



Enhanced Designated Substance Survey Lock 18 Hastings, ON

prepared for

PARKS CANADA, CENTRAL ONTARIO FIELD UNIT

Reference No.: 2273-001

July 19, 2012

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EXECUTIVE SUMMARY

At the request Duncan Manser of the Parks Canada, an enhanced Designated Substance Survey was prepared by Cambium Environmental Inc. to identify recognized environmental conditions associated with the subject property located at Lock 18 on the Trent Severn Waterway in Hastings, Ontario. The Enhanced Designated Substance Survey was completed for the purposes of due diligence prior to work being completed on the swing bridge and areas of the office.

An Enhanced Designated Substance Survey was completed on the main office building and the swing bridge on June 22, 2012. As part of the survey, 16 samples of various building materials were collected for analysis of asbestos. Based on laboratory results, all samples collected were absent of asbestos. The designated substance survey also included the collection and analysis of four paint samples for lead and mercury analysis.

Results of analysis indicate that paint sample PS104-12, collected from multi-layered blue paint on the east side of the swing bridge contained 2570 µg/g of lead, exceeding the 90 µg/g criteria. Ontario Regulation 490 of the Occupational Health and Safety Act, should be referenced if work is to be completed on the buildings painted surfaces.

No evidence of polychlorinated biphenyls was identified on the property. Building materials likely containing silica including mortar, brick, and cement were observed on the property in the buildings. Ontario Regulation 490 should be referenced if work is to be completed on the buildings. Material Safety Data Sheets were collected for substances on the property and although they did not contain designated substances the material safety data sheets should be followed to ensure proper handling.

Respectfully submitted by,

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1.0 INTRODUCTION

Cambium Environmental Inc. (Cambium) was retained by Parks Canada, Central Ontario Field Unit (Parks) to perform an enhanced Designated Substance Survey (DSS) at the at the Lock 18 office building and swing bridge located on the Trent Severn Waterway in Hastings, Ontario (Site). The Ontario *Occupational Health and Safety Act* prepared by the Ministry of Labour requires that all designated substances at a project site be reported to all construction contractors working within the facility. The DSS identifies the designated substances present, their locations and concentrations (if present). Designated Substances are defined by the Ministry of Labour under the Occupational Health and Safety Act, Section 70 (2) 23 as “prescribing any biological, chemical or physical agent or combination thereof as a designated substance”. Specific regulations have been made to regulate workplace exposure to the following substances:

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

Through discussions with Parks personnel and a detailed inventory by Cambium personnel of the materials present at the Site, it was determined the following designated substances may be present on site: asbestos, lead, mercury, and silica.

1.1 SCOPE OF WORK

The following work was performed as part of the enhanced DSS:

- collection of 16 asbestos samples in general accordance with Ontario Regulation 278/05;
- collection of four (4) paint samples analyzed for lead and mercury;
- inspected, mapped and documented the location of light ballasts potentially containing PCBs;
- inspected, mapped and documented of the locations of mercury containing thermostats;
- mapped all sample locations (transferred to CAD drawings); and,
- provided this report intended for use by the contractor detailing all eleven designated substances and other chemicals presence or absence within the building.

The findings of the Enhanced DSS are presented in subsequent sections of this report.

2.0 METHODOLOGY

2.1 DESIGNATED SUBSTANCE SURVEY

The DSS inspection and sampling program was conducted on June 22, 2012. Cambium staff collected the samples from various locations throughout the building. Asbestos sampling was completed in general accordance with O. Reg. 278/05. The minimum number of bulk material samples that were required to be collected was determined from Table 1 Bulk Material Samples in Subsection 3 (3) of O. Reg. 278/05 and is documented below:

Material	Size of Homogenous Area	Min Samples to be collected
Surfacing material (floor tiles, ceiling tiles, plaster, window caulking, etc.)	less than 90 m ²	3
	90 to 450 m ²	5
	greater than 450 m ²	7
Thermal Insulation	Any size	3
Thermal Insulation Patch	Less than 2 m or 0.5 m ²	1
Other material	Any size	3

Drywall, drywall mud, ceiling tile, and floor tile samples were obtained by taking a grab sample of the suspect material in approximately a 0.1 x 0.1 metre square. Four (4) paint samples were also collected and sent for analysis for lead and mercury concentrations. The samples were placed and secured in sealable plastic bags to be shipped to the laboratory for analysis. Due to limited accessibility and the fact that only discrete samples were permitted, only one sample of drywall mud was collected.

The Sample Survey Table, including the location and condition of each sample is included in Appendix A, and the sample location photographs are attached as Appendix B. The samples were shipped to AGAT Laboratories Limited (AGAT) in Mississauga, Ontario on June 25, 2012 for characterization. AGAT is accredited through the National Voluntary Laboratory Accreditation Program for bulk Asbestos Fibre by PLM. AGAT is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA), for specific environmental tests listed in the scope of accreditation approved by the CALA.

Laboratory Certificates of Analysis are included in Appendix C. Details of the DSS are included in Section 3.0.



3.0 DESIGNATED SUBSTANCE SURVEY RESULTS

3.1 ASBESTOS

Asbestos containing material (ACM) pertaining to construction projects, buildings and repair operations are regulated by Ontario Regulation 278/05, under the Occupational Health and Safety Act (O. Reg. 278/05); in addition, asbestos is regulated under O. Reg. 490 as a designated substance. Asbestos is a natural mineral that has physical characteristics that resist high temperatures, chemical attack and wear. The primary use for asbestos was for its fire retardant qualities and in insulation. In accordance with O. Reg. 278/05, all materials that contain 0.5 percent or more of asbestos by dry weight are considered to be ACMs.

