Hazardous Building Materials Assessment

Building # E0599—RCMP Residential House, 1296 7th Avenue,
Valemount, BC

July 29, 2021

Prepared for:

Public Services and Procurement Canada
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Personnel conducting site work and documentation reviews for this project, as indicated below, have appropriate knowledge and experience in the management and control of asbestos hazards to be considered "qualified persons" by WorkSafeBC as it pertains to the provision of consultation in relation to asbestos in buildings.

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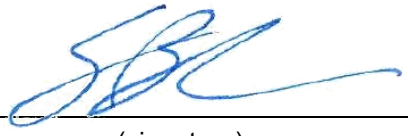
Approved by  _____
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Sean Brigden, B.Sc., P.B.Dipl., CRSP

Executive Summary

Stantec Consulting Ltd. (Stantec) was commissioned by Public Services and Procurement Canada (PSPC) on behalf of the Royal Canadian Mounted Police (RCMP) to conduct a hazardous building materials assessment of Building # E0599—RCMP Residential House, at 1296 7th Avenue, Valemount, BC (subject building), original portions of which were reportedly constructed in 1976.

The purpose of the assessment was to check for potential hazardous building materials that may require special management practices in accordance with applicable federal and provincial regulations, during planned renovations (exterior/foundation repairs and limited mould abatement), and for future maintenance.

The work was carried out in accordance with the requirements of the current versions of the following:

- Canada Labour Code, Part II Canada Occupational Health and Safety Regulations (COHSR)
- British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97)
- WorkSafeBC 2017 publication "Safe Work Practices for Handling Asbestos" (BC Asbestos Guide)
- PSPC June 5, 2017 "Asbestos Management Standard" (AMS) and "Asbestos Management Directive" (AMD)

The hazardous building materials considered during this assessment included the following:

- asbestos-containing materials (ACMs)
- lead, including lead-containing paints (LCPs)
- polychlorinated biphenyls (PCBs) in electrical equipment
- mercury in electrical equipment
- ozone-depleting substances (ODSs) in heating, ventilation and air conditioning (HVAC) equipment or fire suppression systems
- silica in building materials

This report was prepared in conjunction with the following report:

- Stantec Consulting Ltd. Report No. 123221873 entitled *Mould Assessment – Site Review Report*, Pre-Construction Mould Investigation for RCMP Valemount Residence dated July 28, 2021, prepared for Public Services and Procurement Canada

Based on Stantec's visual assessment and the laboratory analyses performed on the samples collected, as well as a review of previous reports, hazardous building materials were identified to be present.

A summary of our findings is presented in Table ES.1, below, complete with recommended actions for identified ACMs, in accordance with the provisions of the PSPC AMS (see Appendix A of this report for definitions). More thorough recommendations pertaining to the handling, removal, transportation and disposal of ACMs and other identified hazardous building materials are provided in the body of this report.

Table ES.1 Summary of Findings

Hazardous Building Material	Summary of Findings
Asbestos	The following ACMs were identified through the Previous Report, and were visually confirmed to remain within the building during the current assessment: • Drywall joint compound where present throughout the subject building. – Supplemental sampling conducted as part of this assessment indicates that joint compound within the Workshop is non-ACM. • Ceiling textured finish throughout the Upper Level (hallway, and bedrooms). Identified ACMs were observed to be in good condition. No additional ACMs were identified through this assessment.
Lead	LCPs were not identified through this assessment. Lead may be present in the following materials: • Older electrical wiring materials and sheathing.
Polychlorinated biphenyls (PCBs)	PCBs may be present in the fluorescent light ballasts of the approximately 12 light fixtures observed (two in the Lower Level bedroom, and 10 in the carport and workshop). As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons.
Mercury	Mercury vapour is present in the light tubes within the 12 fluorescent light fixtures observed throughout (two in the Lower Level bedroom, and 10 in the carport and workshop).
Ozone-depleting substance (ODS)	Building related cooling and refrigeration equipment suspected to be ODS-containing was not observed.
Silica	Silica is expected to be present in the following, which were observed in various locations throughout: • cement products such as concrete foundations and floors • gypsum and associated wall/ceiling finish materials • suspended ceiling tiles • asphalt and asphalt products containing rock or stone (e.g., roof shingles).

The statements made in this Executive Summary text are subject to the same limitations included in this report and are to be read in conjunction with the remainder of this report.

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LIST OF APPENDICES

Abbreviations

ACM	asbestos-containing material
AIHA	American Industrial Hygiene Association
AMD	Asbestos Management Directive
AMP	Asbestos Management Plan
AMS	Asbestos Management Standard
BC	British Columbia
BC Asbestos Guide	WorkSafeBC 2017 publication *Safe Work Practices for Handling Asbestos*
BC Lead Guide	WorkSafeBC 2017 publication *Safe Work Practices for Handling Lead*
BC Reg. 296/97	British Columbia's Occupational Health and Safety Regulation
COHSR	Canada Occupational Health and Safety Regulations
ELLAP	Environmental Lead Laboratory Approval Program
EMSL	EMSL Canada Inc.
HUD	Housing and Urban Development
HVAC	heating, ventilation and air conditioning
LCP	lead-containing paint
NVLAP	National Voluntary Laboratory Accreditation Program
ODS	ozone-depleting substance
OEL	occupational exposure limit
PCB	polychlorinated biphenyl
PLM	polarized light microscopy
ppm	parts per million

PSPC	Public Services and Procurement Canada
RCMP	Royal Canadian Mounted Police
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

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The site work was conducted by Ms. Lovy Mangat, B.Sc., on June 9, 2021.

1.1 UNDERSTANDING OF THE PROJECT

Stantec understands that existing information pertaining to the identity, location and approximate extent of hazardous building materials within the subject building is preliminary in nature. As such, PSPC commissioned this assessment on behalf of the RCMP as a measure of diligence in maintaining compliance with the COHSR and BC Reg. 296/97 pertaining to the identification of hazardous building materials, and to provide sufficient information to support planned renovation/repair activities.

The following documentation related to hazardous building materials was reviewed prior to undertaking the assessment (further referred to as the "Previous Report"):

- Pinchin Report No. 0205090.099 entitled *Asbestos Building Materials Survey Report, Building # E0599*, dated March 13, 2018, prepared for BGIS - WSI

2.0 SCOPE

The scope of work for this assessment involved the following:

- Review of existing information, including site drawings, previous assessment and/or abatement documentation and discussions with site personnel, where available.
- Visual assessment of readily accessible areas for the presence of suspected hazardous building materials.
- Collection of representative bulk samples from building materials suspected to contain asbestos fibres.
- Collection of paint chip samples for the determination of the lead content in paint finishes.
- Submission of samples collected for laboratory analysis.
- Evaluation and interpretation of field findings and sample analytical results to develop conclusions and recommendations pertaining to hazardous building materials identified.

2.1 LIMITATIONS

This report has been prepared for general information purposes associated with continued operations and maintenance of the subject building, as well as to support the planned renovation projects as summarized herein. This report does not necessarily constitute an assessment that would be sufficient to support other renovation projects or building demolition, which would typically require destructive removal of building finishes to observed concealed conditions. Prior to any other renovation or demolition work within the subject building, this report must be reviewed by an appropriately qualified professional (with education and experience associated with the management of hazardous building materials) to determine what, if any, additional assessment is necessary.

In preparation of this report, Stantec used professional judgment based on experience. The work was conducted in accordance with generally accepted professional standards. Stantec relied on information gathered during the site investigation and laboratory analytical reports.

This report reflects the observations made within accessible and accessed areas of the subject building, and the results of analyses performed on specific materials sampled during the current assessment. Analytical results reflect the sampled materials at the specific sample locations.

This report has been prepared for the exclusive use of the Client for the purpose of assessing general conditions in the subject building. Any use that a third party makes of this report, or reliance on, or decisions to be made on it, are the responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

2.1.1 Physical and Sampling Limitations

Sampling was conducted pertaining only to suspected ACMs and suspected LCPs. The assessment for the presence of other hazardous building materials was visual in nature and was conducted pertaining to readily visible surfaces within accessible spaces only. Concealed spaces were inspected via existing access panels, where present. Interior wall finishes were removed and/or penetrated in limited locations to access concealed areas.

Due to limitations on the agreed to scope of work for this project as well as physical limitations in accessing concealed areas there are specific limitations to the information that can be provided regarding each hazardous building material considered in this assessment, as outlined below.

- Building materials that may be present and that may contain asbestos but were not confirmed as present and/or accessible for sampling include, but are not limited to the following:
  - roofing materials (other than roof shingles, which were reportedly replaced in 2020)
  - attic insulation materials in locations more than one metre from the attic access hatch, potentially concealed beneath visible (fiberglass batt) insulation
  - sub-grade materials (e.g., asbestos cement drainage pipe)
  - flooring material concealed beneath carpeting, ceramic tile, brickwork, hardwood flooring, and/or concealed beneath existing sub-floors
  - woven tape inside duct connection joints
  - mechanical (e.g., piping and ducting) insulation within wall cavities, crawlspaces, or other concealed spaces
  - heating, ventilation and air conditioning (HVAC) units mechanical inner linings and/or insulation on the interior side of ducts.
- Samples of paint applications suspected to contain lead were collected from surfaces of major paint applications where visually different paint colours and/or types were identified. Although the surfaces where samples were collected may be covered with more than one coat of paint, the paint samples are described by the surface (visible) colour only. Attempts were made to represent all layers of paint in the samples collected. As analytical results are referenced to the surface paint colour only, the lead content of all painted surfaces similar to that represented by the surface paint colour were presumed to be the same, regardless of differing sub surface paints, if any.

