National Research Council Canada | Conseil national de recherches Canada

Administrative Services and Property Management Branch | Direction des services administratifs et gestion de l'immobilier

NRC · CNRC

## *Addendum / Addenda*

| No./N° |
|---|
| 1 |

| Project Description / Description de projet | | |
|---|---|---|
| M-6 Hot Well Piping Replacement | | |
| Solicitation No./ No de sollicitation | Project No./N° de projet | W.O. No./N° d'ordre de travail |
| 14-22025 | M6-3562 | |
| Project Engineer / Ingénieur de projet | | Date |
| Allan Smith | | June 2nd ,2014 |

| **Notice**: | **Nota**: |
|---|---|
| This addendum shall form part of the tender documents and all conditions shall apply and be read in conjunction with the original plans and specifications. | Cet addenda fait partie intégrale des dossiers d'appel d'offres; toutes les conditions énoncées doivent être lues et appliquées en conjonction avec les plans et les devis originaux. |

Hazardous Materials Assessment Report

Rapport d'évaluation sur les matières dangereuses

END / FIN

PINCHIN
ENVIRONMENTAL

# Hazardous Building Materials Assessment
# National Research Council of Canada
# Building M-06
# 1200 Montreal Road, Ottawa, Ontario

Prepared for:
National Research Council of Canada
Building M-19, 1200 Montreal Road
Ottawa, ON K1A 0R6

**Attention: Denis Labelle**

Pinchin File: 93951

May 27, 2014



555 LEGGET DRIVE, SUITE 1001, TOWER A, KANATA, ONTARIO K2K 2X3 PHONE: (613) 592-3387 FAX: (613)-592-5897
ENVIRONMENTAL HEALTH & SAFETY MANAGEMENT SERVICES FROM OFFICES ACROSS CANADA
www.pinchin.com

# EXECUTIVE SUMMARY

Pinchin Environmental Ltd. (Pinchin) was retained by the National Research Council of Canada (NRC, Client) to conduct an assessment of hazardous building materials in Building M-06 located at 1200 Montreal Road in Ottawa, Ontario.

The assessed area was limited to the parts of the building within the area to be affected by the planned hot well and de-aerator tank replacement project. The extent of the assessed area was outlined by Mr. Allan Smith of the NRC both during the site tour on May 7, 2014 and during the assessment on May 12, 2014.

## Summary of Findings

***Asbestos***

- Asbestos-containing materials were not present.

***Lead***

- Two paint chip samples were found to contain detectable concentrations of lead;
- Lead may be present in solder throughout the building; and
- Back-up emergency lights, present throughout the building, were powered with lead-acid batteries.

***Mercury***

- Mercury vapour was present in all fluorescent lamps; and
- Mercury is present as a liquid in thermometers associated with mechanical equipment within the assessed areas.

***Silica***

- Free crystalline silica (common construction sand) is present in concrete, mortar, brick, masonry, ceramics, plaster etc., where present in the building.

## Summary of Recommendations

***Asbestos***

- No remedial action is required at this time. Please refer to the report for the long term recommendations which may be necessary prior to building maintenance or renovations. We recommend from practical experience that asbestos-containing materials be removed if it may be disturbed by maintenance, construction or demolition activities. Sample all materials excluded from sampling or presumed to contain asbestos immediately prior to removal where required.

***Lead***

- Remedial action is not required at this time. Construction disturbance of lead-containing products may result in excessive exposure to lead. Cutting, grinding, drilling, removing stripping or demolition of materials containing or coated with lead should be completed only with proper respiratory protection and other worker safety precautions as outlined in the Ministry of Labour Guideline – Lead on Construction Projects, 2011.

***Mercury***

- Remedial action is not required at this time. Avoid direct skin contact with mercury materials and avoid inhalation of mercury vapour. Avoid breaking lamps. If disposed of, waste lamps should be treated as likely hazardous waste, due to mercury content. Pinchin recommends treatment of fluorescent lamp waste to reclaim mercury. Recycle all mercury containing materials.

***Silica***

- Remedial action is not required at this time. Construction disturbance of silica-containing products may result in excessive exposures to airborne silica, especially if performed indoors and dry. Cutting, grinding, drilling or demolition of materials containing silica should be completed only with proper respiratory protection and other worker safety precautions as outlined in the Ministry of Labour Guideline – Silica on Construction Projects, 2011.

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### APPENDICES

# 1.0 INTRODUCTION AND SCOPE

## 1.1 Introduction

Pinchin Environmental Ltd. (Pinchin) was retained by the National Research Council of Canada (NRC, Client) to conduct an assessment of hazardous building materials in Building M-06 located at 1200 Montreal Road in Ottawa, Ontario.

This report was prepared to fulfil the Owner's requirements under Section 30 of the Ontario Occupational Health and Safety Act, Revised Statutes of Ontario 1990, (as amended). Prior to tendering project work in the building, the building owner or owner's agent must provide this report to constructors bidding on the project work. In turn, the constructor must provide this report to contractors and subcontractors prior to requesting bids. This report also fulfills the requirements of Section 10 of O.Reg. 278/05, Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations. This requires that owners report the presence of both friable and non-friable asbestos to constructors as part of the tendering process or prior to arranging for work.

The assessment was performed as a prerequisite to the planned hot well and de-aerator tank replacement project. This assessment is intended for pre-construction or pre-demolition purposes only, and may not provide sufficient detail for long term management of asbestos-containing materials (ACM) as required in Section 8 (3) of O.Reg. 278/05.