When the effect of asbestos exposure on building occupants could not be determined in the late 1980's, the Ontario Government established the *Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario*. After three (3) years of study, testing and research, the Commission concluded that the risk posed to building occupants by the presence of even the most friable form of asbestos (namely sprayed fireproofing) was not significant; however, the Royal Commission concluded that when asbestos (particularly friable asbestos) was disturbed by cutting, grinding, abrasion or other direct physical contact, it could become airborne and inhaled at a level that could cause health problems. The final report stated, "... construction, demolition, renovation, maintenance, and custodial workers in asbestos-containing buildings may be exposed to significant asbestos fibre levels and may, during their work, cause elevated fibre levels for nearby occupants". The Report of the Royal Commission on Asbestos also includes the following definition of those buildings which potential contain asbestos containing materials:

Many multi-story office buildings, factories, schools, and other public buildings constructed between 1950 and 1973 contain asbestos.

Despite the studies and reports, the use of asbestos continued into the early 1980s, when it became apparent that prolonged exposure to asbestos causes health problems.

Based on these studies and reports, it has become the industry standard to include only buildings and building materials that were constructed prior 1986 in asbestos surveys.

During the Site inspection on June 22, 2012, Cambium staff determined the following building materials to be potentially asbestos containing materials:

- drywall;
- drywall mud;
- ceiling tile; and,

- floor tile.

In total, sixteen (16) samples were collected and submitted to AGAT for analysis of asbestos. All analysis confirmed the absence of asbestos; therefore, no additional safety precautions or procedures are required by the subcontractors for asbestos related concerns. All sample locations were photographed. Refer to Appendix B for sample photographs and Appendix A for the summary of results.

3.2 LEAD

The designated substance lead is regulated by Occupational Health and Safety Act, O. Reg. 490. This regulation describes lead as being any elemental lead, inorganic compounds of lead and organic compounds of lead and applies to all workplaces where lead is present, produced, processed, used, handled or stored. Based on information issued by Health Canada and the US Environmental Protection Association, lead was commonly used as an element in paint until being official banned in late 1977 by the *Lead Based Paint Poisoning Prevention Act* and *Surface Coating Materials Regulations SOR/2005-109* regulations. These regulations set the maximum allowable concentration of lead in paint to be 90 µg/g.

Four (4) paint samples were obtained for analysis of lead from the buildings and swing bridge. During sampling, it was ensured that the paint was removed to a fresh wall surface, such that any historical paint was obtained within the sample. All sample locations were photographed. Refer to Appendix B for sample photographs and Appendix A for the summary of results.

Results of analysis indicate that one (1) paint sample exceeded the maximum allowable concentration. Paint sample PS104-12, collected from the east side of the swing bridge facing the main office building, contained 2570 µg/g of lead (limit is 90 µg/g). The paint sample consisted of several layers of paint with the top colour being blue. Therefore, additional safety precautions or procedures are required by the subcontractors.

3.3 MERCURY

The designated substance mercury is regulated by Occupational Health and Safety Act, O. Reg. 490. Mercury is defined by the regulation as being elemental mercury, inorganic compounds of mercury and organic compounds of mercury. Mercury was commonly used as an element in thermostats prior to the 1980s; mercury was also used in paint until 1990 when it was official banned. *Surface Coating Materials Regulations SOR/2005-109* regulation set the maximum allowable concentration of mercury in paint to be 10 µg/g. As part of the DSS, four (4) paint samples were also analyzed for mercury concentration. All sample locations were photographed. Refer to Appendix B for sample photographs and Appendix A for the summary of results.

All analysis confirmed the mercury concentration in the paint samples collect were less than than allowable concentration as prescribed by the *Canadian Centre for Occupational Health and Safety*; therefore, no additional safety precautions or procedures are required by the subcontractors for mercury related concerns. All sample



locations were photographed. Refer to Appendix B for sample photographs and Appendix A for the summary of results.

All light fixtures throughout the main office building and the public washrooms were florescent lights and in use, no discarded or spare florescent tubes were observed during the site inspection on June 22, 2012. Heating for the main office building and the public washrooms consists of electric base board heaters. Only one thermostat was observed during the Site visit and it was located on the east wall of the female public washroom. The thermostat operates using bi-metallic sensing strips and did not contain mercury.

3.4 SILICA

The designated substance silica is regulated by Occupational Health and Safety Act, O. Reg. 490. Reg. 845 stipulates that every precaution reasonable should be taken to ensure that every worker that is exposed to silica is protected from adverse impact to their health. As the regulation defines silica as crystalline silica in a respirable form, grinding and sand blasting of mortar, bricks, and cement products that may occur during the construction project(s) may be subject to Reg. 845.

3.5 OTHER DESIGNATED SUBSTANCES

No other designated substances were identified during the Site inspection.

3.6 POLYCHLORINATED BIPHENYLS (PCBS)

Although not a designated substance, PCBs can cause harm when handled improperly and such are included in this enhanced designated substance survey and are subject to Ministry of Environment Regulation. No evidence of PCBs was observed during the property inspection. Various fluorescent light ballasts and an electrical transformer were inspected for indication as potential PCB containing. In order to confirm that unit was free of PCB, the ballast information was cross-referenced with the Environment Canada publication *Identification of Lamp Ballasts Containing PCBs* (Environment Canada, 1991).

3.7 MICROBIAL CONTAMINATION AND MOULD

Although not a designated substance microbial contamination, mould, and biological waste from birds and rodents can pose a serious health risk and is therefore included in this enhanced designated substance survey. There was no evidence of mould, biological waste or microbial contamination observed during the Site visit by Cambium staff.



3.8 MATERIAL SAFETY DATA SHEET (MSDS)

Potentially harmful substances were identified in the mechanical room of the main office building, within the storage cabinets along the east wall. MSDS sheets for some substances were provided, they include; "Advantage 4 and 5", "Berry Blast", "Biozyme 100". "Citro Blast", "Clearsight", "Devguard", "Energy", "Green Plus", "Pine All", "True Blue" and "Wick-It".

