

PART 1 – GENERAL

1.1 REGULATORY REQUIREMENTS

.1 An investigation into the presence of designated substances for the High Voltage Electrical Line Repair Project, Manholes 31 and 32 at The Confederation Heights Complex 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 31 and 32, Confederation Heights Complex, 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 December 19,
2012 (DST File No. BE-OT-016046).
- .2 DST staff completed a visual inspection of materials
for the presence of suspected designated
substances and hazardous materials within the
project area, which was limited to Manholes 31 and
32, at the Confederation Heights Complex in
Ottawa, Ontario.
 - .1 The scope of work for this report involved a
visual evaluation of materials for the
presence of suspected designated
substances and hazardous materials within
the project areas on December 19, 2012.

- .2 The survey was limited to those areas that could be safely accessed by non-destructive means. The visual evaluation 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. DST was instructed by PWGSC not to cut into or open any cables in the manholes. As a result, DST did not conduct an intrusive investigation into the cables, any associated cable layers, or adjoining materials in the direct vicinity of the cables as part of the DSR due to safety concerns and/or as specifically instructed by PWGSC. Based on discussions with the on-site PWGSC representative, no oily, liquid substances leaked from the damage cable.
- .3 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.
- .4 Prior to beginning work, it must be confirmed with the Departmental Representative that no additional designated substances have been brought to the project area.
- .5 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.).
- .6 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: Assumed/Suspected**

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.

As the survey was non-destructive in nature, and due to safety concerns regarding the high voltage cables and the fact that DST was instructed by PWGSC to not cut into any materials associated with the high voltage cables to permit sampling, DST did not collect any samples for asbestos as part of the site investigation. However, the following materials are assumed and/or suspected to contain regulated concentrations of asbestos based on visual observations:

Manhole 32

- Less than one square metre of assumed friable asbestos-containing woven, cable wrap was observed on each of the high voltage cables (refer to Photo 1)(Tags on these cables indicated that a lock-down sealant was applied to this material on 02-01-11); and,
- Non-friable solid cable wrap at wall duct banks is suspected to contain asbestos. DST did not cut into and/or sample the material as select high voltage cables were energized at the time of the site survey (refer to Photo 3).

Manhole 31

- Cable wrap observed on the cables in Manhole 31 was not visibly similar to woven suspect asbestos-containing wrap. However, it is uncertain if the specific wrap type observed consists of asbestos-containing materials. There was less than one square metre of this material observed on each of the high voltage cables (refer to Photo 6); and,
- Non-friable solid cable wrap at wall duct banks is suspected to contain asbestos. DST did not cut into and/or sample the material as select high voltage cables were energized at the time of the site survey (refer to Photo 8).

Based on limited visual observations, the duct bank linings leading out of Manholes G31 and G32 appeared to be comprised of non-asbestos containing materials.

.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 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.

.2 No paints were identified in the project areas.

.3 Lead may be present as a component of the high voltage cables and or sheathings/solid wraps.

.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): Suspected**

During the site investigation, high voltage cables were observed inside Manholes G31 and G32. DST did not conduct an intrusive investigation into any cable wrap/shielding as the survey was non-destructive in nature. High voltage cables inside the manhole are suspected to contain an oily substance or liquid (i.e. dielectric fluid) beneath any cable shielding (i.e. within the cable), until proven otherwise. If present, the liquid should be assumed

to contain PCBs, unless proven otherwise by laboratory analysis.

Staining on concrete walls/cable wraps may consist of oils containing PCBs.

.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 one square metre or less of friable woven cable wrap linings must be conducted using a minimum of Type 2 asbestos work procedures.

The removal or disturbance of suspected non-friable asbestos containing materials can be completed using Type 1 asbestos procedures, provided the material is wetted and only non-powered hand held tools are used. If these conditions cannot be met, then more stringent (Type 2 or Type 3) procedures are required.

It is recommended that high voltage cable lines be de-energized prior to any abatement activity.

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 (mg/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).

It is anticipated that the manual removal of suspect lead components 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 any suspected lead components 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):

1. It was not feasible during the survey to determine whether cables in the manholes contained an oily substance (dielectric fluid) beneath cable shielding (i.e. within the cable) which can contain PCBs. As communicated by the on-site client representative, no oily, liquid substance leaked out from the damaged cable. Any oily liquids or staining encountered as part of future work operations should be assumed to contain regulated concentrations of PCBs, until proven otherwise by laboratory analysis.

2. Any suspected PCB-containing equipment must be handled and disposed of in accordance with:

-Canadian Environmental Protection Act's (CEPA) *PCB Regulations*

-Canadian Council of Ministers of the Environment's "*Guidelines for the Management of Wastes Containing Polychlorinated Biphenyls*"

-Ontario Environmental Protection Act's O.Reg 362/90 "*Waste Management – PCB's*" (O.Reg 33/07, French version)

All PCB-containing equipment that is removed from the site or placed into storage shall be appropriately reported in accordance with the requirements of the CEPA PCB Regulations.

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