

**PART 1 - GENERAL**

**1.1 REFERENCES**

- .1 Refer to report entitled "**Project Specific Designated Substances Report**", Building 88, Central Experimental Farm, Ottawa, Ontario@ dated October 2, 2015 and numbered GEC Project No. 28784.

**PART 2 - PRODUCT - NOT USED**

**PART 3 - EXECUTION - NOT USED**

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# PROJECT SPECIFIC DESIGNATED SUBSTANCE REPORT



Agriculture and  
Agri-Food Canada

Agriculture et  
Agroalimentaire Canada

**CENTRAL EXPERIMENTAL FARM – BUILDING #88**  
**OTTAWA, ONTARIO**



**GEC PROJECT No. 28784**

**REPORT TO:**

**MR. DAVID CARNEGIE  
FACILITY OFFICER**

**ON:**

**PROJECT SPECIFIC DESIGNATED SUBSTANCE REPORT**

**CENTRAL EXPERIMENTAL FARM – BUILDING #88  
OTTAWA, ONTARIO**

**REPORTED BY:**

**Greenough Environmental Consulting Inc.  
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**REPORTED ON:**

**October 2, 2015**

## EXECUTIVE SUMMARY

Greenough Environmental Consulting Inc. (GEC) was commissioned by Agriculture and Agri-Food Canada, hereinafter referred to as the “Client”, under the direction of Mr. David Carnegie (Facility Officer), to conduct a designated substance survey and report (DSR) for the pending exterior siding replacement project at Building #88 located at the Central Experimental Farm in Ottawa, Ontario.

The purpose of the survey and sampling program was to identify the quantity, location, and condition of designated substances that may be impacted during the pending project.

Based on the visual inspection of the accessible areas as well as analytical results, no suspect asbestos-containing materials (ACM's) were identified within the survey area. Lead has been identified in painted finishes within the survey area. Mercury is assumed present in select building materials whereas other designated substances may be present in low concentrations in building materials, paints and adhesives but do not represent a concern to occupational health at this time based on the nature of material and expected concentrations.

A summary of the designated substance survey findings is presented in **Table 1**.

<b>TABLE 1 – SUMMARY OF RESULTS &amp; RECOMMENDATIONS</b>		
<b>DESIGNATED SUBSTANCE SURVEY – CENTRAL EXPERIMENTAL FARM, BUILDING #88</b>		
<b>Component</b>	<b>Comments</b>	<b>Recommendations</b>
Acrylonitrile	None identified.	None.
Arsenic	None identified.	None.
Asbestos	No suspect asbestos-containing materials were identified during within the survey.  No bulk sampling for asbestos content was conducted for the purpose of this survey.	<u>General Recommendations:</u>  Suspect materials identified during renovation and/or demolition activities not discussed in this report herein should be treated as ACMs unless proven otherwise through material specific sampling and analysis in accordance with the requirements of Ontario Regulation 278/05.
Benzene	None identified.	None.

Coke Oven Emissions	None identified.	None.
Ethylene Oxides	None identified.	None.
Isocyanates	None identified.	None.
Lead	<p>Based on the analysis of the paint chip samples collected, low to moderate concentrations of lead were identified in select painted finishes ranging from 246 µg/g to 1,140 µg/g.</p> <p>Lead may be present in electrical wiring/systems, but could not be confirmed during the survey.</p>	<p>In the event that any work is conducted that has the potential to create airborne lead, every employer shall take all necessary measures and procedures by means of engineering controls, work practices and hygiene practices and facilities as outlined in the Ontario Ministry of Labour Guideline - Lead on Construction Projects dated April 2011.</p> <p>Every employer shall also ensure that the time-weighted average exposure of a worker to airborne lead, except tetraethyl lead, shall not exceed 0.05 milligrams lead per cubic metre of air, and in the case of exposure to tetraethyl lead 0.10 milligrams lead per cubic metre of air as per O.Reg 490/09, as amended to 148/12.</p> <p>The disposal of construction waste containing lead is controlled by Ontario Regulation 347/90 as amended to O. Reg. 302/14 – General Waste Management, under the Ontario Environmental Protection Act. Leachate tests for lead in construction waste must not exceed 5 mg/L in order to be disposed of at a local landfill without treatment.</p>

