

PART 1 – GENERAL

1.1 REGULATORY REQUIREMENTS

.1 An investigation into the presence of designated substances for the Catwalk Access Upgrade Project, on the Alexandra Bridge located between Gatineau, Québec and Ottawa, Ontario, was performed in order to meet the requirements of the *Canada Labour Code* under Part II, Section 124 which stipulates that every employer shall ensure that the health and safety at work of every person employed by the employer is protected. Furthermore, Section 125(1)(z.14) of the *Canada Labour Code* stipulates that the employer will take all reasonable care to ensure that all persons granted access to the work place, other than the employer's employees, are informed of every known or foreseeable health and safety hazard to which they are likely to be exposed in the work place. Also, the Designated Substances Report (DSR) was performed to meet the requirements of Section 30 of the Ontario Occupational Health and Safety Act, Revised Statutes of Ontario, 1990, Chapter 0.1. By having a DSR conducted, the PWGSC 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.

.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 Canada Consumer Product Safety
Act's Surface Coating Materials
Regulations SOR/2005-109, as
amended
 - .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) prepared a
Designated Substances Report (DSR) for the
Alexandra Bridge on May 24, 2013 (DST Project No.
BEOT016716). The findings of this DSR that were
considered pertinent for the purposes of the Catwalk
Access Upgrade Project are included in this
Specification Report.
 - .1 The scope of work for the DSR performed
on May 24, 2013 involved a visual
inspection of building materials and contents
for the presence of suspected designated
substances. The project area for the
Catwalk Access Upgrade Project consists of
a section of the bridge and an area below
the bridge in the vicinity of Pier 1 on the
Ontario side of the Provincial border,
identified as the 'Zone of Work' on Drawing
No. AB-R111, provided to DST by PWGSC.
 - .2 From the visual inspection, suspect
materials were sampled and analyzed,
(where necessary), for select designated
substances. On the basis of this inspection,

a total of four (4) bulk paint samples were collected from the project area by DST for lead content analysis.

- .3 Samples were then submitted for analysis at Paracel Laboratories Ltd. (an accredited Canadian Association for Environmental Analytical Laboratories (CAEAL)), located at 300-2319 St. Laurent Boulevard, Ottawa, ON K1G 4J8.

The lead analysis of the paint samples was completed using Inductively Coupled Plasma – Mass Spectrometry (ICP-MS) in accordance with U.S. EPA Method 6010-C.

- .4 The survey was limited to those areas that could be 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 of the bridge, 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 or additional confined 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 or renovation, 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:** Not Identified
- .4 **BENZENE:** Not Identified
- .5 **COKE OVEN EMISSIONS:** Not Identified
- .6 **ETHYLENE OXIDE:** Not Identified
- .7 **ISOCYANATES:** Not Identified
- .8 **LEAD: Identified**

Lead is a naturally occurring metal. It was used primarily in paint prior to the 1980's to increase the drying process. Lead in paint becomes a danger when it is old or damaged, as it creates lead dust and chips. Lead can also be found in soldered joints installed on piping up to the mid-1990s and in older cast iron bell and spigot joints.

- .1 According to the Canada Consumer Product Safety Act's *Surface Coating Materials Regulations* SOR/2005-109, as amended, allowable concentration of lead of surface coatings is 0.009 percent by weight (weight of lead to weight of paint), which is equivalent to 90 parts per million (ppm).
- .2 Even at low concentrations, 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.
- .3 Three (3) representative paint samples were collected by PWGSC in 2012 from the Alexandra Bridge. Four (4) representative paint samples were collected by DST in May, 2013 from the Alexandra Bridge. Analytical results indicate that select paints that may be present in the project area and outlined below contain detectable concentrations of lead. The paint sample results are summarized in the following tables:

Table 1: Lead in Paint Sample Results – PWGSC (2012)			
Sample number	Sample Location	Sample Description	Lead Content (µg/g or ppm)
ALEX-Pb-1	Beam 13C	Dark grey/green paint	130
ALEX-Pb-2	Beam 14C	Grey paint	n/d
ALEX-Pb-3	Beam 15C	Dark grey/green paint	110

n/d – None Detected

Bold items represent paints with detectable concentrations of lead

Table 2: Lead in Paint Sample Results – DST (2013)			
Sample number	Sample Location	Sample Description	Lead Content (µg/g or ppm)
16716-LP01	Under Bridge, Québec	Green/Grey paint, Vertical Steel Member	88
16716-LP02	Under Bridge, Québec	Grey Paint, Horizontal Steel Member	68
16716-LP03	Beam G29W	Grey Paint, Steel Beam	<20
16716-LP04	Beam G13W	Grey Paint, Steel Beam	<20

n/d – None Detected

Bold items represent paints with detectable concentrations of lead.

.4 Sampling was limited to readily accessible areas of the bridge which generally showed areas of delaminating paint. Any older paint applications are suspected to contain detectable concentrations of lead.

.9 **MERCURY: Identified**

Mercury is assumed present in vapour form and in the phosphor coating of high intensity discharge (HID) light tubes associated with the bridge.

.10 **SILICA: Identified**

Free crystalline silica is assumed present in concrete materials, asphalt, stone and mortar.

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

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

HID lights are present under the Alexandra Bridge, as well as on the top side of the bridge for pedestrian and vehicular traffic. DST did not

disassemble the HID lights or other lights as they were energized at the time of the site investigation. These lights are suspected to contain PCB ballasts or capacitors, until proven otherwise.

13 **HALOCARBONS:** Not Identified

2.2 RECOMMENDATIONS

1. LEAD

1. If lead-containing materials are disturbed (i.e. during cutting, dry sanding, grinding, polishing and sawing operations), then proper precautions, as outlined under "Designated Substances" O. Reg 490/09, as amended, of the Occupational Health and Safety Act, must be followed.
2. 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 paint. It should be noted that the use of mechanically-powered tools or torches on lead-containing materials increases the concentration of airborne lead dust or fumes and thereby requiring more stringent respiratory protection and controlled work procedures.
3. 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^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.
4. 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. In the absence of specific legislation for lead on construction projects, this guideline would serve as a reasonable, peer-reviewed standard for work procedures.

5. Should any welding and/or high temperature cutting of painted steel be required then a minimum of Type 3a operations are recommended unless the lead-containing paint is first removed from the steel. Any lead removal work should be performed in accordance with the applicable lead guideline document.
6. The disposal of construction waste containing lead is controlled by "General – Waste Management" O. Reg 347/09, 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. Painted metal can be recycled as scrap metal.

2. MERCURY

1. Mercury is governed by "Designated Substances" O. Reg 490/09, as amended, under the Occupational Health and Safety Act. The regulation provides requirements for allowable exposure levels.
2. In addition, mercury waste is considered a hazardous waste under "General – Waste Management" O. Reg 347/09, as amended, of the Ontario Environmental Protection Act. Fluorescent lamp tubes are considered hazardous material and should be recycled if removed from service. For information regarding the collection of fluorescent lamp tubes, please consult the PWGSC Departmental Representative.

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. Appropriate respiratory protection and ventilation must be donned during the demolition and modifications of materials containing silica.
3. In Ontario, 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) (NOT RECOGNIZED AS A DESIGNATED SUBSTANCE)

- .1 PCBs are not recognized as Designated Substances. However, a survey of the project area was completed for this substance due to its risks to both human health and environment. It was not feasible during the survey to determine whether light fixtures or HID lamp ballasts in the project area were free of PCBs. Therefore, if any fluorescent light ballasts are removed during this project, please refer to the Environmental Canada, *Identification of Lamp Ballasts Containing PCBs, August 1991* report in order to identify the ballast type. Ballasts for a typical 1.2 metre fluorescent light fixture made with PCBs contain approximately 23.6 grams of PCB.
- .2 If any fluorescent light ballasts are removed during any future works, they must be sorted by a competent person.

PCB-containing equipment must be 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"* as amended (*O. Reg 33/07*).

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 substance 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., PWGSC 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 PWGSC Departmental Representative.

The contractor shall also complete all reporting requirements to comply with applicable regulations.

END OF SECTION