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## PART 1 – GENERAL

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### 1.1 REGULATORY REQUIREMENTS

.1 An investigation into the presence of designated substances for the Roof Test Cut Project, scheduled to be completed at the Booth Building (165 Sparks Street) in Ottawa, Ontario, was performed in order to meet the requirements of Section 30 of the *Ontario Occupational Health and Safety Act, Revised Statutes of Ontario, 1990, Chapter 0.1*. The *Canada Labour Code* also stipulates under Part II, Section 124 that every employer shall ensure that the health and safety at work of every person employed by the employer is protected. By having a Designated Substances Report (DSR) completed, the Departmental Representative will be able to inform his or her employees, contractors, and tenants of any designated substances that may be present and possibly disturbed throughout the duration of the project. The informed Departmental Representative will then be able to impose appropriate health and safety precautions for all applicable personnel as required. The *Guide to Green Government* sets out the policy requirements for the federal government to meet or exceed federal environmental statutes and regulations, and the emulation of best practices from the public and private sector. Within the *Guide to Green Government*, pollution prevention efforts are required in federal projects. Pollution prevention is defined as the use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and waste, and reduce overall risk to human health and environment. These policies must be adhered to throughout the duration of any of the scheduled renovation/demolition/repair work to be performed in association with the project.

.2 The designated substances identified in the *Occupational Health and Safety Act* and its corresponding regulations are:

- .1 **Acrylonitrile:** “Designated Substances”  
*O. Reg 490/09, as amended.*
- .2 **Arsenic:** “Designated Substances”  
*O. Reg 490/09, as amended.*
- .3 **Asbestos**
  - .1 “Designated Substances”  
*O. Reg 490/09, as amended.*
  - .2 “*General – Waste Management*”  
*O. Reg 347/90, as amended*
  - .3 “Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations”  
*O.Reg 278/05 (as amended)*
- .4 **Benzene:** “Designated Substances”  
*O. Reg 490/09, as amended.*

- .5 **Coke Oven Emissions:** "Designated Substances" *O. Reg 490/09*, as amended.
- .6 **Ethylene Oxide:** "Designated Substances" *O. Reg 490/09*, as amended.
- .7 **Isocyanates:** "Designated Substances" *O. Reg 490/09*, as amended.
- .8 **Lead:**
  - .1 "Designated Substances" *O. Reg 490/09*, as amended.
  - .2 "General – Waste Management" *O. Reg 347/90*, as amended
  - .3 Hazardous Products Act's *Surface Coating Materials Regulations* SOR/2005-109, as amended (2011)
- .9 **Mercury:**
  - .1 "Designated Substances" *O. Reg 490/09*, as amended.
  - .2 "General – Waste Management" *O. Reg 347/90*, as amended
- .10 **Silica:** "Designated Substances" *O. Reg 490/09*, as amended.
- .11 **Vinyl Chloride:** "Designated Substances" *O. Reg 490/09*, as amended.
- .3 All contractors requesting tenders from subcontractors shall furnish this report to subcontractors.

## 1.2 VALIDITY DATE

- .1 DST staff completed a visual inspection of building materials for the presence of suspected designated substances within the project areas in January 2013. The survey did not include a full building designated substances survey, and was limited to the roof, as well as the crawlspace under the roof of 165 Sparks Street, as per communications with the on-site client representative.
  - .1 From the visual inspection, suspect materials were sampled and analyzed for select designated substances. On the basis of this inspection, a total of nine (9) bulk samples (not including sample layers) of suspected asbestos-containing material were collected from the 165 Sparks Street project area.
  - .2 Samples were submitted for analysis at Paracel Laboratories Ltd., located at 300-2319 St. Laurent Boulevard, Ottawa, ON.

- .3 The survey was limited to those areas that could be safely accessed by non-destructive means, but did include intrusive roofing material sampling. The visual inspection and sampling was limited to readily accessible areas. Destructive testing was not included in the investigation. Due to the nature of construction, some inherent limitations exist as to the possible thoroughness of the designated substance survey.
- .4 It is possible that designated substances are present in non-accessible areas and concealed spaces. No other areas outside the defined work boundaries have been assessed.
- .5 Prior to beginning work, it must be confirmed with the Departmental Representative that no additional designated substances have been brought to the project area.
- .6 In addition, the survey refers to Polychlorinated Biphenyls (PCBs) and Halocarbons; however, it does not refer to other substances that may be present in the day-to-day usage for specialized equipment or areas in buildings (i.e., lead shields, fume hoods, chemicals, etc.).
- .7 There is a possibility that materials that could not be reasonably identified within the scope of this assessment or which were not apparent during previous site visits may exist. Should any designated substance be encountered in the course of demolition, renovation, or repair, work must be stopped, preventative measures taken, and the Departmental Representative must be notified immediately. **Do not proceed until written instructions have been received.**

## **PART 2 - DESIGNATED SUBSTANCES**

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### **2.1 SURVEY RESULTS**

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

Asbestos is a naturally occurring material. In general, it has historically been intentionally added to many building materials in the construction

industry to increase thermal or chemical resistance properties. More common uses are thermal insulation for pipes and boilers, structural steelwork fireproofing, floor tiles and in-wall and ceiling plasters. There are two classes of asbestos-containing materials: friable and non-friable. Friable asbestos-containing materials are loose in composition or can be easily crumbled using hand pressure. Non-friable asbestos-containing materials are more durable and are held together by a binder such as cement, vinyl or asphalt.