- Due to height restrictions and the risk of electrical shock in handling operational light fixtures, the ballasts present in the fixtures observed were not inspected for PCB labels or other PCB identifiers. Conclusions and recommendations regarding the presence of PCBs are based on limited observations in combination with information provided by building staff regarding lighting renovations (where requested by Stantec, based on visual observations) and are presented to provide guidance regarding the likelihood that PCB-containing equipment is or is not present. The exact extent and/or number of fluorescent lamp ballasts containing PCBs, if any, will not be commented on.
  - Although they may also be present in other items in limited amounts (e.g., plastics, molded rubber parts, applied dried paints, coatings or sealants, caulking, adhesives, paper, sound-deadening materials, insulation, or felt and fabric products such as gaskets), PCBs are not expected to be present in those materials in concentrations that would necessitate the requirement for PCB-specific handling procedures, separate removal and/or disposal considerations for renovation or demolition. As such, these items were not considered in our assessment.
- The potential presence of mercury or mercury-containing equipment in inaccessible areas or as internal parts of HVAC mechanisms or other equipment was not assessed.
  - Although limited amounts of mercury may be present in paints and adhesives, mercury is not expected to be present in those materials in concentrations that would necessitate the requirement for mercury-specific handling procedures, separate removal and/or disposal considerations for renovation or demolition. As such, these items were not considered in our assessment.
- Investigation was limited to a visual review in accessed areas of readily accessible building-related cooling and refrigeration equipment which could contain ODSs. Testing was not conducted. Equipment or materials that were not assessed but that may contain ODSs included, but were not limited to, portable equipment (including domestic-type refrigerators and water coolers, occupant-owned refrigeration equipment), flexible plastic foam or rigid insulation foam, solvents, aerosol spray propellants and portable fire extinguishing equipment.
- In general, the assessment for the presence of hazardous building materials was visual in nature and was conducted pertaining to readily visible surfaces within accessible accessed spaces only. Additional hazardous building materials are potentially present in inaccessible areas not assessed including, but not limited to: ceiling spaces, wall cavities and crawlspace areas not accessed, as well as buried materials.

2.1.2 Areas Not Accessed

The following areas were not accessed, for the reasons indicated:

- rooftop (safe access not available)
- crawlspace (limited access—restricted space)
- Attic areas located greater than 1 m from the attic access hatch. Although the attic was accessed at the access hatch, for safety reasons, Stantec did not enter the attic space to assess conditions throughout.

As such, limited comments, if any, will be provided regarding the presence, quantity or condition of hazardous building materials within the above-noted areas.

3.0 FACILITY DESCRIPTION

The subject building is located at 1296 7th Avenue in Valemount, BC, and consists of a two-storey section, a single-storey section on the south end, and an attached two-vehicle carport and a workshop on the north end. The reported construction date of the original building (the two-storey section) was 1976. Additions were subsequently constructed on the south and north ends of the building, however, the construction dates are unknown. The original construction time period is consistent with those dates when hazardous building materials were commonly used.

The typical structural components, mechanical components and building finishes associated with this building consist of the following:

- foundation – slab on grade
- exterior cladding – vinyl siding
- structural – wood framing
- mechanical – un-insulated pipes and systems
- heating, ventilation and air conditioning (HVAC) – natural gas furnace with uninsulated metal ductwork
- interior walls – finished gypsum throughout and chipboard panels in carport
- interior ceilings – finished gypsum throughout and acoustic ceiling tiles in Lower Level bedroom
- interior flooring – combination of engineered hardwood, vinyl sheet flooring, and bare concrete (in carport and workshop)
- roofing material – asphalt shingles

4.0 HAZARDOUS BUILDING MATERIALS ASSESSMENT

Methodology, findings and recommendations are provided on a material-by-material basis in the following sub-sections, for each of the hazardous building materials considered in this assessment.

Background information along with information regarding health effects and the regulatory framework for each of the hazardous building materials considered is provided in Appendix A.

Floor plans showing the locations of samples collected during this assessment as well as identified hazardous building materials are provided in Appendix B.

4.1 ASBESTOS

4.1.1 Methodology

The presence of asbestos in federal workplaces and pertaining to federally regulated workers is governed by the COHSR. According to the COHSR, ACM means:

- Any article that is manufactured and contains 1% or more asbestos (by weight) at the time of manufacture, or any material that contains 1% or more asbestos when tested in accordance with accepted methods.

The presence of asbestos in the workplace in British Columbia pertaining to provincially regulated workers is governed by BC Reg. 296/97. According to the current version of BC Reg. 296/97, ACM means:

- Any material containing at least 0.5% asbestos, or vermiculite insulation with any asbestos.

As both federally regulated workers and provincially regulated workers (e.g., contractors) are expected to carry out work activities within the subject building, and as the provincial regulations have a more stringent definition of ACM, and generally include the requirements noted in the COHSR, this assessment was conducted to meet the requirements of BC Reg. 296/97.

Based on the above criteria, a visual assessment of accessible areas was undertaken in order to check for the presence of materials suspected to contain asbestos. Locations to collect discrete bulk asbestos samples of suspect building materials were identified. Samples of representative materials were then collected at these locations.

Multiple samples were collected from each “homogenous application” of observed suspected ACMs (materials suspected to contain asbestos that are uniform in material type, colour, texture application and estimated installation date) not previously sampled, based on our review of the Previous Report, and submitted to EMSL Canada Inc. (EMSL) in Mississauga, Ontario for analysis of asbestos content using polarized light microscopy (PLM) with dispersion staining, in accordance with the United States Environmental Protection Agency (USEPA) 600/R-93/116 method. EMSL’s analytical laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

The number of samples to be collected for each homogenous application of a suspected ACM was based on accepted occupational hygiene standards and protocols, on the recommendations provided in the BC Asbestos Guide, and on the assessor’s experience and understanding of the consistency of that building material’s application.

4.1.1.1 Potential Asbestos-Containing Vermiculite Insulation

As part of the assessment, Stantec assessed the subject building for areas where vermiculite insulation, a potential ACM, would likely be present. This included making note of and assessing attic spaces, floor cavities and masonry block or brick walls, which are typical areas where vermiculite is found.

4.1.1.2 Sample Results Interpretation

When asbestos is detected in any concentration in one of the samples within a set that was collected to represent a “homogenous application” of a particular material, the entire sample set, and the entire application of that material is then considered to be an ACM.

4.1.1.3 Asbestos Sampling Quality Assurance/Quality Control

Sampling activities pertaining to asbestos were conducted in accordance with Stantec’s safe work practices, which take into account current provincial regulations pertaining to such work (i.e., sampling procedures, required number of samples and laboratory analytical procedures).

Representative bulk samples were collected of accessible suspect ACMs in sufficient quantities for laboratory analysis. Suspect ACM samples were sealed in polyethylene zip-lock bags labeled with the sample number, suspect material description, and sample location. As part of sampling procedures, sampling tools were cleaned between sample collection events to avoid the potential for cross-contamination of samples.

All sample bags were compiled in order and placed into a single container accompanied with a chain of custody form outlining the project information, date, building location, number of samples, and sample description. Samples were submitted to the analytical laboratory in a sealed container via courier.

4.1.1.4 Assessment of Material Condition

A visual assessment of the condition and accessibility was also completed for each occurrence of suspect ACM. Criteria were generally based on the PSPC AMS, the provisions of the template RCMP Asbestos Management Plan (AMP) as communicated to Stantec, as well as industry standards of practice. Details on the criteria utilized are included in Appendix A.

4.1.2 Findings

The following ACMs were identified in the Previous Report, and were observed by Stantec to remain present and in good condition within the subject building:

- drywall joint compound where present throughout the subject building (excluding the Workshop)
- ceiling textured finish throughout the Upper Level (hallway, and bedrooms).

A summary list of the additional bulk samples collected by Stantec, including a description of the material, sampling location and laboratory test results is provided in Appendix C. A copy of the Laboratory Certificate of Analysis for bulk samples analyzed is provided in Appendix D.

Identified ACMs are presented in the table in Appendix E. The following information is included for each material:

- type of material that contains asbestos
- location/approximate extent of the ACM within the building
- asbestos type and percentage identified
- friability
- condition
- representative photographs, where available

4.1.2.1 Presumed Asbestos-Containing Materials

The Previous Report indicates various building materials as PACMs, however, it is not clear as to whether these materials were actually "observed" within the subject building by Pinchin. The materials listed in the Previous Report as PACMs are provided below, along with additional information included in the parentheses, regarding Stantec's observations:

- caulking (suspected ACM caulking materials were not observed)

4.1.2.2 Non-Asbestos-Containing Materials

The bulk samples collected during this assessment for which no asbestos was detected through laboratory analysis can be seen in the table in Appendix C. Refer to the documentation in Section 1.1 for materials that have been previously sampled and identified as non-asbestos-containing through sampling and laboratory analysis.

Materials Not Suspected to Contain Asbestos

Various materials within the subject building were observed and/or presumed to be present, which are not suspected to contain asbestos. Typical materials of this nature that were observed and are not considered suspected ACMs, include but are not limited to the following:

- Materials comprised of glass, such as:
  - window panes
  - fibreglass batt insulation in wall, floor or ceiling cavities, or used in other applications
  - lights and lighting components
- Materials comprised of metal, such as:
  - flashings on siding or roofs
  - electrical wiring (excluding wrap) and conduit
  - plumbing components
  - components of doors, windows and associated trim

- Materials comprised of wood, such as:
  - wall framing
  - components of doors, windows and associated trim
  - structural components
  - handrails
- Other materials generally not suspected to contain asbestos:
  - gypsum board/"drywall" (excluding suspected ACM finishing compounds)
  - poured concrete items such as foundations, floors, pads or structural beams (excluding suspected ACM finishing compounds)
  - silicone-based clear caulkings or sealants

4.1.2.3 Potential for Vermiculite Insulation

As part of the assessment, Stantec assessed the subject building for areas where vermiculite insulation, a potential ACM, would likely be present. This included making note of and assessing attic spaces, floor cavities and masonry block or brick walls, which are typical areas where vermiculite is found. No vermiculite or locations that may potentially contain vermiculite (that could not otherwise be assessed) were observed.

4.1.3 Recommendations

The following recommendations should be implemented to maintain compliance the requirements of the COHSR, BC Reg. 296/97 and the recommendations of the BC Asbestos Guide as they pertain to managing asbestos in the workplace for continued operations and maintenance, as well as for the planned renovation/repair project:

- ACMs that will be disturbed or otherwise impacted during renovation or other activities should be handled and/or removed by appropriately trained personnel (e.g., asbestos abatement contractor personnel), in accordance with the requirements of the COHSR, BC Reg. 296/97 and the BC Asbestos Guide.
- Identified ACMs in good condition can be managed in place, upon development and implementation of an AMP.
- Should a material suspected to contain asbestos fibres become uncovered during renovation and/or demolition activities, all work in the areas that may disturb the material should be stopped. Assessment and testing should be conducted by a qualified person to determine asbestos content. Confirmed ACMs should be handled in accordance with the requirements of BC Reg. 296/97 and the BC Asbestos Guide.
- Suspected ACMs deemed visually similar to the ACMs identified in this report should be considered asbestos-containing and handled as such, until assessment and testing conducted by a qualified person confirms otherwise.

- Asbestos-containing cement pipe may be present below ground—caution should be used at any time when excavation is required.
- Ensure asbestos containing waste is handled, stored, transported and disposed of in accordance with the requirements of the Federal Transportation of Dangerous Goods Regulation and the British Columbia Hazardous Waste Regulation (BC Reg. 63/88).
- This report should be maintained within the Asbestos Management Plan for the subject building.