The assessment was performed by Cory Warmington of Pinchin on May 12, 2014. The surveyor was accompanied by Mr. Allen Smith of the NRC during the assessment.

## 1.2 Scope of Assessment

The assessed area was limited to the parts of the building within the area to be affected by the planned hot well and de-aerator tank replacement project. The extent of the assessed area was outlined by Mr. Allan Smith of the NRC both during the site tour on May 7, 2014 and during the assessment on May 12, 2014. The assessment was performed to establish the location and type of hazardous building materials incorporated in the structure(s) and its finishes. For the purpose of the assessment, and this report, hazardous building materials are defined as those containing the following substances:

The following Ontario Ministry of Labour Designated Substances:

- Asbestos;
- Lead;
- Mercury; and
- Silica (free crystalline silica).

The investigation included an examination for the presence of:

- Polychlorinated Biphenyls (PCBs); and
- Mould or microbial contamination (visible growth only).

The following Designated Substances are not typically found in building materials in a composition/state that is hazardous. Therefore, these materials were not addressed in this assessment. Furthermore, the Client did not report the use of any of the following Designated Substances in processes:

- Arsenic;
- Acrylonitrile;
- Benzene;
- Coke oven emissions;
- Ethylene oxide;
- Isocyanates; and
- Vinyl chloride (vinyl chloride monomer, not PVC).

Owner or occupant processes, articles within the building(s) such as stored items, furniture, etc., subsurface materials or equipment (vessels, drums, underground storage tanks, pipes, etc.), possible contaminants in the soil and groundwater on the site, and sampling of materials that could result in a hazard to the surveyor or damage to the building were not included in the assessment.

## 2.0 ASSESSMENT METHODOLOGIES AND CRITERIA

### 2.1 Methodology

The surveyor entered each room, corridor, service area, etc. where access was possible within the extent of the assessed area and inspected for the presence of hazardous building materials. Relevant information was recorded where hazardous building materials were observed, including approximate quantities, locations, condition, sample information and sample locations. Quantities reported are an approximate visual estimate.

The investigation was limited to non-intrusive testing. Concealed locations such as spaces above solid ceilings, and within shafts and pipe chases were accessed via existing access panels only. Walls, solid ceilings, flooring, structural items, interior finishes or exterior building finishes were not removed to determine the presence of concealed materials.

### 2.2 Asbestos

The surveyor inspected for the presence of friable and non-friable ACM. Typical examples of friable ACM include sprayed fireproofing, acoustic/texture finish, and mechanical insulation.

Typical examples of non-friable ACM include asbestos cement sheets or pipes, vinyl floor tiles, vinyl sheet flooring, drywall compound and asbestos textile products. Typical examples of non-friable ACM, which have the potential to become friable during construction, include plaster and acoustic ceiling tiles. Refer to Appendix I for a definition of friability.

### *2.2.1 Asbestos Sampling Exclusions*

A number of materials which might contain asbestos were *not* sampled during our assessment for various reasons. Reasons for not sampling these materials include:

- Sampling the material may be hazardous to the surveyor (e.g. electrical hazard);
- Sampling the materials may cause consequential damage to the property (e.g. sampling roofing may cause leaks);
- The material is inaccessible without major demolition (e.g. inside boilers etc.) or;
- The material is present in such an inconsistent fashion that without complete removal of finishes, the extent of ACM cannot be determined (e.g. floor levelling compound).

If present, these materials must be presumed to be asbestos-containing and are best sampled *immediately* prior to commencing renovation (see list of presumed ACM in Findings Section).

### *2.2.2 Asbestos Sampling Strategy and Frequency*

Asbestos bulk samples were collected at a rate that was in compliance with the requirements of O.Reg. 278/05. The Regulation identifies the minimum number of samples to be collected and analyzed (1, 3, 5, or 7 depending on quantity, application and friability) from each homogeneous material, in order for the material to be considered non-asbestos. This frequency is indicated in Table 1 of the Regulation (see Appendix I). A homogeneous material is defined in Regulation 278/05 as one that is uniform in colour and texture. The surveyor used information obtained on site by visual examination, available information on the phases of the construction and any information on renovations provided by the client, to determine the extent of each homogeneous area and the number of samples required.

Asbestos cement products and various other non-friable materials (e.g. vibration dampers) were visually identified as ACM where present and where visual identification is reliable.

Ontario was the first Canadian Province to ban the use of friable asbestos (March 1986, O.Reg. 654/85). Of the many non-friable materials, only drywall joint compound has been banned in Canada. Therefore in theory, all other non-friable materials and surfaces in which asbestos could have been used, should be sampled for total certainty that it is non-asbestos, even to the present day. In practice however, asbestos ceased being used in most materials by manufacturers as a result of asbestos concerns. Pinchin is aware of many of the dates that certain materials ceased being manufactured with asbestos. Based on this knowledge, we suggest that sampling of certain materials is not required after specific dates and our sampling strategy was based on this

knowledge. In addition, to be conservative we allow several years past these dates in our strategy. This allows additional time so that stored ACM products would have worked through the supply chain, and allows for some uncertainty in the exact start/finish date of construction and associated usage of ACM. We believe this is a prudent and responsible limitation and that the sampling strategy is appropriate.

#### *2.2.3 Basis of Evaluation and Recommendations regarding ACM*

The condition and the potential for disturbance of any ACM observed were evaluated. The evaluation criteria were based on the conclusions of published studies, particularly the "Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario", existing Ontario regulation, and our experience involving buildings that contain ACM.