MSDS sheets were reviewed for most products identified and no designated substances are included within the materials, however they do contain ingredients which can be harmful when stored, used, or disposed of incorrectly. MSDS sheets for "Odorite", "Solar Flare", "Garb o Solv", "Aro – Magic", "Polar: Plumbing Antifreeze", "Condo Brite", "Weather Shield: Rust Coat", "Vision: Vandalism remover", and "Home Bond: contact cement" were not provided and should be treated as potentially harmful to human health. Therefore, additional safety precautions or procedures are required by the subcontractors when handling these substances. MSDS sheets are attached as Appendix D.



4.0 CONCLUSIONS

4.1 DESIGNATED SUBSTANCE SURVEY

- Sixteen (16) ACM samples were obtained from various materials and locations throughout the buildings and submitted to AGAT Laboratory in Mississauga, Ontario for analysis of asbestos. Based on the results of analysis the samples were absent of asbestos.
- Four (4) paint samples were obtained for analysis of lead from the building and the swing bridge. Results of analysis indicate that one (1) paint sample exceeded the maximum allowable concentration of 90 µg/g. Paint sample PS104-12 collect from the east side of the swing bridge contained 2570 µg/g of lead.
- As part of the DSS, the four (4) paint samples analyzed for lead were also analyzed for mercury concentration. Results of analysis indicate that the mercury concentraion in the paint samples collect were less than than allowable concentration as prescribed by the *Canadian Centre for Occupational Health and Safety*.
- Inspection of the thermostat in the female washroom located in the north east corner side of the main office building did not contain mercury; In addition, potentially mercury containing fluorescent light bulbs was observed in all light fixture ballasts locations throughout the buildings in use.
- No evidence of PCBs was observed during the property inspection.
- As the regulation defines silica as crystalline silica in a respirable form, grinding and sand blasting that may occur during the construction project(s) may be subject to O. Reg. 490.



5.0 RECOMMENDATIONS

Based on the foregoing, the following tasks are recommended:

- Due to the presence of lead within the paint sample collected from the swing bridge, full consideration should be given to protect any contractor completing work on the swing bridge with personal protection equipment outlined in Ontario Occupational Health and Safety Act. For additional safety measures, refer to the Ontario Ministry of Labour publication "Lead on Construction Projects". For disposal methods refer to Ontario Regulation 347 (amended by O. Reg. 558/00);
- Due to the potential presence of silica within different construction materials on site, full consideration should be given to protect any contractor completing work on the buildings with personal protection equipment outlined in Ontario Occupational Health and Safety Act.



6.0 QUALIFICATIONS OF THE ASSESSOR

This designated substance survey was performed by/or under the supervision of Jim Bailey, P.Eng. Credentials are presented in Appendix E. Information presented in this report is true and accurate to the best of the assessors' knowledge.



REFERENCES

Environment Canada. (1991). *Identification of Lamp Ballasts Containing PCBs*.

Safety, Canadian Centre for Occupational Health and. (2007). *Surface Coating Materials Regulations SOR/2005-109, as amended by SOR/2007-230*.



GLOSSARY OF TERMS

Contaminant

A compound, element or physical parameter, usually resulting from human activity, or found at elevated concentrations, that have or may have a harmful effect on public health or the environment.

Detection Limit

Concentration under which a parameter cannot be quantitatively measured.

EAA or EA Act

Environmental Assessment Act, Revised Statutes of Ontario, 1990. One of the primary acts of legislation intended to protect, conserve and wisely manage Ontario's environment through regulating planning and development.

EPA

Environmental Protection Act, Revised Status of Ontario, 1990. EPA is another of the primary pieces of Provincial legislation governing the protection of the natural environment of the Province.

MOE

Ontario Ministry of the Environment.

Occupational Health and Safety Act

The primary act of legislation enacted by Ontario Ministry of Labour to regulate and control the safety in the workplace, also Occupational Health and Safety Act, Revised Statutes of Ontario, 1990.

Remedial Action

Corrective action taken to clean-up or remedy a spill, an uncontrolled discharge of a contaminant, or a breach in a facility or its operations, in order to minimize the consequent threat to public health and the environment.



ABBREVIATIONS

RFP	Request For Proposal	µS	microSiemens
MOE	Ontario Ministry of the Environment	ODWS	Ontario Drinking Water Standards
MNR	Ontario Ministry of Natural Resources	PWQO	Provincial Water Quality Objectives
PCofA	Provisional Certificate Of Approval	TOC	Total Organic Carbon
EPA	Environmental Protection Act	VOC	Volatile Organic Compounds
EAA	Environmental Assessment Act	BTU	British Thermal Unit
MW	monitor well	°C	temperature in degrees Celsius
masl	metres above sea level	N/A	not available
kg	kilogram	%	percent
mm	millimetres	cfm	cubic feet per minute
m	metres	ppmdv	part per million by dry volume
km	kilometres	ppmv	part per million by volume
ha	hectare	ppm	part per million
m³	cubic metres	min	minimum
m²	square metres	max	maximum
mg/l	milligrams per litre		

UNITS OF MEASUREMENT AND CONVERSIONS

Length

1 metre (m)	=	3.28 feet
1 millimetre (mm)	=	0.039 inches
1 kilometre (km)	=	0.621 miles

Area

1 hectare (ha)	=	2.47 acres
1 square metre (m ²)	=	10.76 square feet

Volume

1 cubic metre(m ³)	=	35.29 cubic feet
1 litre(L)	=	0.220 gallons

Mass

1 metric ton (tonne)	=	1.10 Imperial tons
1 kilogram (kg)	=	2.20 lbs
pound (lb)	=	453.6 g
gram (g)	=	---
milligrams (mg)	=	1 x 10 ⁻³ g
microgram (µg)	=	1 x 10 ⁻⁶ g
nanogram (ng)	=	1 x 10 ⁻⁹ g
kilogram (kg)	=	1000 g
pictogram (pg)	=	1 x 10 ¹² g
metric tonne (t)	=	1000 kg



