponding location, use, condition, and in the case of asbestos- friability and type. Some Designated Substances were identified by visual recognition based on surveyor knowledge of the material, and therefore were not sampled. The survey was conducted on a “room-by-room” basis whereby all rooms, hallways, building exterior and mechanical service areas were inspected unless otherwise specified. This included access through false ceilings and hatches, and lifting ceiling tiles and surface finishes such as baseboards, trim, carpeting and vinyl wallpaper at various locations. Invasive openings were made (where applicable) to examine concealed vermiculite loose-fill insulation.

Notwithstanding that reasonable attempts were made to identify all Designated Substances, the possibility of concealed substances and materials exist. As a result, Designated Substances that are concealed may not become visible until substantial demolition has occurred and therefore are currently undocumented.

The primary Designated Substances investigated for the purpose of this assessment include the following:

- Asbestos
- Lead
- Mercury
- Silica

MTE is not aware of, or been informed of, any industrial processing associated with use of these premises and therefore the following Designated Substances were not expected to be present:

- Acrylonitrile;
- Arsenic;
- Benzene;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates; and
- Vinyl Chloride.

The assessment of Designated Substances is limited to building components, materials and service connections. This assessment does not include non-permanent items or personal contents, furnishings, settled dust or airborne agents unless otherwise stated.

All work was conducted in accordance with industry accepted methods and MTE Standard Operating Procedures.

#### 4.0 FINDINGS AND ANALYTICAL RESULTS

An inspection of select units within the building at 392051 Grey Road 109 was conducted by MTE on April 15, 2014. A summary of the building, general construction and finishes is as follows:

**TABLE 1: BUILDING LIST WITH CONSTRUCTION AND FINISHING DETAILS**

<b>PARKSIDE APARTMENTS – 392051 Grey Road 109</b>	
Building Type	Apartment
Number of Units Inspected (10%)	1
Structure	Poured concrete, concrete block, wood frame
Exterior Finishes	Brick, peaked asphalt shingle roof
Flooring	Carpet, vinyl floor tiles, vinyl sheet flooring, ceramic tiles, poured concrete, rubber flooring
Walls	Concrete block, drywall
Ceiling	Drywall, hard texture coat
Mechanical	Fibreglass pipe insulation
Lead-Containing Materials	Solder joints on pipe lines
Mercury-Containing Materials	Fluorescent light tubes

A summary of sampling locations and analytical results is included in Appendix B.

A detailed summary of the recommendations for management of Designated Substances for the building is provided in Appendix C. Figures of ACM and mercury-containing materials are included in Appendix D. Photographs are provided in Appendix E and the Laboratory Certificates of Analysis are provided in Appendix F.

#### **Asbestos**

Bulk samples of materials suspect to contain asbestos were organized by homogeneity for submission and stop positive laboratory analysis in accordance with the United States Environmental Protection Agency, Test Method EPA/600-R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, June, 1993 by Polarized Light Microscopy (PLM) as prescribed by O. Reg. 278/05. Bulk samples were submitted for asbestos analysis to Scientific Analytical Institute (SAI), in Greensborough, North Carolina. SAI is certified under the National Voluntary Laboratory Accreditation Program to perform asbestos analysis of bulk samples by PLM.

A total of 20 bulk samples were submitted for asbestos analysis with a total of 19 analyses being performed. The difference between the number of samples submitted and the number of samples analysed is a function of the stop positive method and/or analysis of multiple layers, performed by the laboratory, from a single sample reported as additional samples or subsets of a sample.

Asbestos fibres were reported in two sample series from flooring material, with 3% Chrysotile asbestos content reported. All other samples analysed reported no detection of asbestos above the laboratory Method Detection Limit of 0.5%. O. Reg. 278/05 indicates that a bulk material containing 0.5% or more asbestos by dry weight establishes that the entire area of homogeneous material from which the bulk material sample was taken is considered to be an ACM.

The following ACM is suspected to be present within the building, however the presence of these materials could not be confirmed due to inaccessibility, safety of the auditor(s), voiding of building warranty or impairment of property aesthetics:

- Roofing materials (Felts, Tar, Soffit);
- Interior & exterior caulking; and
- Vermiculite loose-fill insulation in wall cavities and attic spaces.

These materials must be deemed to be asbestos-containing and treated as if they contain a type of asbestos other than chrysotile. Alternatively they may be sampled prior to disturbance to assess the presence of ACM.

No vermiculite or evidence of vermiculite (in the form of spillage or seepage around wall and or ceiling penetrations) was observed at the time of the inspection and based on the type and/or age of building construction, the presence of vermiculite as loose-fill insulation is not anticipated.

## **Lead**

Representative paint scrape/chip samples were submitted for laboratory analysis by "Atomic Absorption Spectrophotometry" following USEPA Method 6020 Digestion Inductively Coupled Plasma Mass Spectrometry to SAI Laboratories Ltd., in Greensborough, North Carolina. SAI is accredited by the American Industrial Hygiene Association to perform bulk lead analysis of paint.

A total of 1 paint scrape/chip sample was collected for analysis which represents the majority of paint colours observed throughout the building.

The sample analysed reported concentrations of lead to be less than 0.009% by dry weight and is therefore classified as "Lead-Free" paint.

In addition, the following lead-containing materials were identified by visual recognition (i.e. deemed) based on the surveyor's knowledge of the material or are suspected to be present in concealed locations:

- Lead pipe gaskets; and
- Solder joints on domestic water supply pipes throughout the building.

## **Mercury**

The following mercury-containing materials were identified by visual observation:

- Fluorescent light tubes.

In select locations, lighting was observed to be provided by incandescent light bulbs and/or Light-Emitting Diode (LED) bulbs which do not contain mercury.

Thermostats within the inspected units were observed to be pneumatic, and do not contain mercury switches.

No other mercury-containing materials or components were identified at the time of this assessment.

## **Silica**

The following building materials were identified and are presumed to contain silica:

- Brick;
- Poured concrete, concrete block, cement and mortar;
- Ceramic tile and grout; and
- Asphalt containing rock or stone.

## **5.0 RECOMMENDATIONS**

A detailed summary of recommended actions is provided in Appendix D. It should be noted that these measures are the minimum required actions, as prescribed by the appropriate Acts, regulations, guidelines, standards, codes and general best practice measures.