An ACM was considered damaged if it is sprayed material that is delaminating, mechanical insulation with damaged/missing insulation or jacketing, or non-friable materials that have been pulverized or damaged so that they have become friable.

The priority for remedial action is based not only on the evaluation of condition but is also based on several other factors which include:

- Accessibility or potential for direct contact and disturbance;
- Practicality of repair (for example, will damage to the ACM continue even if it is repaired);
- Visibility of the material; and
- Efficiency of the work (for example, if damaged ACM is being removed in an area, it may be most practical to remove all ACM in the area even if it is in good condition).

Recommendations also include removal of ACM that may be disturbed by any planned renovation or demolition activity known to Pinchin.

### 2.3 Lead

Each distinctive paint finish present in more than a very limited application was sampled for lead content. Paint samples were collected and submitted to a laboratory for analysis.

The Ontario Ministry of Labour (MOL) has not established a lower limit for concentrations of lead in paint, below which precautions do not need to be considered. However, except for very aggressive disturbance of painted finishes, (e.g., abrasive blasting, torch cutting or grinding), Pinchin believes that 0.1% (1,000 µg/g) lead in paint represents a minimum concentration of lead in paint for construction hygiene purposes, that is a concentration below which the lead content is not the limiting hazard in any disturbance of leaded paint.

Building materials suspected of containing lead (e.g. lead sheeting) were identified by appearance and age, and knowledge of historic applications.

## 2.4 Mercury

Building materials suspected of containing mercury were identified by appearance, age, and knowledge of historic applications. Sampling was not performed. Dismantling of equipment suspected of containing mercury was not performed.

## 2.5 Silica

Building materials suspected of containing crystalline silica were identified by knowledge of current and historic applications. Sampling was not performed.

## 2.6 Polychlorinated Biphenyls (PCBs)

Electrical equipment such as transformers and capacitors for motors suspected of containing PCB's were identified by knowledge of current and historic applications. Sampling was not performed.

This assessment is intended for pre-construction or pre-demolition purposes only, and may not provide sufficient detail for long term management of PCBs or to determine end-of-use inventories as required in SOR/2008-273.

## 2.7 Visible Mould

Mould was identified if visibly present in a significant quantity on exposed building surfaces. If any mould growth is concealed within wall cavities it was not addressed in this assessment.

## 2.8 Analytical Methods

### *2.8.1 Asbestos*

Bulk samples collected for asbestos identification were analyzed at the Pinchin Laboratory in Mississauga. Preliminary identification of asbestos fibres was made using polarized light microscopy, with confirmation of the presence and type of asbestos by dispersion staining optical microscopy. The analysis was performed in accordance with Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, July 1993. Pinchin is certified under the National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos analysis of bulk samples.

The asbestos analysis was completed using a stop positive approach. Only one result of greater than 0.5% asbestos content is required to determine that a material is asbestos-containing, but all samples must be analyzed to conclusively determine that a material is non-asbestos (O. Reg. 278/05). The laboratory stopped analyzing samples from a homogeneous material once greater than 0.5% asbestos was detected in any of the samples of that material. All samples of a homogeneous material were analyzed if no asbestos was detected. Where building materials are described in this report as non-asbestos, or described as containing no asbestos, this is subject to

the limitations of the analytical method used, and should be understood to mean no asbestos was detected.

Analytical results are presented in Appendix II.

#### *2.8.2 Lead*

The bulk analysis for lead was performed in accordance with EPA Method No. 3050B/Method No. 7420; Flame Atomic Absorption at Scientific Analytical Institute (SAI). SAI are accredited by the American Industrial Hygiene Association (AIHA).

Analytical results are presented in Appendix III.

### 2.9 Photographs

Photographs are presented in Appendix IV.

## 3.0 FINDINGS

### 3.1 Asbestos

#### *3.1.1 Sprayed Fireproofing and Thermal Insulation*

Sprayed fireproofing or sprayed thermal insulation was not found.

#### *3.1.2 Texture Finishes (Acoustic/Decorative)*

Texture finishes were not found.

#### *3.1.3 Pipe Insulation*

Non-asbestos fibreglass insulation is present on straight sections of pipe throughout the project area. There was no asbestos parging cement noted on pipe fittings (elbows, valves, tees, hangers etc.) or the seams of the insulation at the locations inspected.

Refer to photographs 1 to 3 in Appendix IV.

#### *3.1.4 Duct Insulation*

Insulated ducts were not found.

#### *3.1.5 Mechanical Equipment Insulation*

Cementitious parging is present around the hatch of hot well HPHTW01 on the basement level. Three samples of the parging were collected (Samples 01A-C). Asbestos was not detected in the parging.

Asbestos-containing insulations were not found on remaining mechanical equipment. All mechanical equipment is insulated with non-asbestos fibreglass or not insulated.

Refer to photographs 4 to 7 in Appendix IV.

#### *3.1.6 Acoustic Ceiling Tiles*

Acoustic ceiling tiles were not found.

#### *3.1.7 Vermiculite*

Loose fill vermiculite was not found. Demolition of concrete block walls or solid ceilings was not performed.

#### *3.1.8 Plaster*

Rough plaster is present on walls in the room housing boiler unit HPBLR05 on the upper mezzanine level. Three samples of rough plaster were collected (Samples 02A-C). No asbestos was detected in the rough plaster.

Refer to photograph 2 in Appendix IV.

#### *3.1.9 Drywall Compound*

Drywall and drywall compound was not found.

#### *3.1.10 Asbestos Cement Products (Transite)*

No asbestos cement products were found.