4.2 LEAD

4.2.1 Methodology

A visual assessment of accessible areas was undertaken in order to check for the presence of materials that may contain lead. These materials included paint applications, wiring and plumbing, batteries, etc.

4.2.1.1 Lead in Paint

With respect to defining LCP, the 2017 WorkSafeBC publication *Safe Work Practices for Handling Lead* (BC Lead Guide) indicates the following:

> Unlike for asbestos-containing material, WorkSafeBC does not numerically define what would be considered a lead-containing paint or coating. All suspected paints or coatings should be tested for lead because, depending on the nature of the work, even a small amount could pose a risk to workers. In order to determine which controls and personal protective equipment would be required for a particular job, a qualified person must consider this information as part of the risk assessment.

When considering the risks of potential lead exposures associated with disturbance to surfaces coated with lead-containing products, the 2011 WorkSafeBC manual titled *Lead-Containing Paint and Coatings: Preventing Exposure in the Construction Industry*, provides some context in relation to concentrations of lead in paint, indicating the following:

- Improper removal of lead paint containing 600 mg/kg (equivalent to 600 parts per million, or “ppm”) lead results in airborne lead concentrations that exceed half of the exposure limit.
  - In accordance with the provisions of BC Reg. 296/97, the potential for exposure exceeding half of the occupational exposure limit would trigger the requirement for implementation of an exposure control plan.
- Lead concentrations as low as 90 mg/kg may present a risk to pregnant women and children.
  - Any risk assessment should include for the presence of high risk individuals within the workplace.

When reviewing the above, given the building/structure/site type and location, and the likelihood of continuous or significant presence of "high risk" individuals, paints containing 90 ppm lead or more will be considered "lead-containing" for the purpose of this report, such that appropriate risk assessments can be completed for maintenance or renovation or demolition planning. However, information regarding the lead content of all paints tested is provided herein, for reference and risk assessment should the consideration of high risk individuals be necessary, based on the requirements of a particular situation.

Based on the above, samples of potential LCPs were collected from major paint applications, in sufficient quantity to conduct analysis for total lead content. The sampling of paint applications involved the collection of paint chip samples of paint layers to the substrate, where possible. A minimum volume of 5 cc or a half teaspoon of paint chips was typically collected. Wherever necessary and possible, paint was separated from any backing material such as paper, concrete or wood and placed in a sealed, clearly labelled plastic bag.

Samples collected were submitted to EMSL for analysis of total lead content using EPA Method SW 846 3050B*/7000B. EMSL's analytical laboratory is also accredited by the American Industrial Hygiene Association (AIHA) Environmental Lead Laboratory Approval Program (ELLAP).

Welding, Burning or Torch Cutting

Although a concentration of 600 ppm lead has been used to define paint coatings as LCPs, it should be noted that this is related to painted surfaces and the determination of appropriate provisions to protect occupants and employees from exposure to elevated concentrations of lead during typical operations and maintenance or simple renovation. This does not include painted metal surfaces that are to be welded, burned or torch-cut.

Using an arc welder or oxyacetylene torch on steel that is coated with lead-containing paint can create hazardous lead fumes and is prohibited by section 12.115 of BC Reg. 296/97.

> Regulatory excerpt: **12.115 Coatings on metals**
>
> A coating on metal which could emit harmful contaminants (such as lead, chromium, organic materials, or toxic combustion products) must be removed from the base metal, whenever practicable, before welding or cutting begins.

In addition, the following information is provided in the BC Lead Guide:

- Welding or torch cutting of paints or coatings on metal can create very high concentrations of airborne lead fumes. Torch cutting structural steel, coated with paint containing as little as 130 mg/kg (equivalent to ppm) lead, can release airborne levels of lead as high as 0.8 mg/m^3 (16 times the exposure limit).

Given this information and that the analytical detection limit for lead paint analysis is approximately 80–90 ppm (not significantly different than 130 ppm, which, per above, may release airborne lead levels 16 times the exposure limit), any paint coating on a metal surface to be welded, burned or torch-cut represents a potential lead exposure hazard.

4.2.1.2 Assessment of Paint Condition

The criteria for condition evaluation pertaining to LCPs described herein are generally based on the United States Housing and Urban Development (HUD) 2012 *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, and are further detailed in Appendix A.

4.2.2 Findings

Lead is expected to be present in the following within the subject building:

- older electrical wiring materials and sheathing

4.2.2.1 Lead in Paint

A summary list of the samples collected including a description of the samples, sampling locations and laboratory analytical results is provided in Appendix F. A copy of the Laboratory Certificate of Analysis for paint chip samples analyzed is included in Appendix G.

Based on our observations and interpretations of suspected LCP sample analytical results, LCPs were not identified.

4.2.3 Recommendations

Lead-containing materials, including paints, can be managed in place, where in good condition.

When paints or other lead-containing equipment/materials within the subject building are to be disturbed and/or removed, ensure compliance with the following:

- Exposure protection requirements of the COHSR and BC Reg. 296/97, including the provisions of the BC Lead Guide
- Transportation and disposal requirements of BC Reg. 63/88
- Transportation requirements of the Federal Transportation of Dangerous Goods Regulation

Corrective action or remedial work on paint applications containing any concentration of lead should be undertaken in a manner so as to avoid generating fine particulate matter or dust (i.e., avoid sanding). Airborne lead dust or fumes should not exceed the COHSR and BC Reg. 296/97 eight-hour occupational exposure limit (OEL) of 0.05 mg/m^3 during the removal of paints and products containing any concentration of lead. The use of personal protective equipment is recommended to reduce the potential for over-exposure to lead dust.

The work tasks required and the ways in which lead-containing materials (including paints containing any concentration of lead) will be impacted will determine the appropriate respirators, measures and procedures that should be followed to protect workers from lead exposure. This should be determined by the contractor completing the work through the development of a project-specific risk assessment and safe work practice that takes this information into account along with information regarding their workforce (training, experience, etc.), policies in place (i.e., respiratory protection program), work shift duration, and other relevant factors.

4.2.3.1 Welding, Burning or Torch Cutting

Any paint coating on a metal surface to be welded, burned or torch-cut must be removed prior to that action being undertaken, unless project-specific or tasks-specific risk assessments and safe work practices are developed by a qualified person. Development of such risk assessments and work practices will involve consideration of information including, but not limited to, the following:

- composition of the material to be disturbed
- lead content of the paint coating
- methods and tools to be used, including exhaust ventilation
- duration of the work and/or work shift
- training of the personnel conducting the task
- respiratory protection program in effect

4.3 POLYCHLORINATED BIPHENYLS

4.3.1 Methodology

A visual review and/or a review of estimated/reported construction dates was completed to assess the potential presence of PCBs in electrical equipment. Equipment that is generally suspected of containing PCBs includes lamp ballasts, transformers, hydraulic systems, compressors, switchgear and capacitors.

No sampling of dielectric fluids was undertaken as part of this assessment.

4.3.2 Findings

PCBs may be present in the fluorescent light ballasts of the 12 light fixtures observed (two in the Lower Level bedroom, and 10 in the carport and workshop). As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons.

4.3.3 Recommendations

Fluorescent lamp ballasts that may contain PCBs can be managed in place, where these items are operating and in good condition. No further action is currently required until such time that renovation or demolition activities are to be conducted, or until 2025, when PCB-containing ballasts will require removal and disposal.

When decommissioned, verify the PCB content of fluorescent lamp ballasts as per the Environment Canada publication *Identification of Lamp Ballasts Containing PCBs*, 1991 (or equivalent reference).

Should a material suspected to contain PCBs become uncovered during renovation or other activities (i.e., dielectric fluids, hydraulic fluids), all work in the areas that may disturb the material should be stopped. Samples of the suspect material should be submitted for laboratory analysis to determine if PCBs are present.

PCB-containing items identified for removal and disposal should be handled, transported, stored and disposed of in accordance with the following:

- Transportation and disposal requirements of BC Reg. 63/88
- Transportation requirements of the Federal Transportation of Dangerous Goods Regulation
- Federal PCB Regulations (SOR/2008-273)

4.4 MERCURY

4.4.1 Methodology

An assessment for equipment that is likely to contain mercury (such as thermostats, thermometers and fluorescent light tubes) was completed visually. Information on the type of equipment (i.e., gauges, switches, batteries, thermometers, etc.), model and serial numbers and quantities was recorded, where such information was available.

4.4.2 Findings

Mercury vapour is present in the light tubes within the 12 fluorescent light fixtures observed throughout (two in the Lower Level bedroom, and 10 in the carport and workshop).

4.4.3 Recommendations

Identified mercury-containing items can be managed in place, therefore no further action is recommended at this time. Mercury vapour within light fixtures poses no risk to workers or occupants provided the mercury containers remain intact and undisturbed.

Complete removal of mercury-containing equipment is required prior to renovation or demolition activities that may disturb the equipment. When mercury-containing items (e.g., fluorescent light bulbs/tubes) are removed, ensure all mercury waste is handled, stored transported and disposed of in accordance with the requirements the following:

- Transportation and disposal requirements of BC Reg. 63/88
- Transportation requirements of the Federal Transportation of Dangerous Goods Regulation

Precautions should be taken if workers may potentially be exposed to mercury or mercury vapours to ensure that workers exposure levels do not exceed the occupational exposure limit of 0.025 mg/m^3 as per the COHSR and BC Reg. 296/97. This can be achieved by providing respiratory and skin protection applicable to the hazard and task to be completed.

4.5 OZONE DEPLETING SUBSTANCES

4.5.1 Methodology

An assessment for equipment or systems likely to contain ODSs (such as refrigeration/cooling equipment or fire suppression systems) was completed visually. Information on the type of equipment, manufacturer and type and quantity of refrigerants was recorded, where available.

4.5.2 Findings

Building related cooling, refrigeration or fire suppression equipment suspected to be ODS-containing was not observed.

4.5.3 Recommendations

As no suspect ODS-containing equipment was observed within the subject building during the assessment, no recommendations have been provided.

4.6 SILICA

4.6.1 Methodology

An assessment for the presence of silica was conducted visually. The presence of typical silica-containing building materials such as concrete, masonry, stone, terrazzo, refractory brick, gypsum, ceramic tile, ceiling tile and other items, was noted.

4.6.2 Findings

Silica is expected to be present in the following, which were observed in various locations throughout:

- cement products such as concrete foundations and floors
- gypsum and associated wall/ceiling finish materials
- suspended ceiling tiles
- asphalt and asphalt products containing rock or stone (e.g., roof shingles).