Appendix A

Sample Survey Table and Results



Table 1: DSS Summary Table

Sample ID	Room Name/No. and Floor	Location of Sample	Type of Material	Location of Material	Condition of Material	Quantity of Material	Date	Fibrous Asbestos Content %			Comments, Notes, and/or Recommendations
								% Asbestos	Asbestos Type	Friable/Non-Friable	
AS101-12-1	Utility room	Hot water heater - north wall	laminate tile	throughout lunch room/ utility room/ employee bathroom	good	<90 m ²	22-Jun-12	-	-	-	-
AS101-12-2	Lunch room	North corner						-	-	-	-
AS101-12-3	Employee bathroom	Hot water heater -south wall						-	-	-	-
AS102-12-1	Main office	Rear office wall - facing north	tile	main entrance/main office	good	<90 m ²	22-Jun-12	-	-	-	-
AS102-12-2	Main entrance	behind service counter						-	-	-	-
AS102-12-3	Main office	behind paper storage cabinate - facing south						-	-	-	-

1. "NA" denotes not applicable
2. "-" denotes not tested or information not required



Table 1: DSS Summary Table

Sample ID	Room Name/No. and Floor	Location of Sample	Type of Material	Location of Material	Condition of Material	Quantity of Material	Date	Fibrous Asbestos Content %			Comments, Notes, and/or Recommendations
								% Asbestos	Asbestos Type	Friable/Non-Friable	
AS103-12-1	Mechanical room	mech room - north west corner	press board	main office/ mech room	good	<90 m ²	22-Jun-12	-	-	-	-
AS103-12-2	Mechanical room	mech room - south west corner						-	-	-	-
AS103-12-3	Main Office	main office - south west corner						-	-	-	-
AS104-12-1	Utility room	south wall - 30 cm from floor	dry wall	throughout building/ all rooms	good	<90 m ²	22-Jun-12	-	-	-	-
AS104-12-2	Lunch room	north west corner of room						-	-	-	-
AS104-12-3	Utility room	west wall - 50 cm from floor						-	-	-	-
PS101-12	Lunch room	east wall - behind fridge	off white/slight pink	lunch room/ employee bathroom	good	<90 m ²	22-Jun-12	N/A	N/A	N/A	-
PS102-12	Main office	south west corner	light beige/taupe	main office/ employee bathroom	good			N/A	N/A	N/A	-
PS103-12	Employee bathroom	East wall - beside sink cabinet	off white	main office/ employee bathroom	good			N/A	N/A	N/A	-

1. "NA" denotes not applicable
2. "-" denotes not tested or information not required



Table 1: DSS Summary Table

Sample ID	Room Name/No. and Floor	Location of Sample	Type of Material	Location of Material	Condition of Material	Quantity of Material	Date	Fibrous Asbestos Content %			Comments, Notes, and/or Recommendations
								% Asbestos	Asbestos Type	Friable/Non-Friable	
PS104-12	Swing bridge	Swing bridge -underside facing south	multiple layer - blue	swing bridge	good	<90 m ²	22-Jun-12	N/A	N/A	N/A	-
AS105-12-1	Men's and women's bathrooms	Men room - south west corner	ceiling tile	public washrooms	good	<90 m ²	22-Jun-12	-	-	-	-
AS105-12-2	Men's and women's bathrooms	Womens room - south west corner	ceiling tile	public washrooms				-	-	-	-
AS105-12-3	Men's and women's bathrooms	Men room - north east corner	ceiling tile	public washrooms				-	-	-	-
AS106-12-1	Utility room	behind south wall along seam	drywall mud	throughout building/ all rooms	good	<90 m ²	22-Jun-12	-	-	-	-

1. "NA" denotes not applicable
2. "-" denotes not tested or information not required



Table 2: Summary of Sample Locations and Results- Asbestos

Sample ID	Building/Room Name	Location of Sample	Description of Material	Condition of Material	% Asbestos	Asbestos Type
AS101-12-1	Utility Room	under hot water tank/ north wall	White laminate tile	good	ND	-
AS101-12-2	Lunch Room	north corner			ND	-
AS101-12-3	Employee Bathroom	south wall			ND	-
AS102-12-1	Main Office	Rear office wall facing east	White/ beige floor tile	good	ND	-
AS102-12-2	Main Entrance	Behind service counter			ND	-
AS102-12-3	Main Office	Behind office storage cabinate			ND	-
AS103-12-1	Mechanical Room	south west corner	Press board ceiling tile	good	ND	-
AS103-12-2		north west corner			ND	-
AS103-12-3	Main Office	north east corner			ND	-
AS104-12-1	Utility Room	west wall 30cm from floor	dry wall	good	ND	-

*SP = stop positive

ND = Non detection



Table 2: Summary of Asbestos Sample Locations and Results

Sample ID	Building/Room Name	Location of Sample	Description of Material	Condition of Material	% Asbestos	Asbestos Type
AS104-12-2	Lunch Room	north west corner of room	dry wall	good	ND	-
AS104-12-3	Utility Room	south wall 50 cm from floor			ND	-
AS105-12-1	Men's and Women's Bathrooms	Men's room - south west corner	pressed pulp ceiling tile	good	ND	-
AS105-12-2		Women's room - south west corner			ND	-
AS105-12-3		Men's room - north east corner			ND	-
AS106-12-1	Utility Room	behind south wall - along seam	dry wall mud	good	ND	-



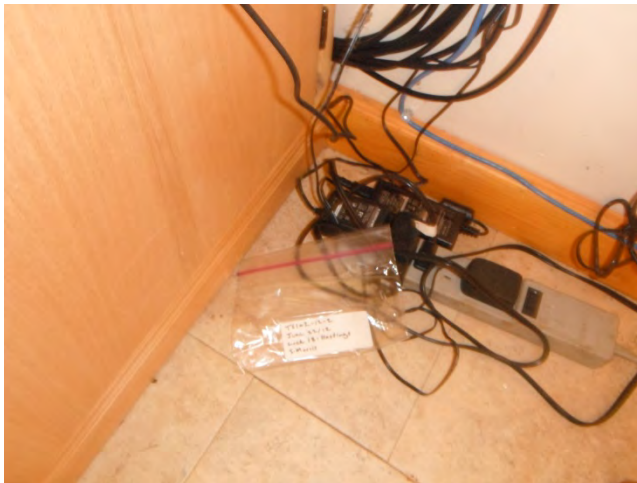
Table 3: Summary of Sample Locations and Results - Paint