## **Asbestos**

ACM has been identified and as such, special management, handling and disposal requirements regarding asbestos apply for any building renovation, maintenance, or demolition work. Visually confirmed or suspect ACM that were not sampled are assumed to contain a type of asbestos other than Chrysotile and must be managed as such in accordance with O. Reg. 278/05.

Asbestos materials that require removal must be conducted by contractors who are trained and experienced in the Type of asbestos operations required, and should be overseen by a qualified third party Health, Safety and Environmental professional. In order to conduct Type 3 asbestos operations, contractors must be certified as Asbestos Abatement Workers AAW (Trade code 253W) and Asbestos Abatement Supervisors AAS (Trade code 253S) by The Ministry of Training, Colleges and Universities (MTCU) as prescribed by Section 20 of O. Reg. 278/05.

## **Lead**

Lead solder joints on domestic water supply pipes were identified during the assessment, and, as such, special management, handling and disposal requirements regarding lead apply for building renovation, maintenance, or demolition work.

There are special requirements for worker training, handling and disposal of lead-containing materials. These apply to the constructor, contractor, sub-contractors and workers. Manual work to remove lead with non-powered hand tools is recommended. If at all possible “hot-work” methods and abrasive blasting should not be used to remove lead-containing materials or lead paint.

If work is to be performed on a surface coating that containing less than 0.009 % lead by weight, no special handling requirements apply with regards to lead.

The abatement contractor should consult the following reference documents for the procedures and methods required to remove and dispose of lead-containing materials:

- Ministry of Labour Occupational Health and Safety Branch's *Lead on Construction Projects Guideline, April 2011.*

## **Mercury**

All mercury-containing materials or sources should be removed, intact, prior to any work which may disturb or damage them and cause worker exposure to mercury liquid and/or vapour.

On-site crushing of fluorescent light tubes should not occur. Care should be taken to ensure safe storage of the above items until recycling or disposal can be coordinated. Under current legislation, mercury waste requires handling and disposal in accordance with Regulation 490/09 of the OHSA and Ontario Regulation 347 of the Environmental Protection Act respectively.

## **Silica**

Silica is known to be present; therefore special requirements for management and handling are required. Typically, silica can be controlled with the implementation of a dust and silica control program executed by the contractor. Such a program should



include, at a minimum: worker training regarding the hazards and controls of silica, administrative controls, engineering controls, modified work practices, personal protective equipment (PPE), worker hygiene and exposure monitoring (if applicable) to control worker exposure to silica.

The abatement contractor should also consult the following reference documents for the procedures and methods required to remove and dispose of silica-containing materials:

- MOL Occupational Health and Safety Branch's Guideline: *Silica on Construction Projects* (April 2011).

### **General Compliance and Abatement Recommendations**

In accordance with Section 30 of the *Occupational Health & Safety Act* (OHSA) and Section 8 of Ontario Regulation 278/05 the owner must provide a copy of this report to all contractors doing work at the Site. The owner must also provide a copy of this report to all prospective contractors at the time of tendering any work at the Site.

Designated Substances may be present in concealed locations and may not become apparent until significant demolition or dismantling has occurred.

Should any additional suspect Designated Substances be discovered during building demolition, work in the vicinity should cease and the materials should not be disturbed until proper notification, testing and abatement instructions are provided.

All waste generated as a result of any and all work at the site must be handled, transported and disposed of in accordance with Ontario Regulation 347 made under the Environmental Protection Act and local by-laws.

## 6.0 LIMITATIONS

Services performed by **MTE Consultants Inc.** (MTE) were conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the Environmental Engineering & Consulting profession. No other representation expressed or implied as to the accuracy of the information, conclusions or recommendations is included or intended in this report.

This report was completed for the sole use of MTE and the Client. It was completed in accordance with the approved Scope of Work referred to in Section 2.0. As such, this report may not deal with all issues potentially applicable to the site and may omit issues that are or may be of interest to the reader. MTE makes no representation that the present report has dealt with all-important environmental features, except as provided in the Scope of Work. All findings and conclusions presented in this report are based on site conditions, as they existed during the time period of the investigation. This report is not intended to be exhaustive in scope or to imply a risk-free facility.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based upon it, are the responsibility of such third parties. MTE accepts no responsibility for liabilities incurred by or damages, if any, suffered by any third party as a result of decisions made or actions taken, based upon this report. Others with interest in the site should undertake their own investigations and studies to determine how or if the condition affects them or their plans.

It should be recognized that the passage of time might affect the views, conclusions and recommendations (if any) provided in this report because environmental conditions of a property can change. Should additional or new information become available, MTE recommends that it be brought to our attention in order that we may re-assess the contents of this report.

All of which is respectfully submitted,

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# BACKGROUND & TECHNICAL INFORMATION ON DESIGNATED SUBSTANCES

Designated Substances and Hazardous Building Materials are components that are or were used in the construction and finishing of buildings as well as related building services and can pose significant health risks to occupants as well as construction and maintenance workers. Designated Substances are strictly regulated by provincial legislation and safe work guidelines to protect worker health and safety. Hazardous Building Materials are legislated provincially and/or federally by acts, regulations, codes, standards, guidelines and general best practice measures to protect worker health and safety and the environment.

## **Asbestos**

Asbestos is a naturally occurring mineral that is strong, durable, heat and chemical resistant. Due to these properties asbestos was widely used as a component in but not limited to, building materials, finishes, thermal and acoustical insulation, and fireproofing. Six commercially important types of asbestos: chrysotile, crocidolite, amosite, actinolite, anthophyllite, and tremolite, were used in construction building materials beginning in the 1930s. Use of asbestos in building materials increased throughout the years with a peak usage in the 1950s and 1960s. A sharp decline in asbestos use in building materials occurred in the 1970s with most manufacturers switching to non-asbestos substitutions in the early to mid 1970s. Buildings constructed in the 1980s have a potential for asbestos-containing building materials to be present as a gradual phasing out of the use of asbestos occurred. Consideration must be given that maintenance and renovation activities can introduce asbestos-containing materials (ACMs) into buildings constructed prior to the 1930s.

