

**Part 1      General**

**1.1      REFERENCE STANDARDS**

- .1 Refer to laws, by laws, ordinances, rules, regulations, and orders of authority having jurisdictions, and other legally enforceable requirements applicable to Work at that area; or become in force during Work performance.
- .2 Comply with specified standards and regulations to ensure safe operations at site containing hazardous or toxic materials.
- .3 Federal Legislation
  - .1 Canada Labour Code, Part II, section 124 and 125.
    - .1 Canada Occupational Health and Safety Regulations
  - .2 Transportation of Dangerous Goods Act, 1992 (TDGA)
  - .3 PSPC Asbestos Management Standard
  - .4 Canada Consumer Product Safety Act
    - .1 Surface Coating Materials Regulations SOR/2016-193
  - .5 Canadian Environmental Protection Act, 1999 (CEPA)
    - .1 PCB Regulations (SOR/2008-273)
    - .2 Federal Halocarbon Regulations (SOR/2003-289)
    - .3 Ozone-depleting Substances and Halocarbon Alternatives Regulations (SOR/2016-137)
    - .4 Environmental Code of Practice for Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems (2015)
- .4 Provincial Legislation
  - .1 Ontario Occupational Health and Safety Act, R.S.O. 1990
    - .1 Ontario Regulation 490/09, Designated Substances (O.Reg. 490/09).
    - .2 Ontario Regulation 278/05, Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations, (O.Reg. 278/05).
  - .2 Ontario Environmental Protection Act, R.R.O. 1990,
    - .1 Ontario Regulation 347/90, General – Waste Management (O.Reg. 347/90).
    - .2 Ontario Regulation 463/10, Ozone Depleting Substances and Other Halocarbons (O.Reg. 463/10).
    - .3 R.R.O. 1990, Regulation 362, Waste Management - PCB's (R.R.O. 1990, Reg. 362)
- .5 Environmental Abatement Council of Ontario (EACO) Lead Guideline for Construction, Renovation, Maintenance or Repair (2014).
- .6 Environmental Abatement Council of Ontario (EACO) Mould Abatement Guidelines (2015).
- .7 Ontario Ministry of Labour, Training and Skills Development Guideline entitled Lead on Construction Projects

- .8 Ontario Ministry of Labour, Training and Skills Development Guideline entitled Silica on Construction Projects.
- .9 Canadian Standards Association (CSA International). CAN/CSA-Z94.4-18 – Selection, Care and Use of Respirators

## 1.2 DEFINITIONS

Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.

Asbestos-Containing Materials (ACMs): materials that contain 0.5 per cent or more asbestos by dry weight and are identified under Existing Conditions including fallen materials and settled dust.

Asbestos Work Area: area where work takes place which will, or may, disturb ACMs.

Authorized Visitors: Visitors provided authorization for site access by the Departmental Representative, and representatives of regulatory agencies.

Competent worker: in relation to specific work, means a worker who:

- Is qualified because of knowledge, training, and experience to perform the work;
- Is familiar with the provincial and federal laws and with the provisions of the regulations that apply to the work; and
- Has knowledge of all potential or actual danger to health or safety in the work.

Friable material: means material that:

- When dry, can be crumbled, pulverized or powdered by hand pressure; or is crumbled, pulverized or powdered.

Glove Bag: prefabricated glove bag as follows:

- Minimum thickness 0.25 mm polyvinyl-chloride bag.
- Integral 0.25 mm thick polyvinyl-chloride gloves and elastic ports.
- Equipped with reversible double pull double throw zipper on top and at approximately mid-section of the bag.
- Straps for sealing ends around pipe.

Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities, and hazardous products, including but not limited to: corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any dimension at 99.97% efficiency.

Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

Occupied Area: any area of building or work site that is outside Asbestos Work Area.

Polychlorinated Biphenyls (PCBs): includes chlorobiphenyls referred to in Column I of item 1 of the List of Toxic Substances in Schedule I of Canadian Environmental Protection Act (CEPA).

Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.

Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for scope of work.

Toxic: substance is considered toxic if it is listed on Toxic Substances List found in Schedule 1 of CEPA.