4.6.3 Recommendations

When silica-containing materials within the subject building are to be disturbed and/or removed (e.g., coring through concrete slabs, demolition of masonry or concrete units), ensure dust control measures are employed such that airborne silica dust concentrations do not exceed the exposure limit as stipulated by the COHSR and BC Reg. 296/97 (cristobalite and quartz—each 0.025 mg/m^3). This would include, but not be limited to, the following:

- providing workers with respiratory protection
- wetting the surface of the materials, and use of water or dust suppressing agents to prevent dust emissions
- providing workers with facilities to properly wash prior to exiting the work area.

5.0 CLOSURE

This report has been prepared for the sole benefit of the PSPC on behalf of the RCMP. Any use which a third party makes of this report, or any reliance on decisions based on it, is the responsibility of such third parties. Stantec Consulting Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The information and conclusions contained in this report are based upon work undertaken by trained professionals and technical staff in accordance with generally accepted engineering, scientific and occupational health and safety practices current at the time the work was performed. Conclusions presented in this report should not be construed as legal advice.

The conclusions presented in this report represent the best technical judgment of Stantec Consulting Ltd. based on the data obtained from the work. The conclusions are based on the site conditions encountered by Stantec Consulting Ltd. at the time the work was performed at the specific assessment and/or sampling locations, and can only be extrapolated to an undefined limited area around these locations. The extent of the limited area depends on building construction and conditions, weather, building usage and other factors. Due to the nature of the investigation and the limited data available, Stantec Consulting Ltd. cannot warrant against undiscovered environmental or health and safety liabilities.

If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided herein.

We trust that the above is satisfactory for your purposes at this time. Should you have any questions or concerns, or require additional information, please do not hesitate to contact the Stantec Project Manager at your convenience.

Regards,

Stantec Consulting Ltd.

APPENDIX A

Hazardous Building Materials Background Information, Health Effects Information and Regulatory Framework

Appendix A HAZARDOUS BUILDING MATERIALS BACKGROUND INFORMATION, HEALTH EFFECTS INFORMATION AND REGULATORY FRAMEWORK

A.1 ASBESTOS

Asbestos is a naturally occurring form of fibrous silicate that is durable and flexible; has high thermal and tensile strength; is resistant to heat, chemical corrosion and friction; does not conduct electricity; and insulates well against condensation, heat and noise. Due to these properties, asbestos was used in over 3,000 commercial products, and it is estimated that approximately 70% of the asbestos that was used in North America was used in building materials.

In buildings, and among many other potential asbestos-containing materials, asbestos is typically found in plaster, mechanical insulation, gaskets, thermal insulation on pipes, refractory material, roofing felts, floor tiles, ceiling tiles and parging, heat resistant panels, incandescent light fixture reflector plates, and any other material requiring a high degree of durability or thermal resistance.

Asbestos-containing materials are grouped into two classifications, friable and non-friable materials. Friable ACMs are those that can easily be crumbled or broken apart by mere hand pressure. When these materials break apart asbestos fibres are then released into the atmosphere. Non-friable ACMs or “manufactured products” are materials that by the nature of their manufacturing/construction do not readily allow the release of asbestos fibres. These materials should not be cut or shaped with power tools, since this procedure may allow for the release of the asbestos fibres. Some materials or “manufactured products”, such as plaster, drywall and ceiling tiles that are considered to be non-friable in an undisturbed state can become friable when damaged or disturbed.

The common use of asbestos in various building materials started to decline as a result of changes in industry practices and/or legislation beginning in the mid-1970s. For example, the spray application of asbestos-containing fireproofing was prohibited in 1986. Although many types of ACMs were no longer in use by the 1990s, some ACMs, primarily non-friable materials such as asbestos cement products (e.g., pipes, shingles, wall panels) and sealants (e.g., roofing products, firestopping products, penetration sealants, pipe thread sealants) saw continued use. A material known as vermiculite, which was found to be asbestos-contaminated as a result of the co-occurrence of asbestos forms in the vermiculite mineral deposits, was used into the mid-1990s for insulation within attics, floor spaces or within masonry block wall systems. Asbestos was still used in selected building materials through the end of 2018 in Canada, when an official ban on the import, manufacture, sale, trade or use of asbestos-containing products was implemented.

A.1.1 Health Effects

Undisturbed asbestos within building materials poses no health risks. Asbestos poses a risk when building materials containing asbestos are impacted, or disturbed, thereby releasing the asbestos fibres into the air.

Asbestos-related diseases are caused when suspended airborne asbestos fibres are inhaled and the fibres settle into various regions of the lungs and remain for extended periods. Once embedded in the lungs the asbestos fibres cause scarring within the lung tissue, ultimately leading to impaired lung function (asbestosis) and/or various cancers (lung cancer; mesothelioma). These asbestos-related diseases are irreversible and fatal. The risk of lung-related cancers is increased in individuals who smoke.

These asbestos-related diseases most often occur in individuals who have been exposed to high concentrations of airborne asbestos over a long period of time, though mesothelioma has been found in individuals with short-term exposures. Symptoms or the development of these asbestos-related diseases usually occur 10 to 25 years after exposure.

A.1.2 Regulatory Framework

Asbestos is included in the Canada Labour Code, Part II Canada Occupational Health and Safety Regulations (COHSR) and British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97). Included in both regulatory instruments are provisions for the general duties of employers, requirements for health assessments, training and project notification. There are also sections that will also apply to abatement projects, depending on the work procedures and specific work site hazards.

The COHSR and BC Reg. 296/97 also established an 8-hour OEL for asbestos (all forms) to be 0.1 fibre/cubic centimetre.

The 2017 WorkSafeBC publication *Safe Work Practices for Handling Asbestos* (BC Asbestos Guide) is used by Occupational Health and Safety officers as a guide when reviewing abatement work practices and employer codes of practice, and generally meets the requirements of the COHSR.

The BC Asbestos Guide also provides significant additional background information pertaining to asbestos, along with details on health effects and other applicable legislation within the province of British Columbia (e.g., the federal *Hazardous Products Act*, the BC Building Code and waste disposal regulations).

According to the COHSR, ACM means:

- Any article that is manufactured and contains 1% or more asbestos (by weight) at the time of manufacture, or any material that contains 1% or more asbestos when tested in accordance with accepted methods.

According to the current version of BC Reg. 296/97, asbestos-containing material (ACM) means any material containing at least 0.5% asbestos, or vermiculite insulation with any asbestos.

Disposal of asbestos waste is governed by the British Columbia Hazardous Waste Regulation (BC Reg. 63/88). The Federal Transportation of Dangerous Goods Regulation and BC Reg. 63/88 set out the requirements for the proper transport of asbestos waste in British Columbia. In general, and for transportation and disposal, the waste must be placed in a double sealed container, properly labeled, free of cuts, tears or punctures and disposed of at a licensed waste station which has been properly notified of the presence of asbestos waste.

A.1.3 Condition, Accessibility and Action Matrix for Identified ACMs

When conducting ACM assessments, it is important to note the condition of the ACMs identified. Protocols for assessing condition and accessibility of identified ACMs to determine recommended actions are generally based on the PSPC AMS, the provisions of the RCMP E Division Asbestos Management Plan (AMP), as well as industry standards of practice, as summarized in the following sections.

A.1.4 Assessment of Condition

Friable ACMs other than Mechanical Insulation

In evaluating the condition of friable ACMs other than mechanical insulation (e.g., spray-applied as fireproofing, texture, decorative or acoustic finishes), the following criteria apply:

Good

- Surface of material shows no significant signs of damage, deterioration or delamination. Up to one percent visible damage to surface is allowed within range of GOOD. Evaluation of sprayed fireproofing requires the Assessor to be familiar with the irregular surface texture typical of sprayed asbestos products. GOOD condition includes un-encapsulated or un-painted fireproofing or texture finishes, where no delamination or damage is observed, and encapsulated fireproofing or texture finishes where the encapsulation has been applied after the damage or fallout occurred.

Poor

- Sprayed materials show signs of damage, delamination or deterioration. More than one percent damage to surface of ACM spray.

In observation areas, where damage exists in isolated locations, both GOOD and POOR condition may be reported. The extent or percentage of each condition will be recorded on the Assessor's assessment form.

Fair condition is not utilized or considered as a valid criterion in the evaluation of sprayed fireproofing, sprayed insulation, or texture coat finishes.

The evaluation of ACM spray-applied as fireproofing, non-mechanical thermal insulation, or texture, decorative or acoustic finishes, which are present above ceilings, may be limited by the number of observations made, and by building components such as ducts or full height walls that obstruct the above ceiling observations. Persons entering the ceiling area are advised to be watchful for ACM DEBRIS prior to accessing or working above ceilings in areas of building with ACM, regardless of the reported condition.

Mechanical Insulation

In evaluating the condition of mechanical insulation (on boilers, breaching, ductwork, piping, tanks, equipment, etc.) the following criteria are used:

Good

- Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.

Fair

- Minor penetration damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.

Poor

- Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired. The evaluation of mechanical insulation may be limited by the number of observations made and building components such as ducts or full height walls that obstruct observations. In these circumstances, it is not possible to observe each foot of mechanical insulation from all angles.

Non-Friable and Potentially Friable Materials

Non-friable materials generally have little potential to release airborne fibres, even when damaged by mechanical breakage. However, some non-friable materials, i.e., exterior asbestos cement products, may have deteriorated so that the binder no longer effectively contains the asbestos fibres. In such cases of significantly deteriorated non-friable material, the material will be treated as a friable product, and evaluated per the above criteria.

Asbestos-Containing Material Debris

Debris from Friable ACM

The presence of fallen ACM is noted separately from the presumed friable ACM source (sprayed fireproofing, thermal insulation, texture, decorative or acoustic finishes or mechanical insulation) and is referred to as debris.

Debris from Damaged Non-Friable ACM

The presence of fallen ACM, from damaged non-friable ACM, is reported separately from the non-friable ACM source. Only fallen non-friable ACM that has become friable, is reported as debris.

A.1.5 Evaluation of Accessibility

The accessibility of building materials known or suspected of being ACM is rated according to the following criteria:

Access (A)

Areas of the building within reach of all building users. Includes areas such as gymnasiums, workshops, and storage areas where activities of the building users may result in disturbance of ACM not normally within reach from floor level.

Access (B)

Frequently entered maintenance areas within reach of maintenance staff, without the need for a ladder. Includes: frequently entered pipe chases, tunnels and service areas or areas within reach from a fixed ladder or catwalk, i.e., tops of equipment, mezzanines.

Access (C) Exposed

Areas of the building above 8'0" where use of a ladder is required to reach the ACM. Only refers to ACM materials that are exposed to view, from the floor or ladder, without removing or opening other building components such as ceiling tiles, or service access doors or hatches. Does not include infrequently accessed service areas of the building.

