

## **PART 1 – GENERAL**

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### **1.1 REGULATORY REQUIREMENTS**

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.1 An investigation into the presence of designated substances for the Cable Repair Project, Manholes 11 and 12 at The Central Experimental Farm, Prince of Wales Drive, 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 within Manholes 11 and 12, Central Experimental Farm, Ottawa, Ontario.

.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 347/09*, as amended
  - .3 "Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations"  
*O.Reg 278/05* (as amended)

- .4 *PWGSC Departmental Policy  
DP 057 – “Asbestos Management”*
- .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 347/09, 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 347/09, 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 Consulting Engineers Inc. (DST), conducted  
the on-site survey for this report on September 19,  
2012 (DST File No. BE-OT-015664).
- .2 DST staff completed a visual inspection of building  
materials for the presence of suspected designated  
substances within the project area, which was  
limited to Manholes 11 and 12, Central Experimental  
Farm, Ottawa.
  - .1 The scope of work for this report involved a  
visual inspection of building materials and  
contents for the presence of suspected  
designated substances within the project  
areas on September 19, 2012.

- .2 From the visual inspection, suspect materials were sampled and analyzed, for select designated substances. On the basis of this inspection, a total of six (6) bulk samples of suspected asbestos-containing material were collected. One (1) PCB surface wipe sample and one (1) bulk PCB tar sample were also collected.
- .3 Samples were submitted for analysis at Paracel Laboratories Ltd., located at 300-2319 St. Laurent Boulevard, Ottawa, ON.
- .4 The survey was limited to those areas that could be safely accessed by non-destructive means. 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.
- .5 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.
- .6 Prior to beginning work, it must be confirmed with the Departmental Representative that no additional designated substances have been brought to the project area.
- .7 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.).
- .8 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

### 2.1 SURVEY RESULTS

.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, collected from materials located within the project areas, have been analyzed for asbestos. Analytical results indicate that select samples contain asbestos in the project areas. The following table below summarizes the analytical results of bulk samples collected during the site investigation.

**Table 1: Asbestos Sample Results by PLM**

Sample number	Material	Location	Asbestos Type	Asbestos content (%)
<b>15564-01A</b>	<b>Transite Lining, Cable Pathways</b>	<b>Manhole 12</b>	<b>Chrysotile/Crocidolite</b>	<b>10%/1%</b>
15564-01B			Not Analyzed, Positive Stop	
15564-01C			Not Analyzed, Positive Stop	
15564-02A	Black Tar on Cables	Manhole 12	n/a	n/d
15564-02B			n/a	n/d
15564-02C			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

The following non-friable ACM may pose a risk if disturbed during the Cable Repair Project:

1. Transite lining in concrete walls associated with cable pathways in Manhole 11 and 12.

.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.

.2 Even at low concentrations, there may be potential for exposure to very 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.

.3 No paints were identified in the project areas; however, suspected lead sheeting was observed around select areas of the cables within both Manholes 11 and 12.

.9 **MERCURY: Not Identified**

.10 **SILICA: Identified**

Free crystalline silica is assumed present in concrete throughout the project area.

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

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

Based on laboratory analytical results, one (1) bulk tar sample collected from the surface of a damage cable in Manhole 12 does not contain regulated concentrations of PCBs.

One (1) surface wipe sample collected from the concrete floor of Manhole 12 revealed a PCB concentration of 58.1 µg/100 cm<sup>2</sup>. Based upon these results, Manhole 12 is considered

contaminated with PCB-containing oils. The oils remaining within the high voltage cables of Manholes 11 and 12 are also assumed to contain regulated concentrations of PCBs unless sampling confirms otherwise after the lines have become de-energized.

.13 **HALOCARBONS:** Not Identified

## 2.2 RECOMMENDATIONS

### **1. ASBESTOS**

PWGSC's *DP 057, Asbestos Management* sets policy, establishes roles and responsibilities and provides a code of practice for the management of and working with asbestos-containing materials. All work must be done in accordance with this directive, as well as all other applicable legislation. 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.

In the event of conflict between DP-057 and "Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations" *O.Reg 278/05, as amended*, the more stringent shall apply.

The removal or disturbance of non-friable transite linings can be conducted using a minimum of Type 1 asbestos work procedures, provided the material is wetted and removed or disturbed 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 to airborne lead dust or fumes should not exceed the Ministry of Labour's 0.05 milligram per cubic metre ( $\text{mg}/\text{m}^3$ ) 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.

Prior to disposal, the concentration of leachable lead must be determined for waste materials with elevated lead contents following the Toxicity Characteristic Leaching Procedure (TCLP).

The removal of suspect lead sheeting can be completed using Type 1 lead precautionary measures. Disposal of lead containing waste must be completed in accordance with *O.Reg 347/90, as amended*. Alternatively and preferably, the suspected lead sheeting can be recycled.

### **3. SILICA**

.1 Silica occurs as crystalline material in cement. 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 concrete, ceiling tiles and drywall 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. POLYCHLORINATED BIPHENYLS (PCBs):**

There are no regulations or guidelines in Canada for the decontamination/cleaning of porous materials such as concrete where PCB concentrations of 10 µg/100 cm<sup>2</sup> or greater on their surfaces (and presumably concentrations of PCBs within the high voltage lines greater than the regulatory limit) are present.

EPA Policy 761.30(p) allows concrete affected by older spills (greater than 72 hours) to be cleaned by solvent washing to permit continued use of the surface while it remains in service for its originally intended use (i.e. concrete is not removed). EPA Policy 761.30 requires that porous surfaces be cleaned following the double wash rinse procedures described in 40 CFR 761, Subpart S. This cleaning process involves several steps intended to clean the affected area. After the double wash rinse procedures, the concrete floor must be encapsulated. Encapsulation involves sealing the



porous surface with liquid applied coating or bonding agent (such as an epoxy) to cover the material to provide a barrier between any remaining PCBs in the surface and the surrounding environment. Subsequent to cleaning and encapsulation, additional surface wipe sampling is recommended to confirm acceptable PCB surface concentrations ( $<10 \text{ cm}/100 \text{ cm}^2$ ).

The high voltage cables in Manhole 11 and 12 should be considered to contain liquid PCB concentrations above limits specified in PCB Regulation SOR/2008-273, unless proven otherwise by laboratory analysis. Cables can continue to be used until the end of their useful life and in any concentration of PCBs, and are not subject to the decommissioning deadline of September 5, 2008 specified in the PCB regulations. However, the cables can no longer be re-used in the same condition once they have been removed from the site where they are located, unless they are cleaned of all the PCBs they may contain. In cases where they have not been cleaned of their PCBs, they can only be moved or dismantled to be stored or shipped for PCB destruction. The PCB storage and destruction requirements of the regulation therefore apply.

## **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**