### *Asbestos Sample Requirements, Criteria and Submission*

A minimum number of bulk samples need to be collected and analysed from materials suspected of being asbestos-containing. The sampling requirements prescribed by Table 1 of Ontario Regulation 278/05 (O. Reg. 278/05) provide a minimum number of samples (1, 3, 5, or 7 depending on quantity, application, use and homogeneity) for the material to be classified as non-asbestos. A homogeneous material is defined by O. Reg. 278/05 “as material that is uniform in colour and texture”. MTE typically identifies homogeneous samples by an alphabetical suffix (a to g) to sample names to represent multiple samples of a homogeneous material.

Ontario Regulation 278/05 defines an ACM as a “material that contains 0.5 per cent or more asbestos by dry weight”. A bulk material sample containing 0.5% or more asbestos therefore establishes that material as asbestos-containing. A single positive analytical result for asbestos equal to or greater than 0.5% (from any one of the samples taken of a homogeneous material) establishes that the entire area, or amount of homogeneous material, from which the bulk samples were taken is considered to be ACM.

It should be noted that in some cases, not all the bulk samples collected are analysed. When a homogeneous material is analysed it is determined to be asbestos-containing upon the first positive detection of asbestos equal to or greater than 0.5%. This process is referred to as the “stop positive” method. Subsequent samples of the same material are therefore not analysed.

It should also be noted that some bulk samples are comprised of multiple layers and as such will require multiple analysis. In such cases each layer is isolated at the laboratory and analysed individually to determine asbestos content. As a result the laboratory may report additional samples beyond the submitted number of samples or include multiple analyses as subsets within a sample.

### *Asbestos Classification and Condition*

Materials that are determined to be asbestos-containing by visual assessment or laboratory analysis are further classified by their friability and condition.

#### *Friable Asbestos*

As defined by O. Reg. 278/05, “friable material means material that, (a) when dry, can be crumbled, pulverized or powdered by hand pressure, or (b) is crumbled, pulverized or powdered”. Friable materials have a high propensity to liberate asbestos fibres when disturbed. Examples of friable materials include, but are not limited to spray fireproofing, pipe insulation, soft texture coats, damaged materials and debris.

#### *Non-Friable Asbestos*

Conversely, non-friable materials have a low propensity to liberate asbestos fibres when disturbed. As such, non-friable ACMs pose a lower exposure hazard than friable ACMs. Examples of non-friable materials include, but are not limited to floor tiles, rolled flooring, asbestos cement products, and tar impregnated fabrics such as roofing felts.

It is important to note that non-friable ACMs can become friable if they are sufficiently deteriorated or damaged by water, chemical agents, or physical wear. Furthermore the breaking, cutting, drilling, abrading, grinding, sanding or vibrating of non-friable asbestos-containing materials, particularly with power-tools and power equipment can cause the material to become friable and increase exposure to workers, building occupants and the public.

### *Condition of Asbestos-Containing Materials*

During the survey process the general condition of ACMs were observed and noted. Materials which are damaged can pose an increased risk of exposure to workers, building occupants and the public.

ACMs are considered damaged when i) materials are delaminating, ii) thermal insulation jacketing/covering is missing, torn, or damaged, iii) asbestos-containing debris is present, iv) when non-friable materials are damaged by water, chemical agents or physical wear, or v) when the auditor observes a condition, not mentioned above that, has resulted in the damage or deterioration of ACM.

For the purpose of this assignment the condition of asbestos is categorized as Good, Fair, or Poor based on auditor observation and experience. The terms are generally defined as follows:

**“Good”:** Indicates that the ACMs are intact and undamaged.

**“Fair”:** Indicates that minor debris and/or incidental damage or deterioration to ACMs is present and minor clean-up, repairs or removal are warranted and likely adequate to control worker and/or occupant exposure.

**“Poor”:** Indicates that significant debris and/or damage, delaminating or deterioration to ACMs is present and repairs will not likely be adequate to control worker and/or occupant exposure.

#### *Asbestos-Contaminated Vermiculite*

Vermiculite is a mica-like mineral which was mined and commonly used as loose-pour insulation in concrete block walls, cavity walls and attics as thermal and acoustical insulation. Vermiculite mined in Libby, Montana from the 1920's to 1990 was sold in Canada under the brand name *Zonolite*® and possibly other brand names. The vermiculite from the Libby Mine, “which supplied the majority of the world market in vermiculite-based insulation”<sup>1</sup>; may be contaminated with asbestiform amphibole (asbestos or asbestos like fibres). The asbestos contamination originates from naturally occurring geological formations of asbestos which co-existed in the vermiculite formation. Libby vermiculite is subsequently cross contaminated with unbound asbestiform which readily become airborne when disturbed.

Due to the nature of Libby vermiculite insulation being contaminated with unbound asbestos, rather than containing bound asbestos within the matrix of the material, and the subsequent mechanism and potentially high exposure concentration, the Ontario Regulation 278/05 threshold value for asbestos-containing materials of 0.5% asbestos by dry weight should not be used as a cut off value to classify vermiculite as asbestos-containing or non-asbestos-containing. A significant exposure risk exists with concentrations of asbestiform in vermiculite below 0.5%.

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<sup>1</sup> “It’s Your Health -Vermiculite Insulation Containing Amphibole Asbestos, Health Canada September 2009 Updated: September 2009 Original : March 2004 ©Her Majesty the Queen in Right of Canada, represented by the Minister of Health, 2009.

The percentage of asbestos identified in vermiculite cannot be directly or confidently correlated to an airborne concentration and worker/occupant exposure value. Although Ontario Regulation 278/05 does not specifically address asbestos contaminated vermiculite, it is considered prudent and diligent that vermiculite insulation containing any amount of asbestos be treated as asbestos-containing/contaminated material. Type 2 or Type 3 measures and procedures prescribed by Ontario Regulation 278/05 should be followed to control worker exposure to asbestos during activities such as maintenance, renovation, construction or demolition that may or will disturb vermiculite. Site specific risk and activity based exposure assessments can be conducted, however, they are typically costly and must be considered on a case-by-case basis.

Polarized Light Microscopy (PLM) Laboratory analysis on its own may not be adequate to definitively conclude vermiculite to be non-asbestos contaminated. Due to interfering materials within the sample material matrix and the limitations of PLM analysis on vermiculite, it is recommended that vermiculite samples which report non-detection for asbestos by PLM be submitted for additional analysed by (USEPA), Test Method EPA/600/R-04/004: *Research Method for Sampling and Analysis of Fibrous Amphibole in Vermiculite Attic Insulation* or other suitable method to ensure that the negative sample result is accurate.