Access (C) Concealed

Areas of the building which require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces, etc. Observations are limited to the extent visible from the access points.

Access (D)

Areas of the building behind inaccessible solid ceiling systems, walls, or mechanical equipment, etc. where demolition of the ceiling, wall or equipment, etc., is required to reach the ACM. Evaluation of the condition and extent of ACM is limited or impossible, depending on the assessor's ability to visually examine the materials in Access D.

A.1.6 Action Matrix

Standard asbestos management protocols typically require the following responses:

- Immediate clean-up of debris that is likely to be disturbed; and,
- The removal, repair or enclosure of friable ACM in **POOR** or **FAIR** condition where continued deterioration will result in debris that is likely to be disturbed.

The following factors are typically considered in making site-specific recommendations for compliance with applicable regulations, and for the practical implementation of asbestos management:

1. ACM in **POOR** condition is not routinely repairable.
    a. If an abatement action is necessary, removal is the recommended action (enclosure is a viable option in unusual circumstances).
2. Mechanical insulation in **FAIR** condition will be repaired or removed based on the following general recommendations, applied on a case by case basis.
    a. Repair ACM mechanical insulation found in **FAIR** condition in ACCESS (B) or ACCESS (C) EXPOSED areas.
    b. Remove ACM mechanical insulation found in **FAIR** condition in ACCESS (B) and ACCESS (C) EXPOSED areas, where future damage to the ACM is likely to occur.
    c. Remove ACM mechanical insulation found in **FAIR** condition in ACCESS (A) to eliminate the potential for re-damaging ACM by all building users.
3. ACM in **GOOD** condition present in ACCESS (A) can be managed by surveillance, as long as it is not disturbed by future renovation, maintenance or demolition. Proactive removal of the ACM in ACCESS (A) will be considered where damage is possible by ongoing occupant activity (accidental or intentional).
4. Non-friable or manufactured products are considered in the action matrix as follows:
    a. Non-friable and manufactured products reported in **POOR** condition, or friable debris resulting from the deterioration of non-friable ACM, are treated as friable materials and the appropriate Action, depending on accessibility, is determined from the Action Matrix for friable ACM.
    b. For non-friable or manufactured products reported in **GOOD** condition, Action 7 (surveillance) is recommended regardless of accessibility.
5. Remove all ACM from a particular area where small quantities of asbestos are present and removal will negate the need for the use of the Asbestos Management Program in that area.

The Action Matrix provided below establishes the recommended asbestos control action. The ACTIONS are described in full following the matrix.

Table A.1 Action Matrix

Access	Friable ACM Condition			Debris
	Good	Fair	Poor	
(A)	ACTION 5/7[1]	ACTION 5/6[2]	ACTION 3	ACTION 1
(B)	ACTION 7	ACTION 6/5[3]	ACTION 3	ACTION 1
(C) exposed	ACTION 7	ACTION 6	ACTION 4	ACTION 2
(C) concealed	ACTION 7	ACTION 7	ACTION 4	ACTION 2
(D)	ACTION 7	ACTION 7	ACTION 7	ACTION 7

NOTES:

1 If material in ACCESS (A)/GOOD condition is not removed ACTION 7 is required.

2 If material in ACCESS (A)/FAIR condition is not removed ACTION 6 is required.

3 Remove ACM in ACCESS (B)/FAIR condition if ACM is likely to be disturbed.

Action Descriptions

ACTION 1 Immediate Clean-up of Debris that is Likely to be Disturbed

Restrict access that is likely to cause a disturbance of the **ACM DEBRIS** and contact an approved asbestos abatement contractor to clean up **ACM DEBRIS** immediately, utilizing correct asbestos procedures. This action is required for compliance with regulatory requirements. The surveyor should immediately notify the Property Manager of this condition.

ACTION 2 Entry into Areas with ACM Debris—Moderate Risk Precautions

At locations where **ACM DEBRIS** can be isolated in lieu of removal or cleaned up, use appropriate means to limit entry to the area. Restrict access to the area to approved asbestos abatement contractor personnel. The precautions will be required until the **ACM DEBRIS** has been cleaned up, and the source of the **DEBRIS** has been stabilized or removed.

ACTION 3 ACM Removal Required for Compliance

Contact an approved asbestos abatement contractor to remove **ACM** for compliance with regulatory requirements, utilizing asbestos procedures appropriate to the scope of the removal work.

ACTION 4 Access into Areas Where ACM is Present and Likely to be Disturbed by Access—Moderate Risk Precautions

Assessment and/or contractor personnel will use Moderate Risk asbestos precautions when entry or access into an area is likely to disturb the **ACM**. ACTION 4 must be used until the **ACM** is removed (Use ACTION 1 or 2 if debris is present).

ACTION 5 Proactive ACM Removal

Retain an approved asbestos abatement contractor to remove **ACM** in lieu of repair, or at locations where the presence of asbestos in **GOOD** condition is not desirable.

ACTION 6 ACM Repair

Retain an approved asbestos abatement contractor to repair **ACM** found in **FAIR** condition, and not likely to be damaged again or disturbed by normal use of the area or room. Upon completion of the repair work, treat **ACM** as material in **GOOD** condition and implement **ACTION 7**. If **ACM** is likely to be damaged or disturbed, during normal use of the area or room, implement **ACTION 5**.

ACTION 7 Routine Surveillance

Institute routine surveillance of the **ACM**. Trained workers or contractors must use appropriate asbestos precautions (Low Risk, Moderate Risk or High Risk) during disturbance of the remaining **ACM**.

A.2 LEAD

Lead may be used in its pure metallic form or combined chemically with other elements to form lead compounds. Metallic lead is used to make products such as electric storage batteries, ammunition, lead solder, radiation shields, pipes, and sheaths for electric cables. Metallic lead is sometimes combined with other metals such as copper, tin and antimony as lead alloys for use in the manufacture of a variety of metal products.

Organic lead compounds contain a lead atom covalently bonded to carbon. Common examples of organic lead compounds include lead “soaps” such as lead oleates, high pressure lubricants, and anti-knock agents in gasoline.

Inorganic lead compounds (or lead salts) result when lead is combined with an element other than carbon. Examples are lead oxide, lead chromate, lead carbonate and lead nitrate. Inorganic lead compounds may occur as solids or in solutions, and are used in insecticides, pigments, paints, frits, glasses, plastics, and rubber compounds.

Lead is commonly found in buildings in items such as the solder used on copper domestic pipes; the caulking on bell fittings of cast iron drainage pipes; electrical equipment/wiring; batteries (e.g., emergency exit signage batteries); lead sheeting (e.g., x-ray rooms); vent and pipe flashings; and paints and ceramic tile glazes.

A.2.1 Health Effects

Elemental lead and inorganic lead compounds are absorbed through ingestion or inhalation and can incorporate into the bone marrow, nerve tissue, brain, and kidneys. In children, symptoms of lead poisoning can include headaches, irritability, abdominal pain, vomiting, anemia, weight loss, poor attention span, noticeable learning difficulty, slowed speech development, and hyperactivity. In adults, symptoms of lead poisoning can include pain, numbness or tingling of the extremities, muscular weakness, headache, abdominal pain, memory loss, unsteady gait, pale skin, weight loss, vomiting, irritability, and anemia. Although adults are susceptible to the toxic effects of lead, children are at high risk due to the nature of a child's activities that involve the introduction of non-food items into their bodies.

Excessive airborne lead and surface contamination can be transferred to employees' hands and may results in lead ingestion. Therefore, work practices intended to minimize surface lead concentrations, such as frequent cleaning of work surfaces should be included in an overall lead exposure control plan.

A.2.2 Regulatory Framework

In the past, the United States Department of Housing and Urban Development (HUD) set a criteria of lead-based paint as 0.5% lead (by weight) or 5,000 parts per million (ppm) for evaluating whether lead is a hazard in a residential setting.

In Canada, the Surface Coating Materials Regulations (SOR/2005-109) under the federal *Hazardous Products Act* provides a concentration of lead that must not be exceeded in surface coatings that are presently sold in this country. This value has recently been reduced from 600 ppm (2005) to 90 ppm (2010). However, it is important to note that this regulation does not comment on the potential occupational exposure if the material is disturbed.

Under the COHSR and BC Reg. 296/97, a regulatory limit has been established for occupational exposure to airborne lead that may be present in a workplace. The OEL for airborne lead dust or fumes per both regulatory instruments should not exceed the TWA value of 0.05 milligram per cubic metre of air (mg/m^3). The OEL represents the time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek, to which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse health effects.

With respect to potential lead exposures associated with disturbance to surfaces coated with lead-containing products, the 2011 WorkSafeBC manual titled *Lead-Containing Paint and Coatings: Preventing Exposure in the Construction Industry*, indicates the following:

- Improper removal of lead paint containing 600 mg/kg lead results in airborne lead concentrations that exceed half of the exposure limit
  - This potential for exposure exceeding half of the occupational exposure limit would be the trigger for implementation of an exposure control plan.

- Lead concentrations as low as 90 mg/kg may present a risk to pregnant women and children
  - Any risk assessment should include for the presence of high risk individuals within the workplace.

In addition to the above, the 2017 WorkSafeBC publication *Safe Work Practices for Handling Lead* (BC Lead Guide) indicates the following:

> Unlike for asbestos-containing material, WorkSafeBC does not numerically define what would be considered a lead-containing paint or coating. All suspected paints or coatings should be tested for lead because, depending on the nature of the work, even a small amount could pose a risk to workers. In order to determine which controls and personal protective equipment would be required for a particular job, a qualified person must consider this information as part of the risk assessment.

Work procedures that can be used to assist in protecting workers and adjacent work areas from exposure to lead during disturbance activities can also be found in this document.

According to the British Columbia Hazardous Waste Regulation (BC Reg. 63/88), lead waste may be considered a toxic leachate (and require special disposal) if lead is in a dispersible form and its leachate contains greater than 5.0 milligrams per litre (mg/L) lead.

The Federal Transportation of Dangerous Goods Regulation and BC Reg. 63/88 set out the requirements for the proper transport of lead waste in British Columbia.

A.2.3 Condition Evaluation for Lead-Containing Paints

When evaluating the condition of LCPs, an attempt should be made to determine whether the deterioration is due to a moisture problem or some other existing building deficiency.

"Poor" surfaces are considered to be a hazard and should be corrected. "**Fair"** surfaces should be repaired but are not yet considered to be a hazard; if not repaired, they should be monitored frequently. "**Good/intact"** surfaces should be monitored to ensure that they remain in a nonhazardous condition.