Sample ID	Building/Room Name	Location of Sample	Description of Material	Condition of Material	Lead Concentration (µg/g)	Mercury Concentration (µg/g)
PS101-12	Lunch room	east wall - behind fridge	white/slight pink	good	<10	<0.10
PS102-12	Main office	south west corner	light beige/taupe		<10	<0.10
PS103-12	Employee bathroom	East wall - beside sink cabinet	off white		<10	<0.10
PS104-12	Swing bridge	Underside facing south	multiple layer - blue		2570	<0.10



Appendix B

Site Photographs and DSS Sample Photographs



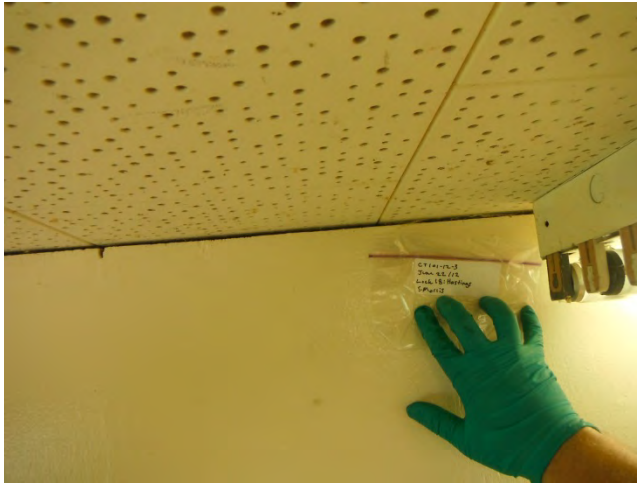
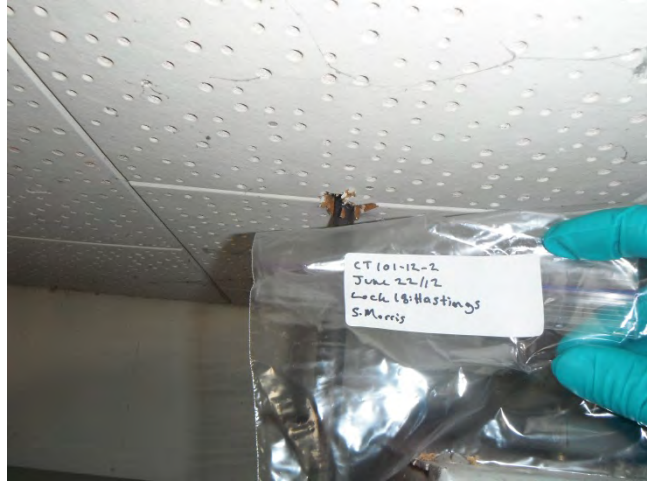






Photo 1 Office building main entrance



Photo 2 Main office building on right, swing bridge in back ground



Photo 3 Main office building and open lock, facing east



Photo 4 Main office building from swing bridge, facing east



Photo 5 Swing bridge from main office building, facing west



Photo 6 Swing bridge from below, facing west



Photo 7 Swing bridge from street level, facing south east



Photo 8 Swing bridge mechanism (underneath), facing west



Photo 9 Example of brick, mortar and concrete, north face of main office building



Photo 10 Public washrooms on east side of office building



Photo 11 Light fixture manufacturer sticker, found throughout office building, no PCBs



Photo 12 Bi-metallic sensing strip thermostat, no mercury



Enhanced Designated Substance Survey, Lock 18 Hastings, ON

Parks Canada, Central Field Unit

Ref. No.: 2273-001

July 19, 2012

Appendix C

Laboratory Certificate of Analysis

CLIENT NAME: CAMBIUM ENVIRONMENTAL INC
52 Hunter Street East P.O. BOX 325
PETERBOROUGH, ON K9H1G5
(705) 742-7900

ATTENTION TO: JIM BAILEY

PROJECT NO: 2273-001

AGAT WORK ORDER: 12T613875

OCCUPATIONAL HYGIENE REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

DATE REPORTED: Jul 05, 2012

PAGES (INCLUDING COVER): 5

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 12T613875

PROJECT NO: 2273-001

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: CAMBIUM ENVIRONMENTAL INC

ATTENTION TO: JIM BAILEY

Asbestos (Bulk)

DATE SAMPLED: Jun 22, 2012

DATE RECEIVED: Jun 26, 2012

DATE REPORTED: Jul 05, 2012

SAMPLE TYPE: Other

Parameter	Unit	G / S	RDL	AS101-11-1 3460530	AS101-11-2 3460531	AS101-11-3 3460532	AS102-11-1 3460533	AS102-11-2 3460534	AS102-11-3 3460535	AS103-12-1 3460536	AS103-12-2 3460537
Asbestos (Bulk)	%		0.5	ND	ND	ND	ND	ND	ND	ND	ND
Parameter	Unit	G / S	RDL	AS103-12-3 3460538	AS104-12-1 3460539	AS104-12-2 3460540	AS104-12-3 3460541	AS105-12-1 3460542	AS105-12-2 3460543	AS105-12-3 3460544	AS106-12-1 3460545
Asbestos (Bulk)	%		0.5	ND	ND	ND	ND	ND	ND	ND	ND

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

3460530-3460545 Condition of sample was satisfactory at time of arrival in laboratory.
"ND" - Not Detected

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T613875

PROJECT NO: 2273-001

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: CAMBIUM ENVIRONMENTAL INC

ATTENTION TO: JIM BAILEY

Lead & Mercury in Paint

DATE SAMPLED: Jun 22, 2012

DATE RECEIVED: Jun 26, 2012

DATE REPORTED: Jul 05, 2012

SAMPLE TYPE: Paint

Parameter	Unit	G / S	RDL	PS101-12	PS102-12	PS103-12	PS104-12
				3460586	3460592	3460594	3460595
Lead	ug/g		10	<10	<10	<10	2570
Mercury	ug/g		0.10	<0.10	0.43	<0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