## **Lead**

Lead was historically used as an additive in exterior and interior paints, surface coatings and glazing as; pigments, drying agents, plasticizers, anti-corrosion and anti-weathering agents. Elemental lead in the form of raw metal was used in electrical equipment, lead-acid batteries, electronics solder; plumbing solder, as packing in cast iron bell and spigot joints of sanitary drains; flexible plumbing connections; flashing panels; acoustical dampeners; phone cable casing; capillary foundation breaks, window frame, architectural features on historic buildings and radiation barriers (primarily in medical diagnostic applications and laboratories). In the 1960's and 1970's, lead oxide was frequently added to brick pointing mortar as pigments for colouring purposes and as a plasticizer to improve workability (particularly during application in winter months). The anti-corrosion and anti-weathering properties of lead resulted in its use in mortar as an additive to improve resistance to deterioration from acidic environments.

Buildings constructed before 1980 probably contain lead-based paint. In 1976, federal regulations imposed by Health Canada limited the amount of lead in interior paint to 0.5% by weight or 5000 milligrams per kilogram (mg/kg), parts per million (ppm), or micrograms per gram ( $\mu\text{g/g}$ ). This threshold criterion is consistent with the 1992 U.S. *Department of Housing and Urban Development* which also assigns a surface concentration general equivalency of 1 milligram per square centimetre ( $\text{mg/cm}^2$ ).

In 2005, Health Canada revised the *Surface Coatings Materials Regulation* SOR/2005-109 to reduce the maximum concentration of lead in paint to 600 mg/kg. "Effective August 14, 2009, in the United States, the total lead limit set out in 16 C.F.R. 1303, *Ban*

*of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint*, was reduced from 600 mg/kg to 90 mg/kg in accordance with the *Consumer Product Safety Improvement Act* (CPSIA) of 2008. This applies to paints and similar surface coating materials for consumer use, as well as toys and other articles intended for use by children and furniture articles for consumer use that have a surface coating material applied to them.”<sup>2</sup>

In 2011 Health Canada amended the *Surface Coatings Materials Regulation* to lower the maximum amount of lead in paint to 90 mg/kg. The purpose of this amendment was to align Canada with the United States in respect of total lead levels in surface coating materials and certain products with surface coating materials applied to them. This lower limit is considered to provide adequate protection to children from lead exposure through ingestion of surface coating materials. The 90 mg/kg maximum lead content does not apply to surface coating materials that are used:

- as an anti-corrosive or an anti-weathering coating applied on the interior or exterior surface of any building or equipment that is used for an agricultural or industrial purpose;
- as an anti-corrosive or an anti-weathering coating applied on any structure, other than a building, that is used for an agricultural, industrial or public purpose;
- as a touch-up coating for metal surfaces;
- on traffic signs;
- for graphic art on billboards or similar displays;
- for identification marks in industrial buildings; or
- as material for the purposes of arts, crafts or hobbies, other than material for use by children.

Today, many paints and surface coatings used in buildings and on their associated services therefore have the potential to expose workers and/or occupants to lead. Some of these applications may be orders of magnitude above the established thresholds. It is therefore important to not rule out lead content in surface coatings based solely on building age.

Paints containing no more than 0.009% are often referred to in colloquial terms as “lead-free” although some lead can still be present. It is important to realize that zero lead content, or “lead-free”, is not truly achievable as some minuscule amount of lead may be present but not detectable by analytical methods. Toxicological studies continue to show adverse health affects from lead exposure despite the ever decreasing Tolerable Daily Intake (TDI) of lead. Subsequently guidelines, allowable thresholds and exposure values are likely to continue to decrease over time until a confident “safe level” of exposure and total safe body burden is established. The goal of the reduced thresholds and TDI is primarily to protect children from lead exposure both directly and

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<sup>2</sup> Order Amending Schedule I to the Hazardous Products Act (Surface Coating Materials) Vol. 144, No. 9 — February 27, 2010, Hazardous Products Act, Department of Health



in-utero. Since lead can be stored in bone and other body tissue and later exposed to the fetus, it is important to protect female workers and occupants from lead exposure. Men can also experience adverse health affects later in life from lead stored in the body.

Current toxicology and industrial hygiene practice is to reduce exposure to lead to a level As Low As Reasonably Achievable (ALARA). The permissible Time-Weighted Average Exposure Value (TWAEV) for worker exposure to lead in Ontario is 0.05 milligrams per cubic meter of air ( $\text{mg}/\text{m}^3$ ) as prescribed by Ontario Regulation 490/09 made under the *Occupational Health and Safety Act*. The Ontario Ministry of Labour *Guideline - Lead on Construction Projects* establishes an expectation that the employer will control construction and maintenance worker exposure to lead. Although the TWAEV does not apply to construction, the work classifications and associated preventative measures and procedures are designed to ensure that worker exposure to lead on construction will not exceed the TWAEV. Neither federal nor provincial authorities have defined a threshold concentration that would categorize a surface coating as lead-containing or non-lead-containing for the purpose of implementation of construction health and safety guidelines. Since the ALARA principle is in effect and an exposure to lead is possible, regardless of the actual lead concentration in the surface coating, the Ministry of Labour expects that even paints with low lead content would require the implementation of some minimal measures and procedures for worker protection.

Health and Safety measures on construction and maintenance projects should strive to ensure workers are not exposed to airborne lead that exceeds the  $0.05 \text{ mg}/\text{m}^3$  TWAEV or overexposed to lead through dermal contact and ingestion. It is therefore reasonable to conclude that if “lead free” (less than 0.009% lead) paints can be applied with no precautionary measures; they can most certainly be removed without the need for precautionary measures.

Due care and consideration should be given to ensure that building occupants and workers are not overexposed to lead during or after the construction or maintenance project. Non-construction workers, building users and occupants may be exposed to lead by inhalation of airborne construction dust which, once settled may become re-suspended causing secondary inhalation exposure. Ingestion and possible cutaneous absorption exposure of settled dust during and after construction is a significant exposure pathway that should not be overlooked. It is important to note that the TWAEV for workers does not apply for office environments and non-worker receptors.

For the purpose of classifying surface coatings and mortars by laboratory analysis, any material containing lead at a concentration:

- greater than 0.5% by weight is considered “Lead-Based”;
- between than 0.5% to 0.009% by weight is considered “Lead-Containing”; or
- less than 0.009% is considered “Lead-Free” however does not imply zero lead content as this is limited by analytical detection limits.