In addition, the presence of paint debris must be considered in evaluating condition. Given the variety of paint uses, there are many applications that can have a tendency for the paint to "wear" from the surface slowly, over an extended period of time. Conditions where paint has worn from a surface are worth noting for maintenance discussions (i.e., related to re-coating the surface should, for example, the coating provide weather protection), however, in the absence of loose paint chip debris/dust, such conditions would not represent a potential exposure situation related to lead.

The condition evaluation criteria for LCPs are summarized in Table A.2, below.

Table A.2 Lead-Containing Paint Condition Categories

Type of Building Component[1]	Total Area of Deteriorated Paint on Each Component		
	Good/Intact	Fair[2]	Poor[3]
Exterior components with large surface areas	Entire surface is intact.	Less than or equal to 10 square feet	More than 10 square feet
Interior components with large surface areas (walls, ceilings, floors, doors	Entire surface is intact.	Less than or equal to 2 square feet	More than 2 square feet
Interior and exterior components with small surface areas (window sills, baseboards, soffits, trim)	Entire surface is intact.	Less than or equal to 10% of the total surface area of the component	More than 10% of the total surface area of the component

NOTES:

1 Building component in this table refers to each individual component or side of building, not the combined surface area of all similar components in a room (e.g., a wall with 1 square foot of deteriorated paint is in "fair" condition, even if the other three walls in a room are intact).

2 Surfaces in "fair" condition should be repaired and/or monitored but are not considered to be "lead-containing paint hazards".

3 Surfaces in "poor" condition are considered to be "lead-containing paint hazards" and should be addressed through abatement or interim controls.

A.3 POLYCHLORINATED BIPHENYLS (PCBS)

PCBs are man-made toxic chemicals whose physical and chemical properties produce the following attributes: fire resistance, low electrical conductivity, high resistance to thermal breakdown, high chemical stability and resistance to oxidants and other chemical.

PCBs were used widely as coolants and lubricants in transformers, capacitors, and other electrical equipment. In fluorescent fixtures, PCBs were usually found within the small capacitors inside the ballast that controls the lamp. The Federal Chlorobiphenyls Regulation, SOR/91-152, prohibited the use of PCBs in electrical equipment manufactured after July 1, 1980. Stocks of items such as ballasts containing PCBs may have been used into the early or mid-1980s.

A.3.1 Health Effects

PCBs are insoluble in water; however, they readily dissolve in fats and other organic compounds. It is these attributes and fat-solubility that allow PCBs to persist in the environment and bio-accumulate in humans and animals. Exposure to PCBs can affect the immune system, reproductive system, nervous system and endocrine system. In humans, PCBs are potentially cancer-causing.

A.3.2 Regulatory Framework

As of September 5, 2008, under subsection 93(1) of the Canadian *Environmental Protection Act,* (CEPA), Federal PCB regulations were published by the Canada Gazette Part II (SOR/2008-273) that imposed specific deadlines for the elimination of all PCBs in concentrations at or above 50 milligrams/kilogram (mg/kg). This regulation required the elimination of all PCBs and PCB-containing materials currently in-use and in storage and limited the period of time PCB materials could be stored before being eliminated. Other aspects of the regulation govern the labelling and reporting of stored PCB materials and equipment as well as improved practices for the management of PCBs that remain in use (i.e., those with PCB concentrations less than 50 mg/kg) until their eventual elimination.

Under SOR/2008-273, the following end-of-use dates were established:

- December 31, 2009
  - Equipment containing PCBs in a concentration of 500 mg/kg or more.
  - Equipment containing PCBs in a concentration of at least 50 mg/kg but less than 500 mg/kg when located in sensitive locations (i.e., drinking-water treatment plant, food or feed processing plant, child care facility, preschool, primary or secondary school, hospital, or senior citizen care facility or the property on which the plant or facility is located, within 100 m of it).
- December 31, 2014
  - Certain specified equipment not replaced by the 2009 deadline due to technical constraints for engineered-to-order equipment or if the facility is scheduled for permanent closure before 2014.
- December 31, 2025
  - Equipment containing PCBs in a concentration of at least 50 mg/kg but less than 500 mg/kg when located in non-sensitive locations.

In addition to the above, a maximum storage period of one year is allowed for PCBs and products that contain PCBs at each of the following non-sensitive locations:

- owner's PCB storage site
- PCB storage site of an authorized facility for decontamination or of an authorized transfer site
- PCB storage site of an authorized destruction facility

For British Columbia, according to the British Columbia Hazardous Waste Regulation (BC Reg. 63/88):

- PCB wastes are defined as: PCB liquid, PCB solid, and PCB equipment that have been taken out of service for the purpose of treatment, recycling, reuse, or disposal, or for the purpose of storage prior to treatment, recycling, reuse, or disposal.
  - "PCB liquid" means any liquid containing more than 50 parts per million (ppm) by weight of PCB.
  - "PCB solid" means any material or substance other than PCB liquid that contains or is contaminated with chlorobiphenyls at a concentration greater than 50 ppm by weight of chlorobiphenyls.
  - "PCB Equipment" means any manufactured item that contains or is contaminated with a PCB liquid or PCB solid is PCB equipment. While items of PCB equipment are often electrical components such as transformers or capacitors, the definition includes other items such as contaminated drums and containers.
    - NOTE: An item of equipment from which PCB liquid or PCB solid has been removed is still PCB equipment until it has been decontaminated by an approved protocol. This is because the removal is a treatment process and the equipment, until decontaminated, is a residue from the treatment.

In British Columbia, PCB equipment becomes PCB wastes as soon as it is removed from service. This is the case even if the intent is to treat, recycle, or reuse the equipment.

When PCB wastes are stored in British Columbia, the full requirements of BC Reg. 63/88 apply to:

- 1.0 kg or more of pure PCB
- 100 L or more of any liquid containing more than 50 ppm of PCB
- 100 kg or more of any material other than a liquid, contaminated with more than 50 ppm of PCB

These amounts are the total of all amounts at a single location owned or controlled by the same person, and include PCB equipment. BC Reg. 63/88 also provides packaging requirements for storage, labeling requirements, and waste destruction requirements.

The Federal Transportation of Dangerous Goods Regulation sets out the requirements for the proper transport of PCB waste across provincial boundaries.

A.4 MOULD

Mould can be found everywhere in the outside environment—on plants, in soil and on dead and decaying matter (i.e., dead leaves). Mould requires two main conditions in order to grow—a source of food (a substrate typically comprised of cellulose) and water. Sources of food for mould are plentiful in outdoor and indoor environments; however, it is the presence of water in an indoor environment that will determine mould growth. The source of water can be a result of a water pipe leak or even excess condensation. Thus, the key to controlling mould indoors is to control the presence of water.

The removal of building materials impacted by mould growth may require workers with specific training and experience using work procedures that have been developed to protect workers and work areas from exposure to elevated concentrations of airborne mould.

A.4.1 Health Effects

There are a number of documented cases of health problems related to exposure to indoor fungi. Both high-level, short-term exposures and lower-level, long-term exposures can result in illness. The most common symptoms from exposure to mould in indoor environments are runny nose, eye irritation, cough, congestion, aggravation of asthma, headache, flu-like symptoms, fatigue, and skin rash. People with suppressed immune systems may be susceptible to fungal infections as a result of exposure to indoor moulds.

People who are exposed to mould growth on building materials will not necessarily exhibit adverse health effects. However, the mould must still be removed. Humans are at risk from indoor mould when fungal spores, fragments or metabolites are released into the air and inhaled or physically contacted (dermal exposure).

Not everyone experiences allergic reaction; the susceptibility to exposure varies with the individual's genetic predisposition, age, state of health, and concurrent exposures. For these reasons, and because the measurement of exposure is not standardized and biological markers of exposure to fungi are largely unknown, it is not possible to establish "safe" or "unsafe" levels of exposure. However, federal and provincial policies have been written to minimize mould exposure and the elimination of mould indoors.

A.4.2 Susceptibility to Mould Exposure

People's reaction to mould exposure is quite varied, and although anyone can be affected, some people may be more susceptible and at greater risk, including:

- infants and children
- elderly
- pregnant women
- individuals with respiratory conditions or allergies and asthma
- persons with weakened immune system (e.g., chemotherapy patients, organ or bone marrow transplant recipients, and people with HIV infections or autoimmune diseases)

People with specific health concerns should consult their doctor if concerned about mould exposure. Symptoms that may appear to stem from mould exposure may be due to other causes such as bacterial or viral infections or other allergies.

A.4.3 Regulatory Framework

At present, there are no specific laws or regulations governing acceptable levels of mould in buildings. The lack of specific regulatory standards is due in part to an inability to establish exposure-response relationships. Variation in individual susceptibility, limitations in sampling and analytical techniques, and the vast number of fungal agents and their products make it difficult to establish safe levels of exposure for all individuals. With a lack of defined exposure criteria, current Health Canada and other agency guidelines on the assessment and control of mould contamination in public buildings are largely based on prudent avoidance (i.e., remove any indoor growth or amplification site of mould, regardless of the concentration of moulds or their products in the indoor environment).

Although there are currently no regulations in Canada pertaining specifically to mould in buildings, occupational health and safety regulations typically require employers to take every precaution reasonable in the circumstances for the protection of workers. For example, BC Reg. 296/97 indicates the following:

- Section 4.79(1):
  - Employer must ensure that the indoor air quality is investigated when
    a) complaints are reported
- Section 4.79(2):
  - Air quality investigation must include
    c) sampling for airborne contaminants suspected to be present in concentrations associated with the reported complaints

The WorkSafeBC Guideline for Part 4 of BC Reg. 296/97 discusses the application of the Regulation to workplaces with mould showing on exposed or hidden surfaces, or where mould may be a factor in complaints regarding indoor air quality. The guideline provides information for investigating indoor air quality complaints with respect to mould contamination, including information on sampling for the presence of moulds in buildings. Information is also provided on possible health effects and for cleanup personnel involved in the remediation of buildings damaged by water and mould.

Several additional guidelines and other resources describe procedures for the investigation and remediation of mould. The following documents indicate that mould observed in occupied building should be remediated in accordance with these procedures:

- Environmental Abatement Council of Ontario's (EACO) *Mould Abatement Guidelines*, 2010—Edition 2
- *Mould Guidelines for The Canadian Construction Industry*, Canadian Construction Association—82, 2004
- *Guidelines on Assessment and Remediation of Fungi in Indoor Environment*, New York City Department of Health and Mental Hygiene, November 2008
- *Bioaerosols: Assessment and Control,* ACGIH 1999

- *Fungal Contamination in Public Buildings: Health Effects and Investigation Methods*, Federal-Provincial Committee on Environmental and Occupational Health 2004
- *Field Guide for the Determination of Biological Contaminants in Environmental Samples*, AIHA 1996
- *Clean-Up Procedures for Mould in Houses,* Canada Mortgage and Housing Corporation (CMHC) 2004

A.5 MERCURY

Mercury is commonly found in buildings as mercury vapour lighting, thermostats/thermometers with mercury-containing glass ampoules, electrical switches and can also be found in minor amounts in fluorescent lamp tubes and vapour bulbs and may be present in stable forms in adhesives. If mercury is exposed to the air, odourless vapours are formed.

