

MEMORANDUM



TO: **City of Ottawa, Asset Management Branch** FOR INFO OF: Church Street Bridge (SN873100)

FROM: **Adel Chowdhury – Env. Eng. (MH)**
Ant West – Sr. Env. Eng. / Dept. Manager (MH)

RE: **Limited Designated Substance Survey - Structure** MH PROJECT No.: 1902172.00
Renewal: Bridges SN873100, SN897140 & SN897170 DATE: July 23, 2019
and Culvert SN898800

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Introduction

Morrison Hershfield (MH) has been retained by the City of Ottawa (the Client) to provide engineering and environmental services for the rehabilitation/replacement of three (3) bridges and one (1) culvert. The scope of the project includes the rehabilitation of the Church Street Bridge over Stevens Creek, (SN873100, North Gower Twp.), renewal of Etienne Road Bridge over Becketts Creek (SN897140, Cumberland Twp.), rehabilitation of Etienne Road Bridge over Becketts Creek Municipal Drain (SN897170, Cumberland Twp.), and replacement of Etienne Road culvert on D. LeGault MD (SN898800, Cumberland Twp.). As part of this project, MH completed a Limited Designated Substance Survey (DSS) of specifically the Church Street Bridge structure only.

The Limited DSS consisted of:

- Visual inspection of structure for potential lead-based-paint (LBP);
- Collection of samples of potential LBP from the east and west railing system on bridge deck;
- Analysis of samples by a laboratory certified by the Canadian Association for Laboratory Accreditation (CALA);
- Assessment and reporting of results.

The Limited DSS was carried out to support the Client in their duty to protect workers from health and safety hazards on the job, as required by the *Ontario Occupational Health and Safety Act (OHS)*.

The Act specifies, in general terms, the duties of owners, employers, and others to protect workers from health and safety hazards on the job. Section 30 of the OHS requires that a list of all “designated substances”, as defined by *O.Reg 490/09*, at a project site be provided to all bidders at tendering stage. The DSS included the eleven “designated substances” (acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica, and vinyl chloride), in addition to other “hazardous materials” which may require special handling during construction or demolition activities (polychlorinated biphenyls (PCB), ozone-depleting substances (ODS) and mould).

The key substance addressed in this inspection is lead (*Guideline: Lead on Construction Projects, April 2011*). No other designated substances were assessed as part of the scope of work for this report.

Although the DSS makes reference to provincial and/or federal laws, regulation, codes, guidelines, and best practices, it is not intended to be an audit to determine compliance with these. The information is provided only to provide context for the assessment of conditions within the facility.

Regulatory and Background Information

Legal requirements which apply to health and safety on construction projects are set out in the OHSA, R.S.O. 1990, Chapter O.1 and regulations made under the Act. The Act specifies, in general terms, the duties of owners, employers and others to protect workers from health and safety hazards on the job. These duties include taking all reasonable precautions to protect workers and acquainting a worker, or a person in authority over a worker, with any hazard in the workplace and in the handling, storage, use, disposal and transport of hazardous materials. The Regulation for Construction Projects, *O.Reg. 213/91* (last amended by *O. Reg. 142/17*), applies to all construction projects, and requires the use of appropriate personal protection equipment, training in the use of protective equipment, and the provision of adequate washing facilities.

Section 30 of the OHSA requires that a list of all "designated substances" at a project site be provided to all bidders at the tendering stage and that the "constructor" for a project shall ensure that each prospective contractor and subcontractor for the project has received a copy of the list before entering into a contract. Under *Regulation 490/09* there are eleven substances which are classified as "designated substances" in Ontario: acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica, and vinyl chloride. Other "hazardous materials" which require special handling during construction or demolition activities include polychlorinated biphenyls (PCBs), ozone-depleting substances (ODS) and mould.

Other regulatory requirements (and guidelines) which apply to control of exposure to designated substances and hazardous materials are referenced in the respective sections for each identified designated substance.

Lead

Lead is a heavy metal that has been used in mechanical and electrical equipment and building materials such as paints and coatings (regulatory limit in Canada: 5000, 600, 90 ppm in 1976, 2005 and 2010 respectively), mortar, concrete, older water pipes (pre-1975), plumbing solder (pre-1986), packaging, sheet metal, caulking, glazed ceramic products and cable splices. Exposure to lead can cause lead poisoning and damage to a number of systems in the body such as the blood, nervous system, and reproductive system. In Ontario, lead is designated under the *OHSA* and *Regulation 490/09*. The latter regulation sets an 8 hour daily or 40 hour weekly time-weighted average exposure limit of 0.05 mg/m³.

Guidance on handling lead-containing materials during construction projects is contained in the document *Guideline: Lead on Construction Projects*, published by the Occupational Health and Safety Branch of the Ministry of Labour, dated April 2011. In the guideline, lead-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of lead generated during the work. Different levels of respiratory protection and work procedures are required for each classification. The guideline does not provide a criterion for classifying materials based on lead content.

There is limited information on what concentration of lead (in paint, for example) would specifically trigger the requirement for safe work procedures. For reference purposes only, it is noted that the term "lead based paint" (abbreviated as LBP) is typically used to denote paint containing lead at a



concentration of 0.5% (5,000 ppm) or higher. Lacking legislated “safe level” of lead content in paint and coated surfaces, the Environmental Abatement Council of Ontario (EACO) established 0.1% (1,000 ppm) lead content to be considered “virtually safe level” of lead in paint and surface coatings, provided that aggressive disturbance or heating does not occur (EACO, 2014). For reference purposes only, the term “low-level lead paint” is used to denote paint containing lead above the Canadian regulatory limit in residential paint but below the “virtually safe level” established by EACO (lead content between 90 ppm and 1,000 ppm)

Two representative samples of potential LBP were collected from the railing on both side of the bridge deck (see Photo 1 and 2 below). The samples were submitted to Paracel Laboratories in Ottawa for analysis.



Lead was detected at concentrations above than that allowed in new interior and exterior consumer paints in Canada in both paint samples with concentrations of 100 and 147 $\mu\text{g/g}$ (100 and 147 ppm). However, the paint are considered “low-level lead paint” and within “virtually safe level” of lead in paint, provided that aggressive disturbance or heating does not occur. The laboratory Certificate of Analysis is attached.

Additionally, lead is assumed to be present in the road paint on bridge deck.

Work involving lead should be conducted in accordance with the *Lead on Construction Project* guideline. Any repair work conducted on the paint-covered parts of the structure should conform to Ontario Provincial Standard Specification 911.

Other Designated Substances

No other designated substances were assessed as part of this Limited DSS.

Closure

We trust the information presented in this memo meets your requirements. If you have any further questions or need addition details, please do not hesitate to contact the undersigned.

Morrison Hershfield Limited

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Attached:

Attachment A – Laboratory Certificate of Analysis