## Mercury

Mercury is typically used in building service applications such as fluorescent light tubes, compact fluorescent bulbs, metal halide (sodium halide) lamp bulbs, and neon lights as a vapour. Mercury may exist in thermostats and pipe or mechanical equipment thermometers as a liquid. Medical facilities may use mercury in blood pressure cuffs, thermometers. Dental offices may use mercury amalgam dental fillings, plumbing filter traps and associated waste. Mercury is presumed to be present in the above materials.

O. Reg. 490/09 prescribes a Time Weighted Average Exposure Value (TWAEV) for alkyl and non-alkyl mercury of  $0.01 \text{ mg/m}^3$  and  $0.025 \text{ mg/m}^3$  respectively. A Short Term Exposure Value (STEV) of  $0.03 \text{ mg/m}^3$  is prescribed for alkyl mercury compounds.

## Silica

Silica is present in rock, stone, soil, and sand. Masonry products such as concrete block, brick, and mortar, as well as concrete and associated products contain silica. Due to its ubiquitous nature, silica was historically used in a wide variety of building materials and is still used today in new construction. Silica is present in, but not limited to:

- Brick and refractory brick;
- Poured concrete, concrete block, cement and mortar;
- Ceramic tile grout;
- Granite, sandstone, quartzite and slate;
- Guniting;
- Mineral deposits;
- Rock and stone;
- Sand, fill dirt and top soil; and
- Asphalt containing rock or stone.

Due to its typical presence in building materials the assessment of silica was determined by surveyor visual recognition only. Samples of silica are rarely collected.

# SUMMARY OF BULK ASBESTOS AND LEAD-IN PAINT SAMPLES AND ANALYTICAL RESULTS

# SUMMARY OF BULK ASBESTOS SAMPLES AND ANALYTICAL RESULTS FOR HOLSTEIN

Date Sampled	Sample No.	Location	Material	Description	Asbestos Results %	Asbestos Type	ACM
PARKSIDE APARTMENTS – 392051 Grey Road 109							
April 15, 2014	S01A	Unit 107/ Living Room	12" x 12" Vinyl Floor Tile	White with Black Dot	3	Chrysotile	Yes
April 15, 2014	S01B				NA	Chrysotile	Yes
April 15, 2014	S01C				NA	Chrysotile	Yes
April 15, 2014	S02A	Unit 107/ Washroom	Vinyl Sheet Flooring	Brown Square	VSF: 3 Mastic: ND	Chrysotile -	Yes No
April 15, 2014	S02B				VSF: NA Mastic: ND	Chrysotile -	Yes No
April 15, 2014	S02C				VSF: NA Mastic: ND	Chrysotile -	Yes No
April 15, 2014	S03A	Unit 107/ Living Room	Drywall Joint Compound	-	ND	-	No
April 15, 2014	S03B	Unit 107/ Kitchen			ND	-	No
April 15, 2014	S03C	Unit 107/ Bedroom			ND	-	No
April 15, 2014	S03D	Unit 107/ Kitchen			ND	-	No
April 15, 2014	S03E	1 <sup>st</sup> Floor/ Front Lounge			ND	-	No
April 15, 2014	S03F	1 <sup>st</sup> Floor/ Corridor			ND	-	No
April 15, 2014	S03G	2 <sup>nd</sup> Floor/ Corridor			ND	-	No
April 15, 2014	S04A	Unit 107/ Living Room	Texture Coat Ceiling	Hard Stipple Pattern	ND	-	No
April 15, 2014	S04B	Unit 107/ Living Room			ND	-	No

Date Sampled	Sample No.	Location	Material	Description	Asbestos Results %	Asbestos Type	ACM
April 15, 2014	S04C	Unit 107/ Hallway	Texture Coat Ceiling	Hard Stipple Pattern	ND	-	No
April 15, 2014	S04D	Unit 107/ Bedroom			ND	-	No
April 15, 2014	S04E	1 <sup>st</sup> Floor/ Front Lounge			ND	-	No
April 15, 2014	S04F	1 <sup>st</sup> Floor/ Corridor			ND	-	No
April 15, 2014	S04G	2 <sup>nd</sup> Floor/ Corridor			ND	-	No

- Shaded rows indicate positive results and classification as asbestos-containing material.
- ND – Non-Detect: No asbestos fibres detected above laboratory method detection limits.
- NA – Not Analysed: Due to "stop-positive" detection in previous sample(s).
- Homogeneous sample series have been identified by an alphabetical suffix as applicable.

# SUMMARY OF BULK LEAD-IN PAINT SAMPLES AND ANALYTICAL RESULTS FOR HOLSTEIN

Sample Name	Room/Location	Painted Surface/ Material	Paint Colour	Lead Content (%)	Classification
PARKSIDE APARTMENTS – 392051 Grey Road 109					
LP1	1 <sup>st</sup> Floor Stairwell	Drywall Wall	Beige	<0.006	Lead-Free

- Shaded rows indicate positive results and paint classification as lead-containing or lead-based
- Lead-Based indicates lead content at or above 0.5% by dry weight.
- Lead-Containing indicates lead content between 0.009% and 0.5% by dry weight.
- Lead-Free indicates lead content less than 0.009% by dry weight (does not denote zero lead).
- ND – Non-Detect: No lead detected above laboratory method detection limits.