Representative bulk samples from materials located within the project areas, collected as part of the designated substance survey, are referenced below. Analytical results indicate that select samples contain asbestos in the project areas. The following table summarizes the analytical results of bulk samples referenced as part of the site investigation.

**Table 1: Asbestos Sample Results, Analyzed by Polarized Light Microscopy (PLM)**

Sample ID	Material	Location	Asbestos Type	Asbestos content (%)
16175-03A	Roofing Materials – tar and fibreboard layers	165 Sparks Street, Roof	n/a	n/d
16175-03B			n/a	n/d
16175-03C			n/a	n/d
<b>16175-04A</b>	<b>Duct Parging</b>	<b>165 Sparks Street, Crawlspace</b>	<b>Chrysotile</b>	<b>60%</b>
16175-04B			Not Analyzed, Positive Stop	
16175-04C			Not Analyzed, Positive Stop	
16175-05A	Black Tar	165 Sparks Street, Crawlspace	n/a	n/d
16175-05B			n/a	n/d
16175-05C			n/a	n/d

**Bold** items exceed the 0.5% regulated concentration of asbestos, as per *O.Reg. 278/05*, as amended.

n/d = none detected, n/a = not applicable

**Asbestos-Containing Materials**

Based on the analytical results listed above, the following asbestos-containing materials were identified in the project area:

- A parging material, observed at a duct penetration inside the crawlspace of 165 Sparks Street contains 60% Chrysotile asbestos (Sample 16175-04A). A small amount (less than one square metre) of parging debris was observed.

**Suspected Asbestos-Containing Materials:**

Based on limited visual observations, the following materials are suspected to contain asbestos:

- Cast iron drain pipe joint caulking; and
- Other caulking applications that could not be collected without compromising the integrity of the caulking seal.

### **Non-Asbestos Containing Materials**

Based on limited visual observations and/or the analytical results listed above, the following materials were confirmed to not contain asbestos:

- Roofing materials at 165 Sparks Street (Sample 16175-03A-C); and
- Black tar observed at select locations on the wood ceiling of the crawlspace at 165 Sparks Street (Sample 16175-05A-C).

It should be noted that some ACMs may be concealed and thus not observed at the time of the survey. The site survey did not include a destructive, intrusive investigation for concealed materials, with the exception of intrusive roofing materials sampling that was completed with the aid of a qualified roofing contractor. As a result, DST cannot confirm materials that may not have been visible or apparent at the time of the site investigation.

Should any previously unidentified suspect ACMs be encountered as part of future work, these materials are to be treated as ACMs and handled accordingly, unless sampling proves otherwise. Materials that have not been analyzed, but are visibly similar to other materials identified as asbestos-containing, must be considered asbestos-containing unless proven otherwise by laboratory analysis.

Materials that are visually similar to materials confirmed to contain asbestos should be treated as asbestos-containing materials, unless proven otherwise by laboratory analysis

.4      **BENZENE:** Not Identified

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

.6      **ETHYLENE OXIDE:** Not Identified

.7      **ISOCYANATES:** Not Identified

.8      **LEAD: Suspected**

Lead is a naturally occurring metal that can be found in various materials such as older paints, in soldered joints installed on piping up to the mid 1990s, and in older cast iron bell and spigot joints.

- .1 There may be potential for exposure to high levels of lead depending on the activities performed that disturb the lead-containing materials. At low lead concentrations, conducting a risk assessment to assess the potential for exposure is required to determine the need to follow precautionary measures.
- .2 No paints suspected of containing lead were identified by DST during the site investigation.

- .3 Lead is suspected to be present in the solder of copper piping and cast iron drain pipe joint caulking.
- .9 **MERCURY: Not Identified**
- .10 **SILICA: Identified**  
Free crystalline silica is assumed present in concrete materials, roofing materials, and brick and mortar.
- .11 **VINYL CHLORIDE MONOMER: Not Identified**
- .12 **POLYCHLORINATED BIPHENYLS (PCBs): Not Identified**
- .13 **HALOCARBONS: Identified**  
Halocarbons are suspected to be present in rooftop air conditioning units.

## 2.2 RECOMMENDATIONS

### 1. **ASBESTOS**

Disturbance of all asbestos (whether friable or non-friable) is regulated in Ontario by “Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations” *O.Reg 278/05, as amended*, which outlines the precautions required when performing work involving asbestos-containing materials. The regulation stipulates appropriate respiratory protection, work procedures and ventilation requirements that must be utilized during the disturbance of any asbestos-containing materials, or materials suspected to contain asbestos.

The removal or disturbance of one square metre or less of friable asbestos containing materials (e.g., duct parging material and debris) must be conducted using a minimum of Type 2 asbestos work procedures. The removal or disturbance of more than one square metre of friable asbestos-containing materials must be conducted using Type 3 asbestos work procedures.