#### *3.1.11 Vinyl Sheet Flooring*

Vinyl sheet flooring was not found.

#### *3.1.12 Vinyl Floor Tile and Mastic*

Vinyl floor tiles were not found.

#### *3.1.13 Firestopping*

Suspect asbestos-containing firestopping was not found.

### 3.2 Presumed Asbestos-Containing Materials

A number of materials which might contain asbestos were *not* sampled during our assessment. If present, these materials must be presumed to be asbestos-containing and are best sampled *immediately* prior to commencing renovation or demolition. Materials[1] presumed to contain asbestos include:

- Insulation on or in high voltage wiring; and

[1] Materials are non-friable except where noted.

- Mechanical packing, ropes and gaskets.

## 3.3 Lead

### *3.3.1 Lead-Containing Paint and Coatings*

Pinchin collected two paint samples (Samples L01-L02) from the interior of the building for lead analysis. Table 1 summarizes the analytical results:

**Table 1: Bulk Analysis Results for Lead in Paint**

| Sample | Lab Reference | Paint Colour | Sample Location | Description | Lead (% by weight) |
|---|---|---|---|---|---|
| L01 | 1408872PBP_1 | Grey | Basement | Hot Well HPHTW01 | 0.20% |
| L02 | 1408872PBP_2 | Pink | Basement | Concrete Wall Near Hot Well HPHTW01 | 0.093% |

Both samples were found to contain detectable concentrations of lead. The Ontario Ministry of Labour (MOL) has not established a lower limit for concentrations of lead in paint, below which precautions do not need to be considered. The MOL will not accept U.S. Environmental Protection Agency (EPA) or U.S. Housing and Urban Development (HUD) limits (greater than 0.5%, or 5,000 ppm) for lead for this purpose.

Appendix III presents the lead testing or bulk sample analytical results.

### *3.3.2 Other Lead Applications*

Lead is present in wiring connectors, grounding conductors and solder throughout the building.

Back-up emergency lights, present throughout the building, are powered with lead-acid batteries.

## 3.4 Mercury

Mercury vapour is present in all fluorescent lamps.

Mercury is present as a liquid in thermometers associated with mechanical equipment within the assessed areas.

## 3.5 Silica

Free crystalline silica (common construction sand) is present in concrete, mortar, brick, masonry, ceramics, granite, slate, stone, asphalt, etc., where present in the building.

### 3.6 Polychlorinated Biphenyls (PCBs)

PCB-containing fluid and building components are not present within the assessed areas.

### 3.7 Visible Mould

Visible mould growth was not observed during the assessment.

## 4.0 RECOMMENDATIONS

### 4.1 General

This report must be given to the constructor. In turn the constructor must provide this report to contractors and sub-contractors.

Constructors/Contractors must use the information in this report when filing a Notice of Project Form with the Ontario Ministry of Labour. In Section 6 of the form, check all Designated Substances listed in this report that will be disturbed.

Dispose of waste containing hazardous materials as per the requirements of applicable waste handling regulations[2].

### 4.2 Asbestos

#### *4.2.1 Remedial Work*

No remedial action is required at this time. Please refer to the report for the long term recommendations which may be necessary prior to building maintenance or renovations.

#### *4.2.2 Renovation Work*

We recommend from practical experience that ACM be removed if it may be disturbed by maintenance, construction or demolition activities.

Sample all materials excluded from sampling or presumed to contain asbestos immediately prior to removal where required.

An intrusive investigation/sampling was not conducted. Prior to commencing construction, Pinchin recommends performing intrusive investigations in inaccessible spaces such as above solid ceilings, in chases, in column enclosures, crawlspaces and within shafts.

[2] Transportation and disposal of Hazardous Building Materials are under the jurisdiction of Federal, Provincial and local government agencies. Primarily, Ministry of the Environment Regulation 347 as amended dictates disposal requirements. However, regional dumpsites have the ability to impose more stringent requirements. Disposal of some Hazardous Building Materials may require testing prior to disposal so as to classify the waste.

If the identified ACM will not be removed prior to commencement of the work, disturbance of ACM must follow the appropriate asbestos precautions for the classification of work being performed.

### 4.3 Lead

Construction disturbance of lead-containing products may result in exposure to lead. Cutting, grinding, drilling, removing, stripping or demolition of materials containing or coated with lead should be completed only with proper respiratory protection and other worker safety precautions as outlined in the Ministry of Labour Guideline – Lead on Construction Projects, 2011. The Ministry has not established a lower limit for concentrations of lead in paint (or other materials) below which precautions do not need to be considered, and will not accept US EPA or HUD limits (0.5% lead) for this purpose. Therefore the need for precautions and details of worker safety will need to be assessed on a project by project basis.

The building owner and/or contractor should develop site specific procedures for the Ministry of Labour designated lead operations. These lead operations and precautions are outlined in the Ministry of Labour Guideline Lead on Construction Projects, 2011, and would specifically consist of the following:

Type 1 Lead Operations

- Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap;
- Removal of lead-containing coatings or materials using a power tool that has an effective dust collection system equipped with a HEPA filter;
- Removal of lead-containing coatings or materials using non-powered hand tools, other than manual scraping or sanding; and
- Soldering.

*Type 2A Lead Operations*

- Removal of lead-containing coatings or materials by scraping or sanding using non-powered hand tools; and
- Manual demolition of lead-painted plaster walls or building components by striking a wall with a sledgehammer or similar tool.