Mercury	<p>Mercury may be present in switches and florescent lights present within the project area.</p> <p>Mercury is also assumed to be present in stable forms, in painted finishes. Sampling of mercury in painted surfaces was not performed for the purpose of this survey.</p>	<p>Mercury or mercury vapour within equipment poses no risk to occupants provided the mercury containers remain intact.</p> <p>Best management practice for disposal of mercury-containing equipment is to participate in the manufacturer's recycling program or to release the material to an approved waste carrier for disposal and/or recycling.</p> <p>Exposure to mercury in industrial establishments is regulated under O. Reg. 490/09, amended to O. Reg. 148/12. The TWA should not exceed 0.025 mg/m<sup>3</sup> for all forms except alkyl compounds. Alkyl compounds of mercury should not exceed 0.01 mg/m<sup>3</sup>.</p> <p>All waste material including switches, thermostats and thermometers, must be handled and disposed of according to O. Reg. 347, amended to O. Reg. 302/14. Leachate tests for mercury in construction waste must not exceed 0.1 mg/L in order to be disposed of at a local landfill without treatment.</p>
Silica	No potential silica-containing materials were identified within the survey areas.	None.
Vinyl Chloride	Likely present in stable form in pipes, paints and finishes.	None.

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### **Appendix 1 – Analytical Results – Lead**

## **1.0 INTRODUCTION**

Greenough Environmental Consulting Inc. (GEC) was commissioned by Agriculture and Agri-Food Canada, hereinafter referred to as the “Client”, under the direction of Mr. David Carnegie (Facility Officer), to conduct a designated substance survey and report (DSR) for the pending exterior siding replacement project at Building #88 located at the Central Experimental Farm in Ottawa, Ontario.

The purpose of the survey and sampling program was to identify the quantity, location, and condition of designated substances that may be impacted during the upcoming project.

## **2.0 SCOPE AND METHODOLOGY**

The scope of work followed during the assessment was completed in accordance with the scope of work agreed upon by GEC and the Client. The survey included a specified areas of the building exterior as well as limited areas of the interior of the building. All work was completed in accordance with provincial regulations (O. Reg 490/09 and 278/05). The survey included the following designated substances:

- Acrylonitrile
- Arsenic
- Asbestos
- Benzene
- Coke oven Emissions
- Ethylene Oxide
- Isocyanates
- Lead
- Mercury
- Silica
- Vinyl Chloride

No suspect asbestos-containing materials were identified during within the survey; therefore, no bulk sampling for asbestos content was conducted for the purpose of this survey

For the purpose of this sampling, GEC collected paint chip samples of predominant paint finishes within the surveyed area and submitted the samples to Paracel Laboratories for analysis.

Paracel has received its Certificate of Laboratory Proficiency from the Canadian Association of Environmental Analytical Laboratories (CAEAL) and has achieved accreditation from the Standard Council of Canada.

Analysis of paint chip samples is performed using MOE E3470 (which utilizes EPA Method 6020) which describes the multi-elemental determination of analyses by ICP-OES in environmental samples. The method measures ions produced by a radio-frequency inductively coupled plasma. Analyte species originating in a liquid are nebulized and the resulting aerosol is transported by argon gas into the plasma torch. The ions produced by high temperatures are entrained in the plasma gas and introduced, by means of an interface, into a mass spectrometer. The ions produced in the plasma are sorted according to their mass-to-charge ratios and quantified with a channel electron multiplier. Interferences must be assessed and valid corrections applied, or the data flagged to indicate problems. Interference correction must include compensation for background ions contributed by the plasma gas, reagents, and constituents of the sample matrix. Prior to analysis, samples which require total values must be acid digested using appropriate sample preparation methods.

Inductively Coupled Plasma-Optical Emission Spectrometry (ICP/OES) is applicable to the determination of sub-ug/L concentrations of a large number of elements in water samples and in waste extracts or digests. When dissolved constituents are required, samples must be filtered and acid-preserved prior to analysis. No digestion is required prior to analysis for dissolved elements in water samples. Acid digestion prior to filtration and analysis is required for groundwater, aqueous samples, industrial wastes, soils, sludges, sediments, and other solid wastes for which total (acid-leachable) elements are required. **Appendix 1** presents lead analytical results for the purpose of this survey.

### **3.0 SURVEY LIMITATIONS**

This report reflects the observations of the accessed areas and analysis of materials sampled during the current survey only. It is possible that additional designated substances and hazardous materials exist outside the survey area but they are beyond the scope of this survey.

GEC cannot warrant against the discovery of additional ACMs or presence of other designated substances inside wall cavities, closed bulkheads and closed ceilings due to the non-destructive nature of this survey. Limited access was gained to various locations of the interior and exterior of the structure due to height restrictions.

The site investigation was completed by Mr. Michael Mask of GEC on September 15<sup>th</sup> and 28<sup>th</sup>, 2015. Observations expressed in this document apply only to conditions on this date and within the subject areas.

## **4.0 RESULTS**

The results of the designated substances survey are discussed below.