### TABLE OF RECOMMENDATIONS

TABLE OF RECOMMENDATIONS FOR HOLSTEIN

Desiganted Substance	Location(s)	Item(s)	Approximate Quantity	Condition	Friability	Required Action	Applicable Method/ Regulation/ Guideline
PARKSIDE APARTMENTS - 392051 Grey Road 109							
Asbestos	Unit 107 - Washroom; 1st Floor - Kitchen	12"x12" White with Black Dots Vinyl Floor Tiles	600 sq ft	Good	Non-Friable	In-Place Management (AMP)  Removal Required Prior to Building Maintenance/ Renovation/ Demolition	Removal as a Type 1 Operation, in accordance with Ontario Regulation 278/05, if work is completed using hand tools only in conjunction with dust suppression.
	Unit 107 - Washroom	Brown Square Pattern Vinyl Sheet Flooring	20 sq ft	Good	Non-Friable		
Suspect Asbestos	Interior & Exterior	Interior and Exterior Window/Door/Fixture Caulking	-	Unknown	Non-Friable	In-Place Management (AMP)  Invasive inspection, detstructive testing/sampling prior to Maintenance, Renovation, Construction, or Demolition OR Deem and handle as asbestos-containing other than Chrysotile.	Removal in accordance with Ontario Regulation 278/05, as required.
	Wall Cavities	Vermiculite loose-fill Insulation	-	Unknown	Friable		
	Exterior	Roofing Materials	-	Unknown	Non-Friable		
Lead	Mechanical Room	Solder on Pipe Connections	-	-	NA	In-Place Management  Removal Required Prior to Renovation, Construction, or Demolition.	Handle according to the Ministry of Labour Guideline Lead on Construction Projects April 2011, as required.
	Suspect Throughout	Lead Pipe Gaskets on Sanitary Drains	-	-	NA		









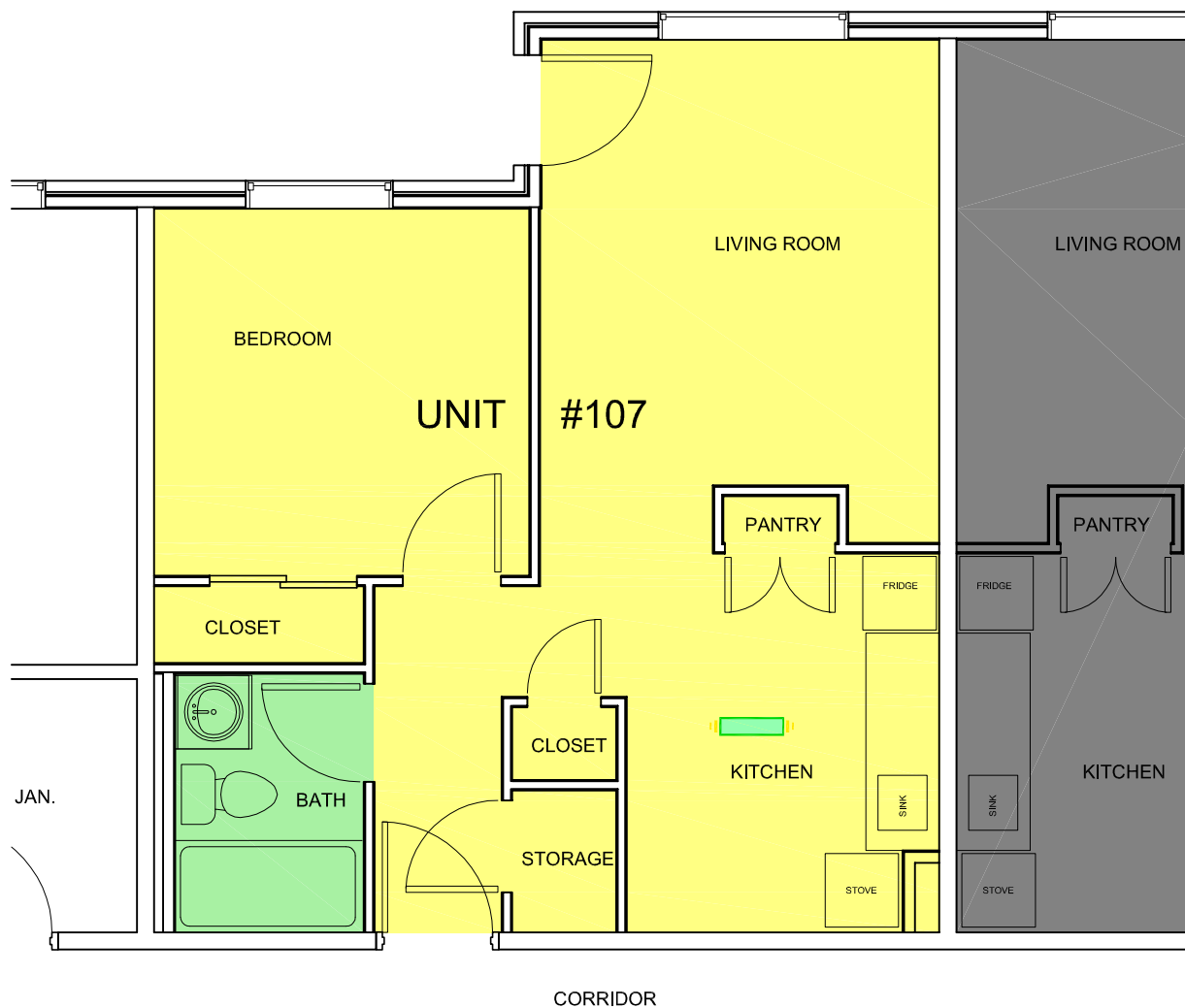
TABLE OF RECOMMENDATIONS FOR HOLSTEIN

Desiganted Substance	Location(s)	Item(s)	Approximate Quantity	Condition	Friability	Required Action	Applicable Method/ Regulation/ Guideline
Mercury	Throughout Building	Fluorescent Light Tubes	56	-	NA	<div>In-Place Management</div> <div>Intact Removal and Storage</div> <div>Reuse or Ship off Site for Disposal Prior to Renovation, Construction, or Demolition</div>	<div>No on-Site crushing. Intact removal and storage for disposal of Materials to a Licensed Facility.</div> <div>Ontario Regulation 347 Disposal</div>
Silica	Throughout - Interior & Exterior	Brick, Poured Concrete, Cement and Mortar, Ceramic Tile and Grout, Asphalt Containing Rock or Stone	-	-	NA	<div>In-Place Management</div> <div>Dust Control Measures Prior to Renovation, Construction, or Demolition</div>	<div>Manage worker exposure in accordance with the Ministry of Labour Guideline Silica on Construction Projects April 2011</div>

### FIGURES

**Legend**

-  Asbestos-Containing Non-Friable Hard Stipple Coat
-  Asbestos-Containing Floor Tile
-  Asbestos-Containing Rolled Flooring
-  No Access
-  Mercury Thermostat
-  Fluorescent Light Fixtures

**Notes:**

1. ALL DRAWINGS TO BE REFERENCED WITH THE DESIGNATED SUBSTANCE AUDIT REPORT.
2. ALL KNOWN OR SUSPECT ASBESTOS-CONTAINING MATERIALS MAY NOT BE DEPICTED ON THIS DRAWING. ASBESTOS PLASTER AND DRYWALL JOINT COMPOUNDS ARE NOT DEPICTED ON THIS DRAWING UNLESS OTHERWISE SPECIFIED. REFER TO THE DESIGNATED SUBSTANCE AUDIT FOR A COMPLETE LIST OF IDENTIFIED, KNOWN AND SUSPECT ASBESTOS-CONTAINING MATERIALS.
3. THIS FIGURE IS COLOUR DEPENDENT. PHOTOCOPIES MAY ALTER INTERPRETATION OF FIGURE. ALWAYS REFER TO ORIGINAL DRAWINGS AND ASBESTOS AUDIT REPORT.
4. THIS IS A SCHEMATIC DRAWING ONLY AND MAY NOT BE TO SCALE (N.T.S.).