*Type 3A Lead Operations*

- Removal of lead-containing coatings or materials using power tools without an effective dust collection system equipped with a HEPA filter; and
- An operation that may expose a worker to lead dust, fume or mist that is not a Type 1, Type 2, or Type 3B operation.

*Type 3B Lead Operations*

- Abrasive blasting of lead-containing coatings or materials.

### 4.4 Mercury

Do not break lamps or separate liquid mercury from components. Mercury-containing materials and lamps should be recycled to reclaim the mercury. Disposal in significant quantities would require mercury-containing materials to be disposed of as hazardous waste.

### 4.5 Silica

Construction disturbance of silica-containing products may result in excessive exposures to airborne silica, especially if performed indoors and dry. Cutting, grinding, drilling or demolition of materials containing silica should be completed only with proper respiratory protection and other worker safety precautions as outlined in the Ministry of Labour Guideline – Silica on Construction Projects, 2011.

## 5.0 LIMITATIONS

This report details the hazardous building materials found within or forming part of the building envelope. The assessment only included inspections of the structure and finishes, including mechanical equipment. The assessment did not include inspection of current or past owner or occupant articles within the building (i.e. process materials or equipment, portable equipment, curriculum items, etc.) and does not report on possible contaminants in the soil and groundwater of the site, underground storage tanks, buried piping, inside drums, vessels, production equipment, or in areas not accessed by the surveyor.

The work performed by Pinchin was conducted in accordance with generally accepted engineering or scientific practices current in this geographical area at the time the work was performed. The Client acknowledges that subsurface and concealed conditions may vary from those encountered or inspected. Pinchin can only comment on the environmental conditions observed on the date(s) the assessment is performed. The work is limited to those materials or areas of concern identified by the Client or outlined in our proposal. Other areas of concern may exist but were not investigated within the scope of this assignment.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretations and these interpretations may change over time and we undertake no, and expressly disclaim, obligation to advise the Client of such change. Pinchin accepts no

responsibility for consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The degree of mould growth noted in the report may change with time if water or humidity issues continue or develop after the assessment date(s). Any sources of water infiltration or high humidity must be corrected to prevent the continuation or occurrence of mould growth.

No warranty is either expressed or implied, or intended by this agreement or by furnishing oral or written reports or findings. The liability of Pinchin or our officers, directors, shareholders or staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. Pinchin will not be responsible for any consequential or indirect damages. Pinchin will only be liable for damages resulting from negligence of Pinchin. Pinchin will not be liable for any losses or damage if client has failed, within a period of (2) years following the date upon which the claim is discovered within the meaning of the Limitations Act, 2002 (Ontario), to commence legal proceedings against Consultant to recover such losses or damage.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party other than the Client, unless the Client, in writing, requests information to be provided to a third party or unless disclosure by Pinchin is required by law. Unless consented to by Pinchin, which consent may be reasonably and/or arbitrarily withheld, any use by a third party, of reports or documents authored by Pinchin, or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted by any party.

## 6.0 CLOSURE

Should there be any questions regarding the contents of this report, please contact the undersigned at (613) 592-3387.

Yours truly,

**Pinchin Environmental Ltd.**

CJW3928

BDH3928

per: Cory Warmington, B.Sc. Hons
*Project Manager*
Hazardous Materials &
Transactional Due Diligence
cwarmington@pinchin.com

per: Brian Healey
*Senior Technical Manager*
Hazardous Materials &
Transactional Due Diligence
bhealey@pinchin.com

93951 NRC M-06 Hazardous Materials Assessment Report.docx

# APPENDIX I

# FRIABILITY AND REGULATIONS

## 1.0 FRIABILITY

As per regulation 278/05, "friable material" means material that, (a) when dry, can be crumbled, pulverized or powdered by hand pressure, or (b) is crumbled, pulverized or powdered. Asbestos-containing material (ACM) that is friable has a much greater potential than non-friable ACM to release airborne asbestos fibres when disturbed. The most common friable ACM used in the past are surfacing materials (usually sprayed fireproofing, texture, decorative or acoustic sprayed finishes) and thermal insulations on mechanical systems. Asbestos-containing non-friable materials include vinyl floor tiles, drywall joint compound, gasket materials, asbestos cement pipe or board, asbestos textiles, etc. Note that though a product may be considered non-friable when new, if the product releases fine dust due to deterioration or during removal, the free dust is considered friable. Potentially friable materials (or sometimes called miscellaneous friable materials) include materials such as ceiling tiles and plaster. These materials are non-friable in place, but can generate dust upon removal.

## 2.0 TABLE 1 REGULATION 278/05 – ASBESTOS SAMPLING FREQUENCY

| Type of Material | Size of Area of Homogeneous Material | Minimum Number of Samples |
|---|---|---|
| Surfacing material, including without limitation material that is applied to surfaces by spraying, by troweling or otherwise, such as acoustical plaster on ceilings, fireproofing materials on structural members and plaster | Less than 90 square metres | 3 |
| | 90 or more square metres, but less than 450 square metres | 5 |
| | 450 or more square metres | 7 |
| Thermal insulation, except as described below | Any size | 3 |
| Thermal insulation patch | Less than 2 linear metres or 0.5 square metres | 1 |
| Other material | Any size | 3 |

## 3.0 REGULATIONS - ONTARIO

Section 30 of the Occupational Health and Safety Act requires building owners or their agents (architects, general contractors, construction managers, etc.) to prepare or have prepared, a list of designated substances present in the area of construction or facility undergoing construction

work. There are eleven designated substances subject to special regulation under the Occupational Health and Safety Act. Of these eleven, asbestos, lead, mercury, and silica are commonly found in buildings and can impact construction, demolition, and renovation projects. The owner must ensure that a prospective constructor has received a designated substance report before entering into a binding contract with the constructor/contractor.