Threshold Limit Value (TLV): an airborne concentration which cannot be exceeded as prescribed by the American Conference of Governmental Industrial Hygienists (ACGIH) as adopted in Part II of the Canada Labour Code – Occupational Health and Safety, the Canada Occupational Health and Safety Regulations (COHSR) Part X – Hazardous Substances.

### **1.3 RELATED REQUIREMENTS**

- .1 Section 02 82 00.02 Asbestos Abatement - Intermediate Precautions.
- .2 Section 02 82 00.03 Asbestos Abatement - Maximum Precautions.

### **1.4 ADMINISTRATIVE REQUIREMENTS**

- .1 Before start of Work arrange for Site visit with the Departmental Representative to examine existing Site conditions.

### **1.5 RESPONSIBILITY**

- .1 Contractor shall be responsible for reading and evaluating the information provided in the Designated Substance and Hazardous Building Material Survey (DSHBMS), for the Site.
- .2 Contractor shall incorporate any recommendations in the Site DSHBMS as they pertain to the health and safety of workers on Site, and in compliance with authority having jurisdictions for that area.
- .3 Contractor shall ask the Departmental Representative should they have any questions related to the Site specific DSHBMS.

- .4 Contractor shall exercise every reasonable precaution for the protection of each worker on Site.
- .5 Contractor shall furnish the Site specific DSHBMS to all subcontractors who will be performing work on Site.

## **1.6 REGULATORY REQUIREMENTS**

- .1 Do Work in compliance with Federal, Provincial, and local requirements pertaining to the hazardous materials, provided that in case of conflict among these requirements or with these specifications, more stringent requirement applies. Comply with regulations in effect at time Work is performed.

## **1.7 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit Site-specific Health and Safety Plan, within 7 days after date of Notice to proceed and before mobilization to Site. List relevant hazardous or contaminated materials or substances required by the authority having jurisdiction which need to be included in the Contractor's Health and Safety Plan.

## **1.8 DESIGNATED SUBSTANCES**

Confirm with the Departmental Representative that no additional designated substances have been brought to the project area prior to beginning work. Additional designated substances and hazardous materials may exist outside the accessible survey areas but are beyond the scope of this project.

Should any additional material, suspected to be a designated substance, be encountered within the project area, any disturbance of such material must be stopped, precautionary measures taken, and the Departmental Representative must be notified immediately. Do not proceed until written instructions have been received.

- 1. ACRYLONITRILE: Not Identified
- 2. ARSENIC: Not Identified
- 3. ASBESTOS: **Identified**

Based on visual observations, laboratory results and historical reports, the following materials were identified as asbestos-containing materials:

Sample ID	Sample Location	Locations with Visibly Similar Material	Building System	Material Description	Type and Content	Friability
<b>BluMetric Sampled Material</b>						
112-O-Duct-01A-C	Main floor - Room 112	Possibly located in other rooms	Other (duct)	Grey paper layer under duct canvas	70% Chrysotile	Yes
110-W-PLA-01A-C	Main floor - Room 110	Ceiling	Wall	Vermicrete-like plaster	1% Chrysotile 1% Tremolite	Yes
<b>Previously Identified</b>						
PSPC sample ID - B3Shirley-AS-3A-C	PSPC, 2018	Above ceiling tiles of Rooms 106 & 107, may be present inside cinderblocks	Ceiling Space	Grey/white vermicrete debris	1% Tremolite	Yes
PSPC sample ID - B3Shirley-AS-4C	PSPC, 2018	Above ceiling tiles of Rooms 106 & 107, may be present inside cinderblocks	Ceiling Space	Dark Grey mortar/parging debris	1% Chrysotile	Yes
WSP Sample ID - 03- ELB-14A, B, C.	WSP, 2018	Rooms 109, 110, 112	Other	Mechanical pipe elbow insulation	65% Chrysotile	Yes

Other ACMs have been identified within the building, however, these materials were not identified within the proposed project area and therefore, have not been listed. For more information regarding other ACMs, refer to historical reports.

If new or suspect asbestos-containing materials are encountered or become accessible during the project, work in the immediate area should cease, and the material should be sampled and analyzed for asbestos content.