**Parkside Apartments - 1st Floor - Unit 107**

Project Name

**Designated Substance Audit**

Site

392051 Grey Road 109, Holstein, ON

Client

County of Grey

Scale

NTS

MTE Project No.

39085-100


Date


May 2014


Figure No.


DUND.1


Legend


 Asbestos-Containing Non-Friable Hard Stipple Coat

 Asbestos-Containing Floor Tile

 Asbestos-Containing Rolled Flooring

 No Access

 Mercury Thermostat

 Fluorescent Light Fixtures



- Notes:
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  4. THIS IS A SCHEMATIC DRAWING ONLY AND MAY NOT BE TO SCALE (N.T.S.).

25 YEARS

1985-2010









MTE

BUILDING HEALTH SCIENCE  
DIVISION

Parkside Apartments - 1st Floor

Project Name			
Designated Substance Audit			
Site		Client	
392051 Grey Road 109, Holstein, ON		County of Grey	
Scale	MTE Project No.	Date	Figure No.
NTS	39085-100	May 2014	DUND.2

**Legend**

-  Asbestos-Containing  
Non-Friable Hard Stipple Coat
-  Asbestos-Containing Floor Tile
-  Asbestos-Containing Rolled Flooring
-  No Access
-  Mercury Thermostat
-  Fluorescent Light Fixtures

**Notes:**

1. ALL DRAWINGS TO BE REFERENCED WITH THE DESIGNATED SUBSTANCE AUDIT REPORT.
2. ALL KNOWN OR SUSPECT ASBESTOS-CONTAINING MATERIALS MAY NOT BE DEPICTED ON THIS DRAWING. ASBESTOS PLASTER AND DRYWALL JOINT COMPOUNDS ARE NOT DEPICTED ON THIS DRAWING UNLESS OTHERWISE SPECIFIED. REFER TO THE DESIGNATED SUBSTANCE AUDIT FOR A COMPLETE LIST OF IDENTIFIED, KNOWN AND SUSPECT ASBESTOS-CONTAINING MATERIALS.
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4. THIS IS A SCHEMATIC DRAWING ONLY AND MAY NOT BE TO SCALE (N.T.S.).

**Parkside Apartments - 2nd Floor**Project Name**Designated Substance Audit**Site

392051 Grey Road 109, Holstein, ON

Client

County of Grey

Scale

NTS

MTE Project No.

39085-100

Date

May 2014

Figure No.

DUND.3

### PHOTOGRAPHIC LOG

**PARKSIDE APARTMENTS – 392051 Grey Road 109**



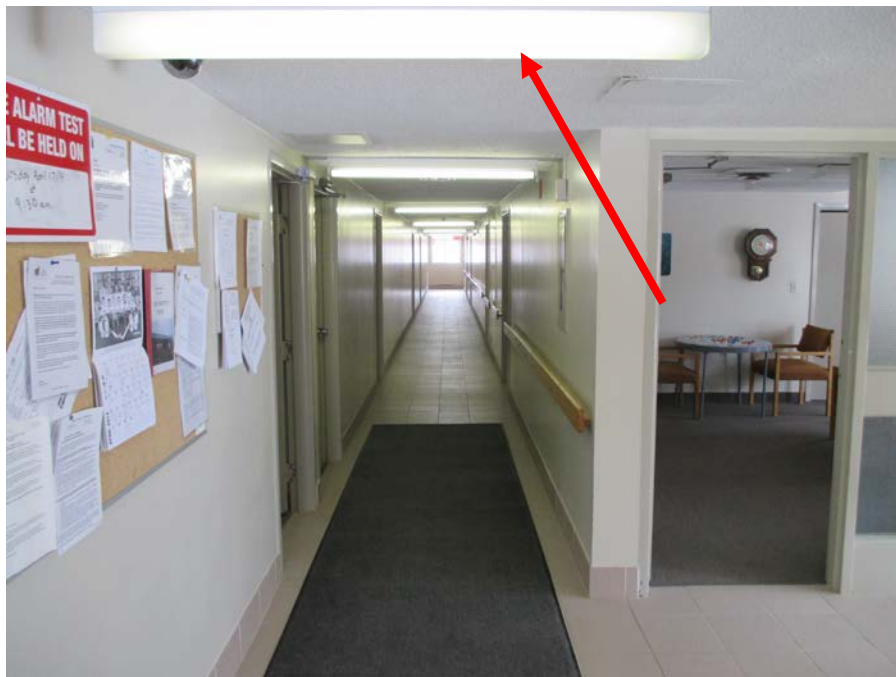
**Photograph No. 1 – Unit 107 (Front Entrance)**  
Asbestos-containing 12" x 12" white with black dots vinyl floor tile