The disturbance of asbestos-containing materials (ACM) on construction projects is controlled by Ontario Ministry of Labour Regulation 278/05 made under the Occupational Health and Safety Act (Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations). The Regulation classifies all disturbances as Type 1, Type 2, or Type 3, each of which has defined work practices. All ACM are subject to special handling and disposal, and must be removed before partial or full demolition. The Ministry of Labour must be notified prior to any project involving removal of more than a minor amount of friable ACM (Type 3 or Glove Bag abatement).

The Ministry of Labour released two documents in December 2004, Ministry of Labour Guideline - Lead on Construction Projects, and Ministry of Labour Guideline - Silica on Construction Projects. Although these documents were not released as Regulations, to quote the Ministry of Labour *"These guidelines will raise awareness of the potential hazards associated with Lead and Silica for common construction activities and tasks, and will provide assistance to employers, constructors and workers in how to take reasonable precautions to protect workers from exposure to Lead and Silica. These Guidelines include specific measures and procedures for typical construction activities and operations and can be used as best practices by the industry."* These guidelines are expected to be widely enforced by the Ministry of Labour, via the general duty clause 25 (2) (h) of the Occupational Health and Safety Act, since there is no other construction regulation regarding lead and silica available for them to draw upon as a resource. The Ministry of Labour has also issued guidelines or proposed regulations for coal tar products and handling of mercury on construction sites.

Management, handling and transfer of PCBs are controlled by R.R.O. 1990, Reg. 362, Waste Management-PCB's Regulation, made under the Ontario Environmental Protection Act, and the PCB Regulation (SOR/2008-273) made under the federal Environmental Protection Act.

The Ontario Ministry of Labour published the hazard alert "Mould in Workplace Buildings", in December 2000. To quote from the alert, "The sustained and/or extensive growth of any visible mould on the interior surfaces of a building is unacceptable. Mould growth on the interior surfaces of buildings is a risk factor for health problems." The Ministry of Labour has enforced work stoppages as a result of indoor mould growth and has enforced removal using work practices similar to those required for asbestos abatement.

Waste disposal is controlled by Ministry of the Environment Regulation, R.R.O. 1990 Reg. 347 as amended.

# APPENDIX II

# RESULTS OF BULK SAMPLE ANALYSIS FOR ASBESTOS

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THE PINCHIN GROUP

# Pinchin Environmental Asbestos Laboratory
## *Certificate of Analysis*

| | | | |
|---|---|---|---|
| **Project Name:** | **National Research Council, Building M-06, 1200 Montreal Road, Ottawa, ON** | | |
| **Project No.:** | **93951** | | |
| **Prepared For:** | **Cory Warmington** | **Date Received:** | **May 14, 2014** |
| | **Julie Featherstone** | **Date Analyzed:** | **May 20, 2014** |
| **Lab Reference No.:** | **b108791** | **# Samples submitted:** | **6** |
| **Analyst(s):** | **N. Barinque** | **# Phases analyzed:** | **9** |

**Method of Analysis:**
**EPA 600/R-93/116 - Method for the Determination of Asbestos in Bulk Building Materials dated July, 1993**

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence and dispersion staining colours. A visual estimate is made of the percentage of asbestos present. A reported concentration of less than (<) the regulatory threshold (see chart below) indicates the presence of confirmed asbestos in trace quantities, limited to only a few fibres or fibre bundles in an entire sample. This method complies with provincial regulatory requirements where applicable. Multiple phases within a sample are analyzed and reported separately.

| Provincial Jurisdiction | Regulatory Threshold | Provincial Jurisdiction | Regulatory Threshold |
|---|---|---|---|
| Ontario, British Columbia, Nova Scotia | 0.5% | Manitoba | 0.1% friable 1% non-friable |
| Quebec | 0.1% | Saskatchewan | 0.1% friable 1% non-friable |
| Alberta, NWT, Yukon, Nunavut | 1% | Newfoundland and Labrador, PEI and New Brunswick | 1% |

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

Pinchin Environmental Ltd. is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 101270-0) for the 'EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples' and meets all requirements of ISO/IEC 17025:2005.

This report relates only to the items tested.

***NOTE:*** ***This test report may not be reproduced, except in full, without the written approval of the laboratory. The client may not use this report to claim product endorsement by NVLAP or any agency of the U.S. Government. This report is valid only when signed in blue ink by the analyst. Vinyl asbestos floor tiles contain very fine fibres of asbestos and may be missed by some laboratories using the PLM method. Internal verification studies performed by Pinchin indicate that the chance of missing asbestos in floor tiles is no higher than about 2%. The vinyl tile study and laboratory documentation on measurement uncertainty is available upon request. The analysis of dust samples by PLM cannot be used as an indicator of past or present airborne asbestos fibre levels.***