Quality Assurance

CLIENT NAME: CAMBIUM ENVIRONMENTAL INC

AGAT WORK ORDER: 12T613875

PROJECT NO: 2273-001

ATTENTION TO: JIM BAILEY

Occupational Hygiene Analysis

RPT Date: Jul 05, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Lead & Mercury in Paint

Lead	1	3460595	2570	2050	22.5%	< 10	84%	80%	120%	104%	80%	120%	100%	70%	130%
Mercury	1	3460595	< 0.10	< 0.10	0.0%	< 0.10	99%	90%	110%	92%	70%	130%	94%	70%	130%

Certified By:



Method Summary

CLIENT NAME: CAMBIUM ENVIRONMENTAL INC

AGAT WORK ORDER: 12T613875

PROJECT NO: 2273-001

ATTENTION TO: JIM BAILEY

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Occupational Hygiene Analysis			
Asbestos (Bulk)	INORG 93-6010	EPA 600/R-93/116 & NIOSH 9002	PLM
Lead	MET 1006	EPA SW 846 3050B & 6010C	ICP/OES
Mercury	MET 1001	EPA SW 846 7471A, 245.5	CVAAS

12T613875

21.8°C

Client Information:

Company: Cambium Environmental Inc.
 Contact Address: 52 Hunter Street East PO Box 325
 Peterborough, Ontario, K9H 1G5
 Phone: 705-742-7900 PO# AGAT Quote #: 10-470
 Fax: 705-742-7907 Client Project #: 2273-001

Invoice To:

Ccompany: Same: Yes
 Contact Address: _____
 Phone: _____ PO# _____ AGAT Quote #: _____
 Fax: _____ Client Project #: _____

Invoice To:

Reg 153 Table _____
 Sewer Use: _____
 Other: O. Reg. 278/05

Report Information:

Name: Jim Bailey
 Email: jim.bailey@cambium-env.com
 Name: Steve Morris
 Email: stephen.morris@cambium-env.com

Report Format:

(Check one)
 Single sample per page
 Multiple Samples per page X
 Results by Fax


Turnaround Time Required (TAT):

(Check one)
 Regular TAT 5 to 7 working days X
 Rush TAT 3 to 5 working days
 Rush surcharges 48 to 72 hours
 may apply 24 to 48 hours

Is this a drinking water sample (potable water intended for human consumption)?
 If "Yes" please use the Drinking Water Chain of Custody Record

Sample Identification	Date/Time Sampled	Sample Matrix	Comments Site/Sample Info Sample Containment	Number of Containers	Analysis Required					
					Asbestos (O. Reg. 278/05)	Lead	Mercury			
AS101-11-1	22-Jun-12	Solid		1	X					
AS101-11-2	22-Jun-12	Solid		1	X					
AS101-11-3	22-Jun-12	Solid		1	X					
AS102-11-1	22-Jun-12	Solid		1	X					
AS102-11-2	22-Jun-12	Solid		1	X					
AS102-11-3	22-Jun-12	Solid		1	X					
AS103-12-1	22-Jun-12	Solid		1	X					
AS103-12-2	22-Jun-12	Solid		1	X					
AS103-12-3	22-Jun-12	Solid		1	X					
AS104-12-1	22-Jun-12	Solid		1	X					
AS104-12-2	22-Jun-12	Solid		1	X					
AS104-12-3	22-Jun-12	Solid		1	X					
AS105-12-1	22-Jun-12	Solid		1	X					
AS105-12-2	22-Jun-12	Solid		1	X					
AS105-12-3	22-Jun-12	Solid		1	X					
AS106-12-1	22-Jun-12	Solid		1	X					
PS101-12	22-Jun-12	Solid		1		X	X			
PS102-12	22-Jun-12	Solid		1		X	X			
PS103-12	22-Jun-12	Solid		1		X	X			
PS104-12	22-Jun-12	Solid		1		X	X			

Sample Relinquished By:

Stew Dolstra  25-Jun-12
 Print Name Sign Name Date

 Print Name Sign Name Date

Sample Received By:

 Print Name Sign Name Date

 Print Name Sign Name Date June 26 9:00

Special Instructions:

stop positive analysis required for asbestos samples



Appendix D

Material Safety Data Sheets

SECTION I. PRODUCT IDENTIFICATION AND USES

PRODUCT NAME: ADVANTAGE "4" **EFFECTIVE DATE:** 01/01/12
CODE: 618A

WHMIS CLASS: Status: Controlled
Class A: Compressed gas.
Class D-1B: Material causing immediate and serious toxic effects (TOXIC).
Class D-2A: Material causing other toxic effects (VERY TOXIC).
Class D-2B: Material causing other toxic effects (TOXIC).

T.D.G. CLASSIFICATION: Consumer Commodity

SUPPLIER NAME AND ADDRESS: ADVANTAGE SPECIALTIES
P.O. BOX 244
BRIGHTON, ON K0K 1H0
(613) 475-4572

EMERGENCY PHONE: CANUTEC (613) 996 6666

SECTION II. HAZARDOUS INGREDIENTS

Name	CAS#	% by Weight	TLV/PEL	LC50 ppm (Rat, Inhal)	LD50 mg/kg (Rat, Oral)
Perchloroethylene	127-18-4	30-60	Not available	24196	2629
Methylene Chloride	75-09-2	30-60	TWA: 200 CEIL: 250 ppm TWA: 700 CEIL: 870 mg/m ³	Not available	2388
Diethylene Glycol					
Monobutyl Ether	112-34-5	1-5	Not available	Not available	6560 mg/kg
Carbon Dioxide	124-38-9	1-5	TWA: 5000 ppm	Not available	Not available

SECTION III. PHYSICAL DATA

BOILING POINT:	39.75 (Deg C)	S.G.: 1.260	VOLATILITIES, %:	87%
VAPOR PRESSURE. (mm Hg):	171.8		EVAPORATION RATE:	<0.1 (nBuAcetate=1)
VAPOR DENSITY (Air=1):	3.97		pH(1% soln/water):	Not applicable
SOLUBILITY IN WATER:	Insoluble		VISCOSITY:	Not available
PHYSICAL STATE & COLOR:	Brown Liquid, mild odour		ODOUR THRESHOLD:	Not available
SPECIFIC GRAVITY:	1.27(Water = 1)		FREEZING POINT:	Not available
COEFFICIENT OF WATER/OIL DISTRIBUTION:	<0.1			

SECTION IV. FIRE AND EXPLOSION DATA

FLAMMABILITY: Non-Flammable Aerosol.