Based on visual observations and laboratory results, the following materials were identified as non-asbestos containing materials:

Sample ID	Sample Location	Locations with Visibly Similar Material	Building System	Material Description
<b>Previously Identified</b>				
WSP Sample ID - 03-MTR-02A, B, C, D, E, F, G.	WSP, 2018	Throughout (including 106, 107 & 109))	Wall	Mortar on brick and cement block
WSP Sample ID - 03-CLK-03A, B, C	WSP, 2018	Exterior	Wall	Brown exterior caulking on metal sheeting
WSP Sample ID - 03-VFT-06A, B, C	WSP, 2018	Throughout (including 106, 107 & 109))	Floor	12" white vinyl floor tiles with blue-grey streaks (and associated mastic - adhesive)
WSP Sample ID - 03-ACT-13A, B, C	WSP, 2018	Throughout (including 106, 107 & 109))	Ceiling	2'X4' ceiling tiles with large and small pinholes

The following materials were visually assessed as being non-asbestos-containing and were not sampled:

- Bare metal sheeting;
- Uninsulated metal pipes;
- PVC or plastic electrical wires;
- Galvanized metal conduits; and,
- Fibreglass and fiberglass paper.

4. **BENZENE: Identified**

The following equipment contains fuel (anticipated to contain benzene) within the project area:

- AST – 2,200L diesel fuel;
- UST – 2,500L fuel;
- Day tank; and
- FOS, FOR and associated fuel piping.

5. **COKE OVEN EMISSIONS: Not identified**

6. **ETHYLENE OXIDE: Not Identified**

7. **ISOCYANATES: Not Identified**

8. **LEAD: Identified**

Paints are considered “no lead” (lead content  $\leq 90 \mu\text{g/g}$ ) if they are below laboratory detection limit or meet the Surface Coatings Material Regulation. “Low-level lead” (lead content of  $>90 \mu\text{g/g} - \leq 1,000 \mu\text{g/g}$ ), “lead-containing” (lead content between  $>1,000 - <5,000 \mu\text{g/g}$ ) or “lead-based” (lead content  $\geq 5,000 \mu\text{g/g}$ ) according to the EACO Lead Guideline for Construction, Renovation, Maintenance or Repair dated October 2014. A summary of the “no lead”, “low-level lead”, “lead-containing” and “lead-based” paints is provided below.

Sample ID	Material Description	Sample Location	Other Locations with similar Surface Coating	Building System	Lead Content ( $\mu\text{g/g}$ )
<b>EXT-O-Pipe-P01</b>	<b>Grey</b>	<b>Room 112</b>	<b>Fuel oil return piping (connected to generator and AST) and day tank</b>	<b>Other</b>	<b>1620</b>
EXT-O-Beam-P02	Yellow, black	Exterior	-	Other	<20
<b>EXT-O-Vent-P03</b>	<b>Brown, white</b>	<b>Exterior</b>	<b>Two normal vent metal pipes</b>	<b>Other</b>	<b>1,100</b>
EXT-O-Tank-P04	Blue, blue, beige	Exterior	-	Other	646
<b>110-W-PLA-P05</b>	<b>Beige</b>	<b>Room 110</b>	<b>Room 112 walls (cinderblock, brick) and ceiling (corrugated metal)</b>	<b>Walls / Ceiling</b>	<b>1220</b>
112-F-Conc-P06	Grey	Room 112	Room 110	Floor	561
<b>107-W-CB-P08</b>	<b>White, beige, green, brown</b>	<b>Room 107</b>	<b>Room 106, 109</b>	<b>Walls</b>	<b>2410</b>

**Notes:**

- 1) **Grey and Bold** – Indicates “Lead Containing” (lead content between  $>1,000 - <5,000 \mu\text{g/g}$ ) or “Lead Based” (lead content  $\geq 5,000 \mu\text{g/g}$ )
- 2) Grey – Indicates “Low-Lead Containing” (lead content of  $>90 \mu\text{g/g} - \leq 1,000 \mu\text{g/g}$ )
- 3) No Highlight - Indicates “no lead” (lead content  $\leq 90 \mu\text{g/g}$ )

9.      **MERCURY: Identified**

The following mercury-containing equipment was observed within the project areas:

- Approximately 56 fluorescent light tubes; and
- Thermostats (suspect).