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### BULK SAMPLE ANALYSIS

| SAMPLE IDENTIFICATION | SAMPLE DESCRIPTION | % COMPOSITION (VISUAL ESTIMATE) | |
|---|---|---|---|
| | | ASBESTOS | OTHER |
| 0001A<br>Parging - Around Hatch, Hot Well HPHTW01, Basement Level | Homogeneous, grey, hard, cementitious material. | None Detected | Non-Fibrous Material > 75% |
| 0001B<br>Parging - Around Hatch, Hot Well HPHTW01, Basement Level | Homogeneous, grey, hard, cementitious material. | None Detected | Non-Fibrous Material > 75% |
| 0001C<br>Parging - Around Hatch, Hot Well HPHTW01, Basement Level | Homogeneous, grey, hard, cementitious material. | None Detected | Non-Fibrous Material > 75% |
| 0002A<br>Rough Plaster - Wall at Pipe Penetrations, Room Housing Boiler Unit HPBLR05, Upper Mezzanine Level | 2 Phases:<br>a) Homogeneous, grey, hard, cementitious material.<br>b) Homogeneous, white, soft, cementitious material. | None Detected<br>None Detected | Non-Fibrous Material > 75%<br>Perlite 10-25%<br>Other Non-Fibrous > 75% |
| 0002B<br>Rough Plaster - Wall at Pipe Penetrations, Room Housing Boiler Unit HPBLR05, Upper Mezzanine Level | 2 Phases:<br>a) Homogeneous, grey, hard, cementitious material.<br>b) Homogeneous, white, hard, cementitious material. | None Detected<br>None Detected | Non-Fibrous Material > 75%<br>Perlite 10-25%<br>Other Non-Fibrous > 75% |
| 0002C<br>Rough Plaster - Wall at Pipe Penetrations, Room Housing Boiler Unit HPBLR05, Upper Mezzanine Level | 2 Phases:<br>a) Homogeneous, grey, hard, cementitious material.<br>b) Homogeneous, white, hard, cementitious material. | None Detected<br>None Detected | Non-Fibrous Material > 75%<br>Perlite 10-25%<br>Other Non-Fibrous > 75% |

**ANALYST**

# APPENDIX III

# RESULTS OF TESTING FOR LEAD IN PAINT

# Analysis for Lead Concentration in Paint Chips

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

AIHA LAP, LLC
ACCREDITED LABORATORY
ENVIRONMENTAL LEAD
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #173190

**Customer:** Pinchin Environmental Ltd
555 Legget Drive
Kanata ON K2K 2X3

**Attn:** Julie Featherstone
Cory Warmington

**Lab Order ID:** 1408872
**Analysis ID:** 1408872_PBP
**Date Received:** 5/15/2014
**Date Reported:** 5/20/2014

**Project:** 93951-NRC M-06

| Sample ID / *Lab Sample ID* | Description / *Lab Notes* | Mass *(g)* | Analytical Sensitivity *(% by weight)* | Concentration *(% by weight)* |
|---|---|---|---|---|
| L01 | Grey Paint- Hot Well HPHTW01, Basement | 0.0613 | 0.002% | **0.20%** |
| 1408872PBP_1 | | | | |
| L02 | Pink Paint-Wall Near Hot Well HPHTW01, Basment | 0.0656 | 0.002% | **0.093%** |
| 1408872PBP_2 | | | | |



Kristin Cooke (2)

**Analyst**

**Laboratory Director**

pbRpt_3 4 02/pbCalc_3 4 0
1

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

1408872

Version 1-15-2012

| | |
|---|---|
| **Client:** | Pinchin Environmental Ltd |
| **Contact:** | Cory Warmington |
| **Address:** | 555 Legget Drive, Suite 1001<br>Tower A, Kanata, ON, K2K 2X3 |
| **Phone:** | 613-592-3387 |
| **Fax:** | 613-592-5897 |
| **Email:** | cwarmington@pinchin.com |
| **cc:** | jfeatherstone@pinchin.com |
| **Project:** | 93951 - NRC M-06 |
| **Client Notes:** | NRC Bldg M-06, 1200 Montreal Roa |
| **P.O. #.** | 93951 |
| **Date Submitted:** | 5/13/2014 0:00 |
| **Analysis:** | PAINT - Lead Analysis by Flame AA |
| **TurnAroundTime:** | 3 Days |

***Instructions:***

*Use Column "B" for your contact info*

*To See an Example Click the bottom Example Tab.*

***Enter samples between "<<" and ">>"***
***Begin Samples with a "<< "above the first sample and end with a ">>" below the last sample.***
*Only Enter your data on the first sheet "Sheet1"*

*Note: Data 1 and Data 2 are optional fields that do not show up on the official report, however they will be included in the electronic data returned to you to facilitate your reintegration of the report data.*


***Scientific Analytical Institute***

***302-L Pomona Dr.***
***Greensboro, NC 27407***
***Phone: 336.292.3888***
***Fax: 336.292.3313***
***Email: lab@sailab.com***


| Sample Number | Data 1 (Lab use only) | Sample Description | Data 2 (Lab use only\) |
|---|---|---|---|
| << | | | |
| L1 | | Grey Paint - Hot Well HPHTW01, Basement Level | |
| L2 | | Pink Paint - Wall Near Hot Well HPHTW01, Basement Level | |
| >> | | | |

Accepted ☑

Rejected ☐

SO 5-15 10 AM

# APPENDIX IV
# PHOTOGRAPHS

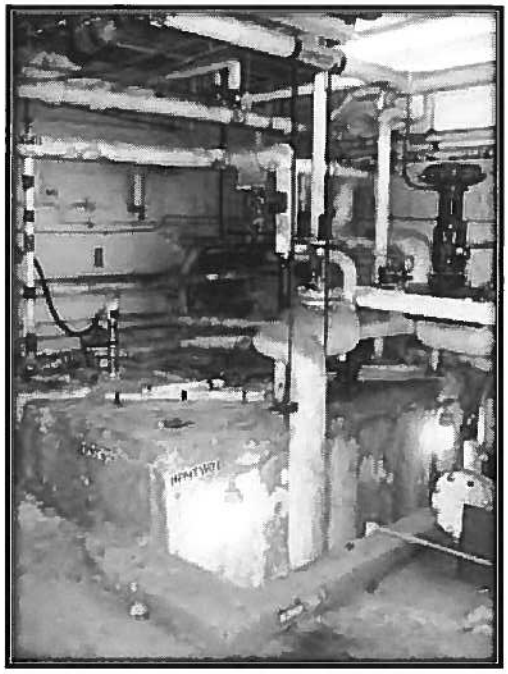

Photo 1 – View of non-asbestos fibreglass pipe insulation atop hot well HPHTW01 on the basement level.