AUTO-IGNITION TEMPERATURE: Not applicable.

FIRE DEGRADATION PRODUCTS: Not applicable.

FLASH POINT: 25 cm

FLAMMABLE LIMITS: Not applicable.

FIRE EXTINGUISHING PROCEDURES: Use Foam, Dry Chemical, Carbon Dioxide, Water fog. Self-contained respiratory protection should be provided for firefighters. Keep containers cooled with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Aerosol containers are pressurized. Keep containers cooled with water.

RISKS OF EXPLOSION: Risks of explosion of the product in presence of mechanical impact: Do NOT subject aerosol cans to impact.
Risk of explosion of the product in the presence of static discharge: Not available. Do not expose aerosol containers to open flames, heat or ignition sources.

SECTION V. REACTIVITY DATA

STABILITY: Stable

HAZARDOUS DECOMP. PRODUCTS: Oxides of Carbon, Traces of HCl, Phosgene and other Toxic Fumes.

INCOMPATIBILITY: Excessive Heat, Oxidizers, Alkalies.

PRODUCTS OF DEGRADATION: These products are carbon oxides (CO, CO₂), hydrogen, chloride, traces of phosgene and chlorine, acrylic monomers and other irritating gases.

REACTIVITY: Avoid contact with strong oxidizing agents, strong acids and strong alkalies. The materials of this product may react violently with metals such as sodium, potassium, barium and aluminum, particularly if these metals are finely divided.

POLYMERIZATION: Will not occur.

SECTION VI. TOXICOLOGICAL PROPERTIES

ROUTES OF ENTRY: Eye contact, Skin contact, Inhalation, Ingestion**EXPOSURE LIMIT:** 350 ppm LD50: N/A LC50: N/A**EFFECTS OF ACUTE EXPOSURE:****EYE:** May cause irritation, corneal burns, conjunctivitis and possible corneal damage. May cause severe eye irritation.**SKIN CONTACT:** May cause moderate to severe irritation, defatting, drying and cracking of skin. Prolonged and repeated contact may lead to dermatitis.**INHALATION:** Vapours may be irritating to nose, throat and respiratory tract. Excessive inhalation of vapours may cause nasal and respiratory irritation and Central Nervous System effects including dizziness, weakness, fatigue, nausea, headache and possible unconsciousness.**INGESTION:** May cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause Central Nervous System effects including dizziness, weakness, fatigue, nausea, headache and possible unconsciousness. Aspiration of material into the lungs can cause chemical pneumonitis, which can be fatal.**EFFECTS OF CHRONIC EXPOSURE:** None Known.**RESPIRATORY TRACT SENSITIZATION:** Not available.**CARCINOGENIC EFFECTS:** Classified A2 (Suspected for human.) by ACGIH (Perchloroethylene).**MUTAGENIC EFFECTS:** Not available.**TERATOGENIC EFFECTS:** Not available.**SYNERGISTIC MATERIALS:** Not available.**TOXIC EFFECTS ON REPRODUCTION:** Developmental toxicity: Proven (Perchloroethylene)

The substance is toxic to kidneys, the reproductive system, liver. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

SECTION VII. PREVENTIVE MEASURES

GLOVES: Gloves, rubber (impervious).**EYE PROTECTION:** Chemical Safety glasses to avoid possible contact.**RESPIRATORY PROTECTION:** In case of insufficient ventilation, wear suitable respiratory equipment. Be sure to use a MSHA/NIOSH approved respirator or equivalent.**OTHER PROTECTIVE EQUIPMENT:** As required by employer code.**ENGINEERING CONTROLS:** Ventilation is normally required when handling or using this product.**LEAK AND SPILL PROCEDURE:** Ventilate area. Absorb with an inert material (clay or diatomaceous earth absorbents) and place in an appropriate waste disposal container.

Large spills not applicable for aerosol containers.

WASTE DISPOSAL: Dispose in accordance with local, prov., & fed. Regulations for the disposal of pressurized containers.
STORAGE REQUIREMENTS: CONTENTS UNDER PRESSURE. Container may explode if heated. Keep in a cool, well-ventilated place. Keep away from heat, sparks and flame. Do not puncture, incinerate, store the container at temperatures above 49°C (120°F) or in direct sunlight.**PROPER SHIPPING NAME:** Aerosols, Class 2.2 UN 1950

SECTION VIII. FIRST AID MEASURES

EYE CONTACT: IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.**SKIN CONTACT:** Wash contaminated skin with soap and water. If irritation persists, seek medical attention. Remove contaminated clothing and wash before reuse.**INHALATION:** Remove to fresh air. Oxygen may be administered if breathing is difficult. If the victim is not breathing, perform mouth-to-mouth resuscitation. Keep person warm, quiet and get medical attention. Do not give stimulants.**INGESTION:** Do NOT induce vomiting. Have conscious person drink several glasses of water or milk. NEVER give an unconscious person anything to ingest. Aspiration of material into the lungs due to vomiting can cause Chemical Pneumonitis which can be fatal. Seek immediate medical attention.

DISCLAIMER: Information for this material safety data sheet was obtained from sources considered technically accurate and reliable. No warranty, expressed or implied, is made and the supplier will not be liable for any losses, injuries or consequential damages that may result from the use of or reliance on any information contained in this form.