**Photograph No. 2 – Unit 107 (Washroom)**  
Asbestos-containing brown square pattern vinyl sheet flooring



**Photograph No. 3 – 1<sup>st</sup> Floor Mechanical Room**  
Lead solder on pipe connections



**Photograph No. 4 – 1<sup>st</sup> Floor Corridor**  
Mercury-containing fluorescent light tubes



# LABORATORY CERTIFICATES OF ANALYSIS



# Bulk Asbestos Analysis

By Polarized Light Microscopy  
EPA Method: 600/R-93/116 and 600/M4-82-020



NVLAP Lab Code: 200664-0

**Customer:** MTE Consultants Inc.  
520 Bingemans Center Drive  
Kitchener ON N2B8X9

**Attn:** Greg Eller

**Lab Order ID:** 1407199

**Analysis ID:** 1407199\_PLM

**Date Received:** 4/23/2014

**Date Reported:** 5/21/2014

**Project:** 39085-100 392051 Grey Road 109,  
Holstein

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
S01A	White w black dot VFT/107 - living room	3% Chrysotile		97% Other	White Non Fibrous Homogeneous
1407199PLM_1					Dissolved
S01B	White w black dot VFT/107 - living room	Not Analyzed			
1407199PLM_2					
S01C	White w black dot VFT/107 - living room	Not Analyzed			
1407199PLM_3					
S02A - A	Brown square VSF/107 - WR	3% Chrysotile		97% Other	Beige Non Fibrous Homogeneous
1407199PLM_4	tile				Dissolved
S02A - B	Brown square VSF/107 - WR	None Detected	5% Cellulose	95% Other	Yellow Non Fibrous Homogeneous
1407199PLM_21	mastic				Dissolved
S02B - A	Brown square VSF/107 - WR	Not Analyzed			
1407199PLM_5	tile				
S02B - B	Brown square VSF/107 - WR	None Detected	5% Cellulose	95% Other	Yellow Non Fibrous Homogeneous
1407199PLM_22	mastic				Dissolved
S02C - A	Brown square VSF/107 - WR	None Detected	15% Cellulose 10% Fiber Glass	75% Other	Tan Fibrous Heterogeneous
1407199PLM_6	vinyl sheet flooring				Dissolved, Teased

**Disclaimer:** Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogeneous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Estimated MDL is 0.5%.

Bethany Nichols (23)

Analyst

Approved Signatory



# Bulk Asbestos Analysis

By Polarized Light Microscopy  
EPA Method: 600/R-93/116 and 600/M4-82-020



**Customer:** MTE Consultants Inc.  
520 Bingemons Center Drive  
Kitchener ON N2B8X9

**Attn:** Greg Eller

**Lab Order ID:** 1407199

**Analysis ID:** 1407199\_PLM

**Date Received:** 4/23/2014

**Date Reported:** 5/21/2014

**Project:** 39085-100 392051 Grey Road 109,  
Holstein

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
S02C - B	Brown square VSF/107 - WR	None Detected	5% Cellulose	95% Other	Yellow Non Fibrous Homogeneous
1407199PLM_23	mastic				Dissolved
S03A	DWJC/107 - living room	None Detected		100% Other	White Non Fibrous Homogeneous
1407199PLM_7					Crushed
S03B	DWJC/107 - kitchen	None Detected		100% Other	White Non Fibrous Homogeneous
1407199PLM_8					Crushed
S03C	DWJC/107 - bedroom	None Detected		100% Other	White Non Fibrous Homogeneous
1407199PLM_9					Crushed
S03D	DWJC/107 - kitchen	None Detected		100% Other	White Non Fibrous Homogeneous
1407199PLM_10					Crushed
S03E	DWJC/107 - 1st floor front lounge	None Detected		100% Other	White Non Fibrous Homogeneous
1407199PLM_11					Crushed
S03F	DWJC/107 - 1st f corridor	None Detected		100% Other	White Non Fibrous Homogeneous
1407199PLM_12					Crushed
S03G	DWJC/107 - 2nd f corridor	None Detected		100% Other	White Non Fibrous Homogeneous
1407199PLM_13					Crushed

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Bethany Nichols (23)

Analyst



Approved Signatory



# Bulk Asbestos Analysis

By Polarized Light Microscopy  
EPA Method: 600/R-93/116 and 600/M4-82-020



NVLAP®  
NVLAP Lab Code: 200664-0

**Customer:** MTE Consultants Inc.  
520 Bingemans Center Drive  
Kitchener ON N2B8X9

**Attn:** Greg Eller

**Lab Order ID:** 1407199

**Analysis ID:** 1407199\_PLM

**Date Received:** 4/23/2014

**Date Reported:** 5/21/2014

**Project:** 39085-100 392051 Grey Road 109,  
Holstein

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
S04A	Hard texture coat ceiling/107 - living room	None Detected		90% Other 10% Perlite	White Non Fibrous Homogeneous
1407199PLM_14					Crushed
S04B	Hard texture coat ceiling/107 - living room	None Detected		90% Other 10% Perlite	White Non Fibrous Homogeneous
1407199PLM_15					Crushed
S04C	HTC ceiling /107 - hallway	None Detected		90% Other 10% Perlite	White Non Fibrous Homogeneous
1407199PLM_16					Crushed
S04D	HTC ceiling /107 - bedroom	None Detected		90% Other 10% Perlite	White Non Fibrous Homogeneous
1407199PLM_17					Crushed
S04E	HTC ceiling /1st floor front lounge	None Detected		90% Other 10% Perlite	White Non Fibrous Homogeneous
1407199PLM_18					Crushed
S04F	HTC ceiling /1st f corridor	None Detected		90% Other 10% Perlite	White Non Fibrous Homogeneous
1407199PLM_19					Crushed
S04G	HTC ceiling /2nd f corridor	None Detected		90% Other 10% Perlite	White Non Fibrous Homogeneous
1407199PLM_20					Crushed

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Bethany Nichols (23)

Analyst

  
Approved Signatory



# Analysis for Lead Concentration in Paint Chips

by Flame Atomic Absorption Spectroscopy  
EPA SW-846 3rd Ed. Method No. 3050B/Method No. 7420



**Customer:** MTE Consultants Inc.  
520 Bingemans Center Drive  
Kitchener ON N2B8X9

**Attn:** Greg Eller

**Lab Order ID:** 1407177

**Analysis ID:** 1407177\_PBP

**Date Received:** 4/23/2014

**Date Reported:** 5/1/2014

**Project:** 39085-100; 392051 Grey Road 109,  
Holstein

Sample ID	Description	Mass (g)	Analytical Sensitivity (% by weight)	Concentration (% by weight)
Lab Sample ID	Lab Notes			
LP1	Beige / 1st floor stairwell	0.0666	0.002%	< 0.006%
1407177PBP_1				

The quality control samples run with the samples in this report have passed all AIHA required specifications unless otherwise noted. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by AIHA or any other agency of the U.S. government. (R.L. = 0.01 wt.%)

Kristin Cooke (1)

**Analyst**

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407 (336) 292-3888

**Laboratory Director**