### **4.1 Acrylonitrile**

Acrylonitrile is used in production of synthetics and may be present in stable form in paints and adhesives. Over time, acrylonitrile will volatilize out of these materials but it is not expected that acrylonitrile concentrations will exceed the maximum allowable Time Weighted Average limit (TWA) of 2 ppm (parts per million) of air for occupants of the structure.

### **4.2 Arsenic**

Arsenic, or arsenic-containing compounds, may be present in stable form in paints and adhesives. Provided these materials remain in good condition, it is not expected that arsenic concentrations will exceed the maximum allowable TWA of 0.01 mg/m<sup>3</sup> of air for occupants of the subject area.

### **4.3 Asbestos**

Based on the findings of the site visit, no suspect asbestos-containing materials were identified during within the survey; therefore, no bulk sampling for asbestos content was conducted.

Suspect asbestos-containing material's identified during renovation and/or demolition activities should be treated as ACMs unless proven otherwise through material specific sampling and analysis in accordance with the requirements of Ontario Regulation 278/05.

### **4.4 Benzene**

Suspected benzene-containing materials were not identified during the survey. Benzene is likely present in a stable form within roofing materials, paints and adhesives. Over time, the benzene component volatilizes out of these materials and is released into the ambient air. It is expected that only trace amounts of benzene presently exist in the building materials at the site. It is unlikely that benzene emissions from the building materials on site will exceed the maximum allowable TWA of 0.5ppm for occupants of the subject area.

#### **4.5 Coke Oven Emissions**

Coke oven emissions are the exhaust released during the burning process of coke (pure carbon). This process was not observed and is not expected to take place at the property; therefore, it is unlikely that coke oven emission concentrations will exceed the maximum allowable TWA of 0.15 mg/m<sup>3</sup> for occupants for the subject building.

#### **4.6 Ethylene Oxides**

Ethylene oxides are used in production of many foams, adhesives and paints. Over time, ethylene oxide will volatilize out of these materials and may be present in trace amounts in the ambient air in the building. It is not expected that ethylene oxide levels will become hazardous to occupants of the subject building.

#### **4.7 Isocyanates**

Isocyanates are raw materials from which all polyurethane products are made. Over time, isocyanates may volatilize out of these materials but will only be present in trace amounts and are not expected to exceed the maximum allowable TWA of 0.02-0.005 ppm (depending on type of isocyanate present) for occupants of the subject area.

#### **4.8 Lead**

In 1976, the Hazardous Products Act limited the amount of lead in interior paint to 0.5 % by weight (5,000 µg/g). Over the years, the amount of lead in paint has continued to decrease due to cooperative efforts of government and industry.

Two (2) paint chip samples were collected from the exterior of the building for laboratory analysis. Based on the sample analysis, low to moderate concentrations of lead were identified in the painted finishes ranging from 246 µg/g to 1,140 µg/g.

Paint analysis completed within the survey is summarized in **Table 3**.

<b>TABLE 3 – RESULTS OF LEAD ANALYSIS – SEPTEMBER 2015</b> <b>DESIGNATED SUBSTANCE SURVEY – CENTRAL EXPERIMENTAL FARM – BUILDING #88</b>			
<b>Date Sampled</b>	<b>Material Description</b>	<b>Surface Colour</b>	<b>Results (ug/g Lead)</b>
LS-01	Exterior Wall	Beige	246
LS-02	Exterior Window Sill	Red	1,140

Lead may be present in electrical wiring/systems present on the exterior of the structure.

#### **4.9 Mercury**

Mercury may be present in switches and florescent lights present within the project area.

Mercury is also assumed to be present in stable forms in painted finishes. Sampling of mercury in painted surfaces was not performed for the purpose of this survey.

#### **4.10 Silica**

No potential silica-containing materials were identified within the survey areas.

#### **4.11 Vinyl Chloride**

Vinyl chloride may be present in paints and finishes. Over time, vinyl chloride will volatize out of these materials but will only be present in trace amounts and is not expected to exceed the maximum allowable TWAEV of 1ppm for occupants of the subject area.

### **5.0 RECOMMENDATIONS**

#### **5.1 Lead**

In the event that any work is conducted that has the potential to create airborne lead, every employer shall take all necessary measures and procedures by means of engineering controls, work practices and hygiene practices and facilities as outlined in the Ontario Ministry of Labour Guideline - Lead on Construction Projects dated April 2011.

Every employer shall also ensure that the time-weighted average exposure of a worker to airborne lead, except tetraethyl lead, shall not exceed 0.05 milligrams lead per cubic metre of air, and in the case of exposure to tetraethyl lead 0.10 milligrams lead per cubic metre of air as per O.Reg 490/09, as amended to 148/12.