10.     **SILICA: Identified**

Silica is known be present in cementitious building materials. At the time of the assessment, the following silica-containing building materials were observed within the project areas.

- Brick and mortar;
- Cinderblock and mortar;
- Plaster; and
- Poured concrete.

11.     **VINYL CHLORIDE MONOMER: Not Identified**

12.     **POLYCHLORINATED BIPHENYLS (PCBs): Identified**

The following suspect PCB-containing equipment was observed within the project areas:

- Approximately 28 fluorescent light ballasts.

13.     **HALOCARBONS: Identified**

The following suspect halocarbon-containing equipment was observed within the project area but not anticipated to be disturbed:

- Fujitsu air conditioner – refrigerant 410A – 9oz

14.     **MOULD: Not Identified**

15.     **OTHER HAZARDOUS MATERIALS: Not Identified**

## **1.9                RECOMMENDATIONS**

### **.1                ASBESTOS**

Regulatory Requirements: comply with Federal, Provincial, and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications, more stringent requirement applies. Comply with regulations in effect at time Work is performed.

The hazardous abatement procedures to be followed during the project are based on the scope of impacted area, type of building material, friability, type of work to be undertaken, equipment to be used, wet/dry work procedures, and fibre-release control measures (e.g., power tools equipped with HEPA filters). The classification of asbestos-related work is based on Section 6.2.1. of the Public Services and Procurement Canada Asbestos Management Standard which was developed to supplement the legislative requirements outlined in the Canada Occupational Health and Safety Regulations (COHSR) Part X – Hazardous Substances. Abatement work must comply the legislative requirements as indicated in O.Reg. 278/05 (Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations), and O. Reg. 490/09 (Designated Substances) under the Ontario Occupational Health and Safety Act, R.S.O. 1990, c. O.1.

Refer to the following specification sections for the project requirements for submittals, abatement work classification, personnel training, work procedures / precautions, materials, inspection and air monitoring (if applicable), waste management, disposal, and quality assurance:

- .1 Section 02 82 00.01 Asbestos Abatement - Minimum Precautions.
- .2 Section 02 82 00.02 Asbestos Abatement - Intermediate Precautions.
- .3 Section 02 82 00.03 Asbestos Abatement - Maximum Precautions.

Low risk work includes:

- non-destructive (i.e. without breaking, cutting, drilling, abrading) removal of non-friable asbestos-containing material;
- destructive work (i.e. breaking, cutting, drilling, abrading) on wetted non-friable asbestos-containing material with non-powered hand-held tools;
- removal of one square meter or less of drywall in which joint compounds contain asbestos-containing materials;
- removal or replacement of 7.5 square metres or less of non-friable asbestos-containing compressed-mineral-fibre-type ceiling tiles; and
- collecting samples of materials suspected of containing friable asbestos.

Moderate risk work includes:

- entry into ceiling spaces, crawlspaces, pipe tunnels, etc., where friable asbestos debris is or may be present;
- removal or replacement of greater than 7.5 square metres of non-friable asbestos-containing compressed-mineral-fibre-type ceiling tiles;
- removing more than 2 square meters of friable asbestos-containing suspended ceiling tiles that are removed without being broken, cut, drilled, abraded, ground, sanded, or vibrated;
- removal of more than one square metre of drywall where asbestos-containing joint compound materials has been used;
- destructive work (i.e. breaking, cutting, drilling, abrading) on non-wetted, non-friable asbestos-containing material with non-powered hand held tools;

- destructive work (i.e. breaking, cutting, drilling, abrading) on non-friable asbestos-containing material if the work is done by means of power tools that are attached to dust collecting devices equipped with a high efficiency particulate air (HEPA) filters;
- minor removal or disturbance of friable asbestos-containing material. Minor is defined as follows:
  - in Quebec: up to 0.03 m<sup>3</sup> of debris
  - all others: up to 1 m<sup>2</sup> of surface area
- enclosing friable asbestos-containing material;
- applying tape or cover to asbestos-containing insulation;
- glove bag removal of asbestos-containing material from a pipe, duct or similar structure;
- removing filters in an air handling unit in a building that has sprayed-on asbestos-containing fireproofing; and
- work not otherwise classified as either low or high risk.