A.5.1 Health Effects

Routes of exposure for mercury and mercury compounds include inhalation, ingestion, skin and/or eye contact. Mercury is hazardous if it is inhaled or absorbed through the skin, therefore exposure controls (including both respiratory protection and skin protection) are important to consider.

Elemental (metallic) mercury most often causes health effects through inhalation of its vapour, which can be absorbed through the lungs. This kind of exposure can result when elemental mercury is spilled (or products that contain elemental mercury break) and the mercury is exposed to the air. Vapour concentrations can vary especially in warm or poorly-ventilated indoor spaces where the airborne concentration can exceed the permissible exposure limit (provincially set).

Chronic mercury “poisoning” can be caused by long-term exposure to low airborne concentrations (or low levels) of mercury. Symptoms or effects of mercury exposure include: tremors, emotional changes (e.g., mood swings, nervousness, irritability, etc.), neuromuscular effects (e.g., muscular weakness, twitching), mental changes/disturbances, digestive disturbances, headaches, insomnia, and changes in nervous response.

Factors that determine the severity of the health effects from mercury exposure include the following:

- chemical form of mercury (e.g., elemental, methylmercury, inorganic and organic)
- dose
- age of individual exposed
- duration of exposure
- route of exposure—as listed above
- health of individual exposed

A.5.2 Regulatory Framework

In Canada, the Surface Coating Materials Regulations (SOR/2005-109) under the federal *Hazardous Products Act* provides a concentration of mercury that must not be exceeded in surface coatings that are presently sold in this country. This value was set at 10 ppm in 2005. However, it is important to note that there is not a direct correlation between the concentration of mercury in a material to the potential occupational exposure if the material is disturbed.

Exposure to mercury is regulated by the COHSR and BC Reg. 296/97. The regulated occupational exposure limit for airborne mercury according to both regulatory instruments is 0.025 mg/m^3 (eight-hour TWA).

Mercury disposal should be through a scrap dealer (elemental mercury), recycling firm for mercury vapour and returned to the manufacturer for light tubes and fixtures. Disposal of mercury waste is governed by BC Reg. 63/88.

The Federal Transportation of Dangerous Goods Regulation and BC Reg. 63/88 set out the requirements for the proper transport of mercury waste in British Columbia.

A.6 OZONE-DEPLETING SUBSTANCES

Ozone-depleting substances (ODSs) are chemical agents known as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) used in various refrigeration equipment including air-conditioning, heat pump, refrigeration or freezer units. They have also been used in solvents, as aerosol additives in the production of foam insulation and in fire extinguishing equipment.

A.6.1 Health Effects

Health effects are not typically related to exposure to ODSs directly, but to the consequences of ODS release to the atmosphere, subsequent degradation of the earth's ozone layer, and implications associated with increased UVB light exposure.

A.6.2 Regulatory Framework

ODSs are regulated in British Columbia by the British Columbia *Waste Management Act*—Ozone Depleting Substances and Other Halocarbons Regulation (BC Reg. 387/99 as amended by BC Reg. 109/2002).

On federal land, aboriginal land and federal works, buildings and undertakings, the Federal Halocarbon Regulation 2003 (SOR/2003-289, including associated amendments) applies. All other buildings and uses of refrigerants and other agents are under the Ozone-Depleting Substances Regulations 1998 (SOR/99-7), under CEPA. The regulations prohibit the release of halocarbons contained in refrigeration systems, air conditioning systems, fire extinguishers (except to fight a fire that is not a fire caused for training purposes) or containers or equipment used in the re-use, recycling, reclamation or storage of a halocarbon.

The regulations also impose restrictions on the servicing and dismantling, disposing of or decommissioning of any system containing halocarbons and requires the recovery of halocarbons into an appropriate container by a certified individual. The regulation also details an owner's record-keeping obligations.

If ODS-containing materials are to be removed and disposed of, all ODSs must be handled, recycled, stored, and/or disposed of in accordance with the requirements of BC Reg. 63/88.

The Federal Transportation of Dangerous Goods Regulation and BC Reg. 63/88 set out the requirements for the proper transport of ODS waste in British Columbia.

A.7 SILICA

Silica is a scientific name that refers to a mineral group made up of silicon and oxygen. It is the crystalline form of silica that is of concern when considering health effects. Crystalline silica occurs in several forms including quartz, cristobalite and tridymite. Silica's many uses include sand in golf courses and playgrounds, sandblasting abrasives, glass, ceramics, building materials (concrete, grout, bricks, blocks, asphalt, acoustical tiles, floor tiles, and plaster), electronic components.

Dust containing respirable crystalline silica is produced during construction-related activities such as the following:

- demolition
- masonry, bricklaying and/or stone setting
- rock drilling
- repair and/or finishing of concrete materials
- abrasive blasting
- dry sweeping
- quarrying and mining

A.7.1 Health Effects

Crystalline silica dust particles, which are small enough to be inhaled into the lungs (respirable size), can cause a number of health problems. As with asbestos, silica within building materials poses no threat to human health if left undisturbed.

Exposure to crystalline silica airborne dust my cause scaring of the lungs with coughing and shortness of breath—also known as "silicosis", a form of disabling, progressive, and sometimes fatal pulmonary fibrosis.

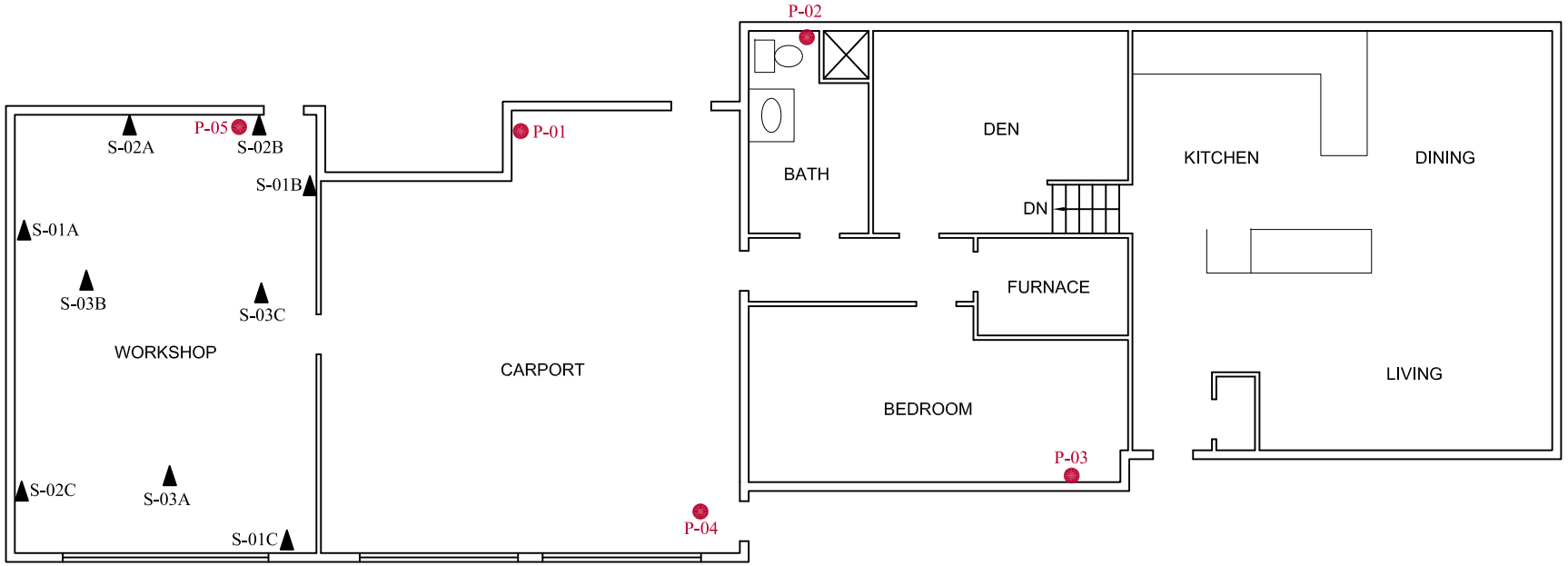
A.7.2 Regulatory Framework

Regulations pertaining to silica are provided in BC Reg. 296/97. Included are general provisions (minimizing release; keeping worksite clear of unnecessary accumulations; ensuring methods for decontamination prevent generation of airborne silica), provisions for “restricted areas” (where there is a reasonable chance that the airborne concentration of silica exceeds or may exceed the occupational exposure limit), provisions for use in abrasive blasting, and provisions for health assessments for workers exposed to silica.

BC Reg. 296/97 and the COHSR also established the eight-hour OEL for silica to be 0.025 mg/m^3 for each cristobalite and quartz.