The Occupational Health and Safety Branch of the Ontario Ministry of Labour have published Guideline: Lead on Construction Projects. This document classifies all lead disturbances as Type 1, Type 2a, Type 2b or Type 3 work, and assigns alternate levels of respiratory protection and work procedures for each type of task being performed.

Lead is confirmed and/or assumed to be present in the following materials:

- Painted surfaces (confirmed); and
- Electrical wiring / equipment etc. (assumed).

The disposal of construction waste containing lead is controlled by Ontario Regulation 347/90 as amended to O. Reg. 302/14 – General Waste Management, under the Ontario Environmental Protection Act. Leachate tests for lead in construction waste must not exceed 5 mg/L in order to be disposed of at a local landfill without treatment.

## **5.2 Mercury**

Mercury or mercury vapour within equipment poses no risk to occupants provided the mercury containers remain intact.

Best management practice for disposal of mercury-containing equipment is to participate in the manufacturer's recycling program or to release the material to an approved waste carrier for disposal and/or recycling.

Exposure to mercury in industrial establishments is regulated under O. Reg. 490/09, amended to O. Reg. 148/12. The TWA should not exceed 0.025 mg/m<sup>3</sup> for all forms except alkyl compounds. Alkyl compounds of mercury should not exceed 0.01 mg/m<sup>3</sup>.

All waste material including switches, thermostats and thermometers, must be handled and disposed of according to O. Reg. 347, amended to O. Reg. 302/14. Leachate tests for mercury in construction waste must not exceed 0.1 mg/L in order to be disposed of at a local landfill without treatment.

## 6.0 CLOSURE

This report has been prepared for the sole benefit of the Client and their intended use. The report may not be relied upon by any other person or entity without the written consent of Greenough Environmental Consulting Inc. (GEC), and the Client.

GEC accepts no responsibility for any use that an outside party makes of this report and any reliance on decisions made based on it, are the responsibility of such parties.

This report was not intended to provide direction or procedures for the handling of designated substances and hazardous materials. Only persons with documented, current training in the safe handling of the designated substances and hazardous materials should handle them. Persons handling any of the designated substances and/or hazardous materials identified in this survey, or conducting work in the vicinity of these materials are advised to consult this survey and individuals with appropriate experience and training, prior to doing so.

The conclusions presented represent the best judgment of the assessor based on current environmental standards. Due to the nature of the investigation and the limited data available, the assessor cannot warrant against undiscovered environmental liabilities.

We trust that the report meets your current requirements. Should you have any questions or concerns regarding the above, please do not hesitate to contact the undersigned.

Yours Truly,

**GREENOUGH ENVIRONMENTAL CONSULTING INC.**



Michael J. Mask  
Environmental Technician



Michael P. Buller, B.A. (Hons), ROHT, CRSP, CMI  
Vice President of Operations

## **APPENDIX 1 – LABORATORY CERTIFICATE – LEAD**

## Certificate of Analysis

**Greenough Environmental Consulting Inc.**

29 Capital Drive  
Ottawa, ON K2C 0E7  
Attn: Mike Mask

Client PO:  
Project: 28784 (Building 88)  
Custody: 14774

Report Date: 23-Sep-2015  
Order Date: 22-Sep-2015

**Order #: 1539136**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1539136-01	LS-01 - Beige Ext. Paint
1539136-02	LS-02 - Red Ext. Win.Trim

Approved By:



Mark Foto, M.Sc.  
Lab Supervisor

Any use of these results implies your agreement that our total liability in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	23-Sep-15	23-Sep-15

**Sample and QC Qualifiers Notes**

1- QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

**Sample Data Revisions**

None

**Work Order Revisions/Comments:**

None

**Other Report Notes:**

n/a: not applicable  
ND: Not Detected  
MDL: Method Detection Limit  
Source Result: Data used as source for matrix and duplicate samples  
%REC: Percent recovery.  
RPD: Relative percent difference.

## Sample Results

Lead				Matrix: Paint
				Sample Date: 15-Sep-15
Paracel ID	Client ID	Units	MDL	Result
1539136-01	LS-01 - Beige Ext. Paint	ug/g	20	246
1539136-02	LS-02 - Red Ext. Win.Trim	ug/g	20	1140

## Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Matrix Blank</b>									
Lead	ND	20	ug/g						
<b>Matrix Duplicate</b>									
Lead	1980	20	ug/g	2120			6.8	30	
<b>Matrix Spike</b>									
Lead	1230		ug/L	1060	69.9	70-130			QM-07