High risk work includes:

- major removal or disturbance of friable asbestos-containing material (greater than quantities defined under moderate work);
- destructive work (i.e. breaking, cutting, drilling, abrading) of non-friable asbestos-containing material using power tools not attached to dust-collecting devices equipped with HEPA filters;
- encapsulating friable asbestos-containing material by spray application of an encapsulant or sealant;
- cleaning or removal of ductwork and air handling equipment serving or passing through areas of buildings with sprayed, friable asbestos-containing material; and
- repair, alteration or demolition of a boiler, furnace, kiln, or similar equipment made of asbestos-containing refractory materials.

If new or suspect asbestos-containing materials are encountered during the upcoming Project, work in the immediate area should cease, and the material should be sampled and analyzed for asbestos content.

.2      BENZENE

Safe work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne benzene levels that exceed the time weighed average of 0.5 parts per million (ppm) or the short-term exposure limit (STEL) of 2.5 ppm prescribed by COHS Reg Part X and O.Reg. 490/09.

.3      LEAD

- Safe work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne lead levels that exceed the time weighed average of 0.05 milligram per cubic metre (mg/m<sup>3</sup>) prescribed by COHS Reg Part X and O.Reg. 490/09.

- The Ontario Ministry of Labour (MOL) Lead on Construction Projects Guidelines and/or the EACO Lead Guideline for Construction, Renovation, Maintenance or Repair should be consulted for all work that may disturb low-level lead, lead-containing and lead-based paint or surface coatings. The stated guidelines include information on respiratory protection and work practices.
- Where construction workers are exposed to airborne lead, measures and procedures to control their exposure must be implemented. The Ontario Ministry of Labour (MOL) Guideline (dated April 2011): Guideline: Lead on Construction Projects classifies all lead disturbances as Type 1, Type 2 or Type 3 operations, and can be thought of as being of low, medium and high risk. Specific measures and procedures for working with lead are required depending on how the work is classified.
- Disposal of construction waste containing lead must be done in accordance with O. Reg. 347 – General – Waste Management under the Ontario Environmental Protection Act. The classification of the waste as hazardous or non-hazardous is dependent upon the results of Toxicity Characteristic Leaching Procedure (TCLP) analysis. Any lead confirmed to be leachable in excess of 5.0 mg/L as per Schedule 4 – Leachate Quality Criteria should be disposed as hazardous waste.

### .3      MERCURY

All work involving disturbance of mercury-containing equipment must be done in accordance with O.Reg. 490/09, Designated Substances.

When removal of fluorescent light tubes is required, the tubes should be removed intact from the fixtures. Other sources of elemental mercury should be removed intact to prevent worker exposure.

Disposal of waste containing mercury must be done in accordance with O.Reg. 347/90, General – Waste Management.

### .4      PCBs

Fluorescent light ballasts were observed throughout the work areas. Prior to removal or disposal, equipment suspected of containing PCBs should be confirmed. When fluorescent light fixtures are taken out of service, the ballasts should be visually examined to determine whether they contain PCBs. This can be done by comparing the manufacturer date codes stamped on the ballasts to information contained in the document titled Identification of Lamp Ballasts Containing PCBs, published by Environment Canada.

If PCB-containing equipment and/or materials are identified, they shall be disposed of in accordance with the PCB Regulations SOR/2008-273, and R.R.O. 1990, Reg. 362. The transport of PCB waste is controlled by the federal Transportation of Dangerous Goods Act.

### .5      SILICA

Comply with O.Reg. 490/09 when performing work that may disturb silica-containing materials. The regulation outlines Control Program requirements and the exposure limits, TWA, for airborne silica.

Silica dust can be generated through such processes as blasting, grinding, crushing, and sandblasting silica-containing material. Since silica is present in select materials within the project area, appropriate respiratory protection must be donned during the demolition and modifications of these structures.

Follow recommendations provided in the Ontario Ministry of Labour, Training and Skills Development Guideline entitled Silica on Construction Projects. This guideline outlines the hazards associated with silica in construction and the measures and procedures that should be taken to control those hazards.

**Part 2            Products**

**2.1            NOT USED**  
      .1        NOT USED

**Part 3            Execution**

**3.1            NOT USED**  
      .1        NOT USED

**END OF SECTION**