APPENDIX B

Floor Plans



MAIN FLOOR AND LOWER LEVEL

LEGEND

- ▲ BULK SAMPLE LOCATION FOR ASBESTOS
- ● PAINT CHIP SAMPLE LOCATION FOR LEAD

NOTES:
1. **DRYWALL JOINT COMPOUND THROUGHOUT IS ASBESTOS-CONTAINING (EXCLUDING THE WORKSHOP).**
2. **CEILING TEXTURED FINISH THROUGHOUT UPPER LEVEL IS ASBESTOS-CONTAINING.**
3. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

HAZARDOUS BUILDING MATERIALS ASSESSMENT

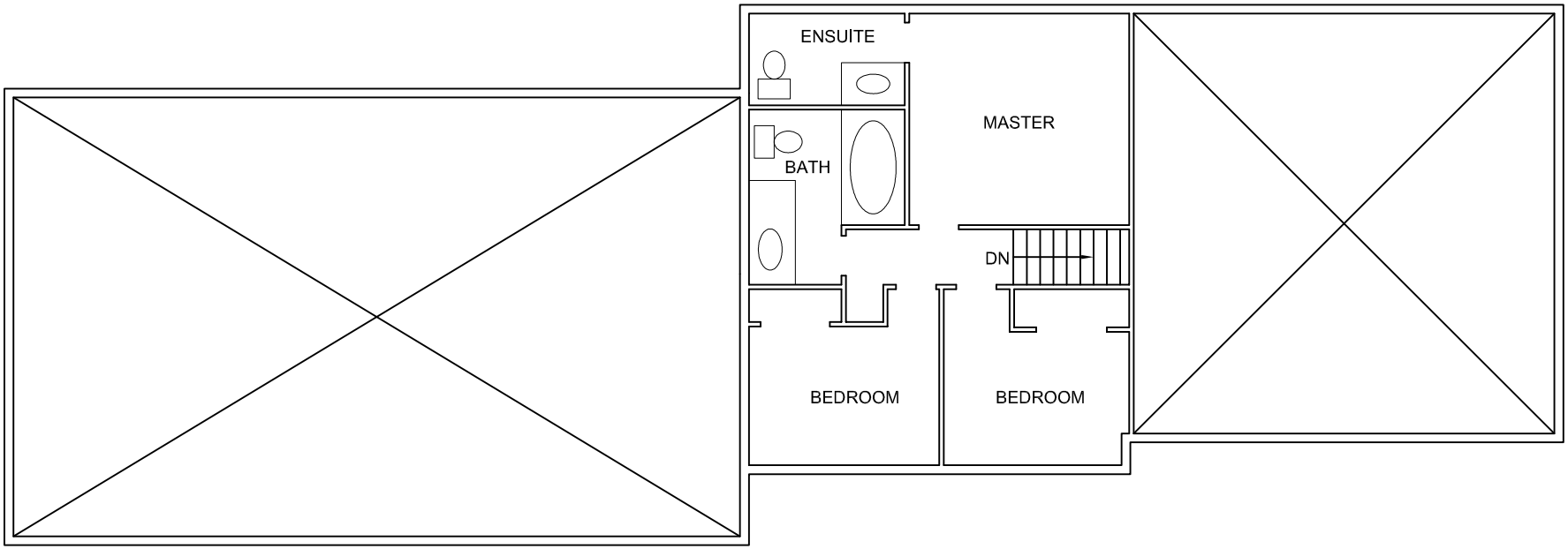
RCMP VALEMOUNT RESIDENCE, 1296 7TH AVENUE, VALEMOUNT, BC

Client: PUBLIC SERVICES AND PROCUREMENT CANADA

Project No.:	123221873
Scale:	N.T.S.
Date:	21/07/07
Dwn. By:	CD CS SL2021070021
App'd By:	LM

Dwg. No.: 1

Stantec



UPPER LEVEL

NOTES: **1. DRYWALL JOINT COMPOUND THROUGHOUT IS ASBESTOS-CONTAINING (EXCLUDING THE WORKSHOP).**
2. CEILING TEXTURED FINISH THROUGHOUT UPPER LEVEL IS ASBESTOS-CONTAINING.
3. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

HAZARDOUS BUILDING MATERIALS ASSESSMENT

RCMP VALEMOUNT RESIDENCE, 1296 7TH AVENUE, VALEMOUNT, BC

Client: PUBLIC SERVICES AND PROCUREMENT CANADA

Project No.:	123221873
Scale:	N.T.S.
Date:	21/07/07
Dwn. By:	CD CS SL2021070022
App'd By:	LM

Dwg. No.: 2

Stantec

APPENDIX C

Summary of Results: Analysis of Bulk Samples for Asbestos

Appendix C SUMMARY OF RESULTS: ANALYSIS OF BULK SAMPLES FOR ASBESTOS

Table C.1 Suspected ACM Bulk Sample and Analytical Results Summary
Building # E0599— RCMP Residential House, 1296 7th Avenue, Valemount, BC

Material/Homogenous Application Description	Sample Number	Sample Location	Result (% Asbestos)
Wall textured finish throughout workshop	S-01A	Workshop	None Detected
	S-01B	Workshop	None Detected
	S-01C	Workshop	None Detected
Drywall joint compound throughout workshop	S-02A	Workshop	None Detected
	S-02B	Workshop	None Detected
	S-02C	Workshop	None Detected
Ceiling textured finish throughout workshop	S-03A	Workshop	None Detected
	S-03B	Workshop	None Detected
	S-03C	Workshop	None Detected

NOTE:

1. Discrepancies between sampled material or location descriptions between this table and the laboratory certificate—this table is to be considered correct.

APPENDIX D

Laboratory Analytical Report—Asbestos: Polarized Light Microscopy

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 Order 552109539
Customer ID: 55JACQ30Z
Customer PO: 123221873
Project ID:

Attn: Lovy Mangat
Stantec Consulting Ltd.
200-325 25th Street SE
Calgary, AB T2A 7H8

Phone: (403) 781-4143
Fax: (403) 716-8049
Collected:
Received: 6/14/2021
Analyzed: 6/21/2021

Proj: RCMP Valemount (123221873)

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: S-01A ***Lab Sample ID:*** **552109539-0001**
Sample Description: garage/workshop/wall textured finish

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2021	White	5.0%	95.0%	None Detected	

Client Sample ID: S-01B ***Lab Sample ID:*** **552109539-0002**
Sample Description: garage/workshop/wall textured finish

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2021	White	3.0%	97.0%	None Detected	

Client Sample ID: S-01C ***Lab Sample ID:*** **552109539-0003**
Sample Description: garage/workshop/wall textured finish

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	White	0.0%	100.0%	None Detected	

Client Sample ID: S-02A ***Lab Sample ID:*** **552109539-0004**
Sample Description: garage/workshop/drywall joint compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2021	White	1.0%	99.0%	None Detected	

Client Sample ID: S-02B ***Lab Sample ID:*** **552109539-0005**
Sample Description: garage/workshop/drywall joint compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2021	White	1.0%	99.0%	None Detected	

Client Sample ID: S-02C ***Lab Sample ID:*** **552109539-0006**
Sample Description: garage/workshop/drywall joint compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	White	0.0%	100.0%	None Detected	

Client Sample ID: S-03A ***Lab Sample ID:*** **552109539-0007**
Sample Description: garage/workshop/ceiling textured compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2021	White	10.0%	90.0%	None Detected	

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 Order 552109539
Customer ID: 55JACQ30Z
Customer PO: 123221873
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: S-03B ***Lab Sample ID:*** **552109539-0008**

Sample Description: garage/workshop/ceiling textured compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2021	White	10.0%	90.0%	None Detected	

Client Sample ID: S-03C ***Lab Sample ID:*** **552109539-0009**

Sample Description: garage/workshop/ceiling textured compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	White	0.0%	100.0%	None Detected	

Analyst(s):

Delaney Breen PLM (6)
Stephanie Achaiya PLM (3)

Reviewed and approved by:

Matthew Davis or other approved signatory
or Other Approved Signatory

None Detected = <0.1%. 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. Estimation of uncertainty available upon request. This report is a summary of multiple methods of analysis, fully compliant reports are available upon request. A combination of PLM and TEM analysis may be necessary to ensure consistently reliable detection of asbestos. This report must not be used to claim product endorsement by NVLAP of any agency or the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 06/21/202114:22:04

APPENDIX E

Summary of Identified Asbestos-Containing Materials

Appendix E SUMMARY OF IDENTIFIED ASBESTOS-CONTAINING MATERIALS

Table E.1 Summary of Identified Asbestos-Containing Materials
Building # E0599—RCMP Residential House, 1296 7th Avenue, Valemount, BC

Identified ACM Description and Condition Information		
Drywall joint compound where present throughout the subject building (excluding the Workshop)		
% Type	3% Chrysotile (Previous Report)	
Friability	Non-friable in situ; potentially friable during renovation or demolition	
Condition	Good	
Accessibility	A	
Action	7	
Approx. Quantity	605 square metres	
Ceiling textured finish throughout the Upper Level (hallway, and bedrooms)		
% Type	5% Chrysotile (Previous Report)	
Friability	Non-friable in situ; potentially friable during renovation or demolition	
Condition	Good	
Accessibility	C (exposed)	
Action	7	
Approx. Quantity	50 square metres	

APPENDIX F

Summary of Results: Analysis of Paint Chip Samples for Lead

Appendix F SUMMARY OF RESULTS: ANALYSIS OF PAINT CHIP SAMPLES FOR LEAD

Table F.1 Suspected Lead-Containing Paint Sample and Analytical Results Summary Building # E0599—RCMP Residential House, 1296 7th Avenue, Valemount, BC

Sample Number	Paint Colour/Application	Sample Location	Result (ppm)
P-01	White on wood walls throughout carport	Carport	<84
P-02	Tan on drywall walls in various locations	Lower Level Bathroom	310
P-03	Grey on drywall walls throughout	Lower Level Bedroom	<80
P-04	Grey on concrete floors in carport/workshop	Carport	<85
P-05	White on drywall walls throughout workshop	Workshop (east door)	<82

NOTE:

1. Discrepancies between sampled material or location descriptions between this table and the laboratory certificate—this table is to be considered correct.

APPENDIX G

Laboratory Analytical Report—Lead: Paint Chip Analysis

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	552109520
CustomerID:	55JACQ30Z
CustomerPO:	123221873
ProjectID:	

Attn: **Lovy Mangat**
Stantec Consulting Ltd.
200-325 25th Street SE
Calgary, AB T2A 7H8

Phone:	(403) 781-4143
Fax:	(403) 716-8049
Received:	6/14/2021 11:21 AM
Collected:	6/9/2021

Project: **RCMP VALEMOUNT (123221873)**

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

Client SampleDescription	*Collected*	*Analyzed*	*Weight*	*RDL*	*Lead Concentration*
P-01	6/9/2021	6/16/2021	0.2370 g	84 ppm	<84 ppm
552109520-0001	Site: WHITE ON WOOD WALLS - GARAGE				
P-02	6/9/2021	6/16/2021	0.2467 g	81 ppm	310 ppm
552109520-0002	Site: TAN ON DRYWALL WALLS - LOWER LEVEL WASHROOM				
P-03	6/9/2021	6/16/2021	0.2512 g	80 ppm	<80 ppm
552109520-0003	Site: GREY ON DRYWALL WALLS - LOWER LEVEL BEDROOM				
P-04	6/9/2021	6/16/2021	0.2342 g	85 ppm	<85 ppm
552109520-0004	Site: GREY ON CONCRETE FLOORS - GARAGE				
P-05	6/9/2021	6/16/2021	0.2441 g	82 ppm	<82 ppm
552109520-0005	Site: WHITE ON DRYWALL WALLS - GARAGE/WORKSHOP				

Rowena Fanto, Lead Supervisor
or other approved signatory

Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.
Samples analyzed by EMSL Canada Inc. Mississauga, ON AIHA-LAP, LLC - ELLAP #196142

Initial report from 06/21/2021 10:12:24