Photo 2 – View of non-asbestos fibreglass pipe insulation beneath metal jacketing and non-asbestos rough plaster (Samples 02A-C) in the room housing boiler unit HPBLR05 on the upper mezzanine level.

Photo 3 – View of non-asbestos fibreglass pipe insulation associated with de-earator tank HPDEA03 on the upper mezzanine level.

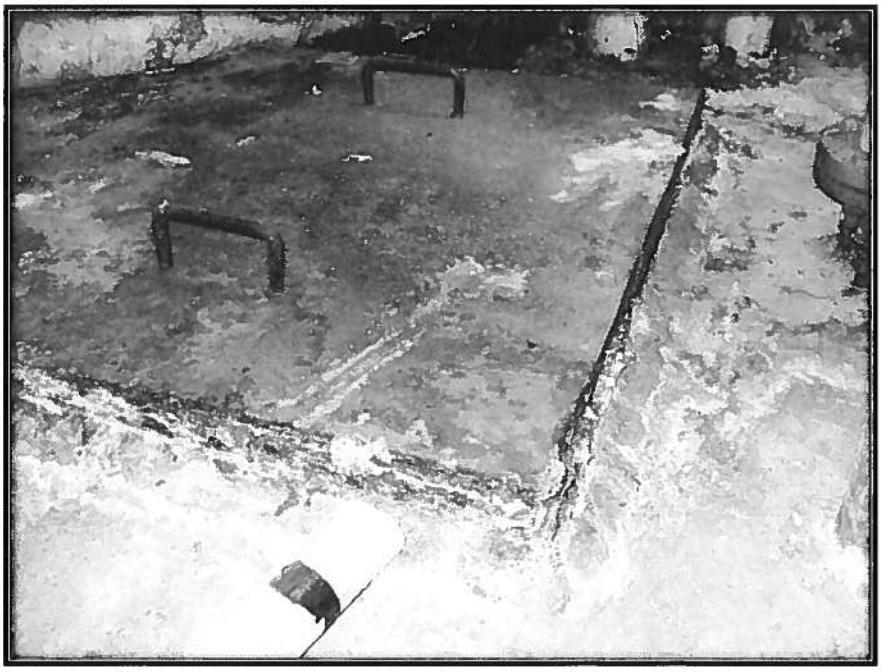

Photo 4 – View of non-asbestos parging around the top hatch of hot well HPHTW01 on the basement level (Samples 01A-C).


Photo 5 – View of non-asbestos fibreglass insulation present on de-aerator tanks HPDEA02 and HPDEA03 on the upper mezzanine level.

Photo 6 – View of non-asbestos fibreglass insulation present on de-aerator tank HPDEA02 on the upper mezzanine level.

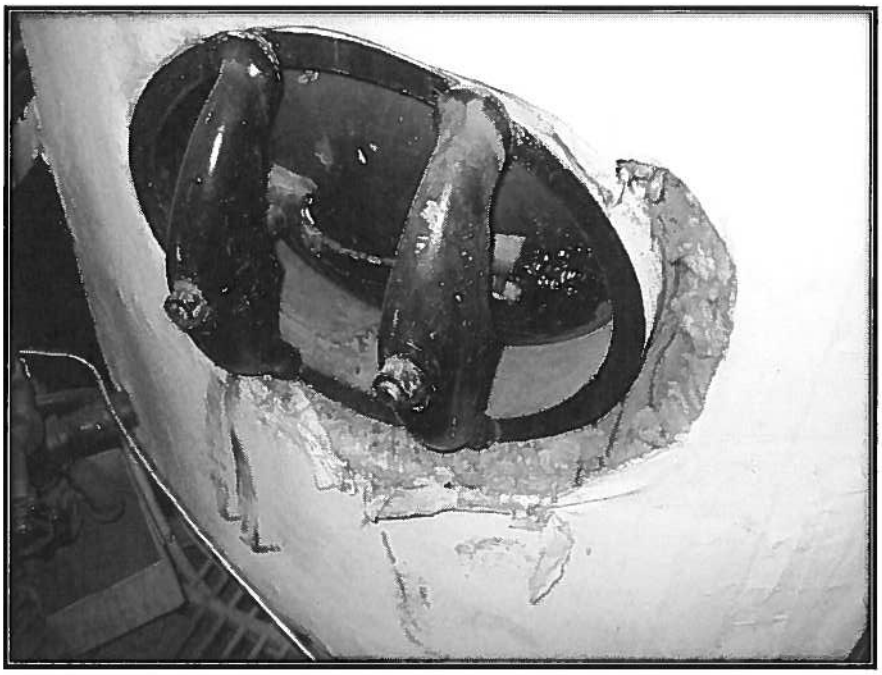

Photo 7 – View of non-asbestos fibreglass insulation present on de-aerator tank HPDEA03 on the upper mezzanine level.