The removal or disturbance of non-friable caulking applications can be conducted using a minimum of Type 1 asbestos work procedures, provided the material is wetted and removed by means of non-powered hand-held tools. If these conditions cannot be met, then more stringent (Type 2 or Type 3) work procedures are required.

The “General – Waste Management” *O.Reg 347/90, as amended*, governs the disposal of waste containing asbestos. The waste must be disposed at a licensed waste disposal site.

## 2. LEAD

If lead-containing materials are disturbed then proper precautions, as outlined under "Designated Substances" *O.Reg 490/09*, as amended, of the Occupational Health and Safety Act, must be followed.

Under Ontario Regulation 490/09, as amended of the Occupational Health and Safety Act, regulatory limits have been established for occupational exposure limits to airborne lead that may be present in a workplace. The Time Weighted Average Exposure Values (TWAEV) to airborne lead dust or fumes should not exceed the Ministry of Labour's 0.05 milligram per cubic metre (mg/m<sup>3</sup>) limit during the removal of paints and products containing any concentration of lead. The TWAEV 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.

Contractors performing work that requires disturbance of lead-containing materials are responsible to ensure that the workers are not exposed to airborne lead dust levels in excess of the time-weighted average and Maximum Exposure Concentration for lead-containing paints.

.1 Ontario Ministry of Labour (MoL) has published the document entitled "*Guideline: Lead on Construction Projects*". This document classifies all disturbances of lead-containing materials as Type 1, Type 2a, Type 2b, Type 3a or Type 3b work, based on presumed airborne concentrations of lead generated during the work each of which will have defined work practices. Although this document is not a regulation, Ministry of Labour Inspectors use it as guidance during site inspections. Where there is conflict with the exposure limits and respiratory protection required by "Designated Substances" Regulation *O.Reg 490/09*, as amended, the most stringent requirements of Regulation *490/09* must apply.

.2 The disposal of construction waste containing lead is controlled by "General – Waste Management" *O.Reg 347/90, as amended*, under the *Ontario Environmental Protection Act*. The classification of the waste is dependent upon the result(s) of leachate test(s). The waste can be classified as "hazardous", "non-hazardous" or "registerable solid waste", depending on the results of the leachate test.

### 3. SILICA

.1 Crystalline silica is regulated under "Designated Substances" O.Reg 490/09, as amended, of the *Occupational Health and Safety Act* as a Designated Substance

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

.3 The Occupational Health and Safety Branch of the MoL has published the document entitled "*Guideline: Silica on Construction Projects*". This document classifies the disturbance of materials containing silica as Type 1, Type 2 or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. These work procedures should be followed when performing work involving the disturbance of silica-containing materials.

### 4. HALOCARBONS

#### (NOT RECOGNIZED AS A DESIGNATED SUBSTANCE)

.1 When halocarbons-containing equipment requires dismantling or disposal, this equipment must be tagged by a certified technician before it can be dismantled or disposed, as per the requirements of the Federal Halocarbon Regulations (2003) and O.Reg. 463/10. If the units are to be removed, no release of the refrigerant shall occur in accordance with the *Canadian Environmental Protection Act*. If the units are being disposed, a qualified ODS technician with environmental awareness training must drain and remove the ODSs. ODS recycling and recovery initiatives must be undertaken for any ODS-containing units being displaced by proposed work.

.2 *The Ozone-Depleting Substances (ODS) Regulations* made under the *Canadian Environmental Protection Act* came into force on June 2, 1994. These regulations control the reclamation, recovery and recycling of ODSs. Environment Canada has prepared a *Code of Practice for the Reduction of Chlorofluorocarbon Emissions from Refrigeration and Air Conditioning Systems (1991)* which outlines practices to be followed when conducting maintenance on these refrigerant-containing units. *The Federal Halocarbon Regulation* which came into effect in 1999, regulates releases, recovery and recycling of

ODS and their halocarbon alternatives in the federal domain and also to ensure that these releases are minimized. Even though halocarbon alternatives to ODSs may have no impact on the ozone layer, they are green house gases and thus contribute to climate change. The Regulations ensure that actions are taken to prevent releases of ODS and their halocarbon alternatives; to report these releases; that adequate training is provided to personnel; that operational and emergency procedures and strategic plans are developed for the use, control and phase-out of these substances. During this project, these regulations must be followed when dealing with ODSs.

## 5. CONTRACTORS DUTIES

The contractor must review the designated substances report and take the necessary precautions to protect the health and safety of the workers and the environment. As per Section 30(4) of the *Ontario Occupational Health and Safety Act*, the party hiring the contractor (i.e., Departmental Representative) shall ensure that the contractor and subcontractor (if any) for the project has received a copy of the designated substance report prior to entering a binding contract for the supply of work on the project. As per Section 27(2) (a, b, and c) of the *Ontario Occupational Health and Safety Act*, while onsite, the contractor supervisor shall exercise every reasonable precaution for the protection of a worker. If you have any questions about the designated substance report, please contact the Departmental Representative.

**END OF SECTION**