SECTION I. PRODUCT IDENTIFICATION AND USES

PRODUCT NAME:	ADVANTAGE “5”	EFFECTIVE DATE: 01/01/12
WHMIS CLASS:	Class A: Compressed gas. Class D-2B: Material causing other toxic effects (TOXIC).	CODE: A1330
T.D.G. CLASSIFICATION:	Consumer Commodity	
SUPPLIER NAME AND ADDRESS:	ADVANTAGE SPECIALTIES BOX 244 BRIGHTON, ON K0K 1H0 (613) 475-4572	
EMERGENCY PHONE:	CANUTEC (613) 996 6666	

SECTION II. HAZARDOUS INGREDIENTS

Name	CAS#	% by Weight	TLV/PEL	LC50	LD50
Isoparaffinic Hydrocarbon	64742-46-7	60-80	200 ppm	N/D	N/D
Oxygenated Hydrocarbon Blend	N/D	01-05	N/D	N/D	N/D
Carbon Dioxide Propellant	124-38-9	01-05	10000 ppm	N/D	N/D

SECTION III. PHYSICAL DATA

Data below based on aerosol concentrate only:		Data below based on total contents:	
BOILING POINT:	260 C	VAPOUR PRESSURE: (psig @ 20°C):	68
pH(1% soln/water):	Not available	VOLATILITY:	3%
SOLUBILITY:	Slightly soluble in water	VAPOR DENSITY: (Air=1)	>1
PHYSICAL STATE & COLOR:	Brownish liquid, solvent odour.	SPECIFIC GRAVITY: (Water=1 @23°C):	0.833

SECTION IV. FIRE AND EXPLOSION DATA

FLAMMABILITY:	Non-Flammable Aerosol
AUTO-IGNITION TEMPERATURE:	Not applicable
FLASH POINTS:	>93°C (T.O.C.) of concentrate only.
FIRE EXTINGUISHING PROCEDURES:	Foam, carbon dioxide and dry media. Cool fire exposed containers to prevent rupturing. Self-contained respiratory protection should be provided for firefighters.
FLAMMABLE LIMITS:	Not applicable
FLAMMABILITY:	At elevated temperatures (49°C or over) containers may burst, rupture or vent.
RISKS OF EXPLOSION:	Risks of explosion of the product in presence of mechanical impact: Do not subject aerosol cans to impact. Risk of explosion of the product in the presence of static discharge.

SECTION V. REACTIVITY DATA

STABILITY:	Stable
HAZARDOUS POLYMERIZATION:	Will not occur
HAZARDOUS DECOMP. PRODUCTS:	Carbon dioxide, carbon monoxide
INCOMPATIBILITY:	Avoid contact with strong oxidizing agents.

SECTION VI. TOXICOLOGICAL PROPERTIES

ROUTES OF ENTRY:	Eye contact, Skin contact, Inhalation, Ingestion
EFFECTS OF ACUTE EXPOSURE:	
EYE:	Contact may cause irritation, redness, tearing and itching.
SKIN CONTACT:	Contact may cause moderate to severe irritation.
INHALATION:	Vapours may be irritating to nose, throat and respiratory tract. May cause Central Nervous System effects including dizziness, weakness, fatigue, nausea, headache and possible unconsciousness.
INGESTION:	May cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis, which can be fatal.
EFFECTS OF CHRONIC EXPOSURE:	
IRRITANCY:	Hazardous by WHMIS criteria.
RESPIRATORY TRACT SENSITIZATION:	No data available.
CARCINOGENIC EFFECTS:	Non hazardous by WHMIS criteria
MUTAGENIC EFFECTS:	No information available and no adverse effects are anticipated.
TERATOGENIC EFFECTS:	No information available and no adverse effects are anticipated. Toxicity of the product to the reproductive system: Not available.
SYNERGISTIC MATERIALS:	Not available.

SECTION VII. PREVENTIVE MEASURES

GLOVES:	Chemical resistant gloves.
EYE PROTECTION:	Safety glasses to avoid possible contact.
RESPIRATORY PROTECTION:	Not normally required if good ventilation is maintained.
OTHER PROTECTIVE EQUIPMENT:	As required by employer code.
ENGINEERING CONTROLS:	General ventilation normally adequate.
LEAK AND SPILL PROCEDURE:	Allow propellant to evaporate. Maintain local exhaust and adequate ventilation. No smoking. Keep sparks, heat sources and open flame away from a spill or leak. Cover with absorbent material and sweep up. Wash area to prevent slipping. Dispose of soaked absorbent material in accordance with Federal, Provincial and local laws.
WASTE DISPOSAL:	Review federal, provincial and local government requirements prior to disposal. Recycle to process, if possible Do not dispose in sewers. When container is empty, press button to release all pressure, then dispose of in garbage can.
STORAGE REQUIREMENTS:	CONTENTS UNDER PRESSURE. Keep in a cool, well-ventilated place. Keep away from heat, sparks and flame. Keep away from sources of ignition. Do not puncture, incinerate, store the container at temperatures above 49°C (120°F) or in direct sunlight. Container may explode if heated.

SECTION VIII. FIRST AID MEASURES

EYE CONTACT:	Immediately flush eyes with running water for at least 15 minutes, while holding upper and lower lids open. If irritation persists, seek medical attention.
SKIN CONTACT:	Wash the affected areas thoroughly with soap and water. If irritation persists, seek medical attention.
INHALATION:	Remove to fresh air. Oxygen may be administered if breathing is difficult. If the victim is not breathing, perform mouth-to-mouth resuscitation. Keep person warm, quiet and get medical attention.
INGESTION:	Do not induce vomiting. Keep victim warm and quiet. Seek immediate medical attention. Aspiration of material into the lungs due to vomiting can cause chemical pneumonitis which can be fatal.

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SECTION I. PRODUCT IDENTIFICATION AND USES

PRODUCT NAME: BERRY BLAST **EFFECTIVE DATE:** 01/01/12

WHMIS CLASS: Class A: Compressed gas.
Class B-5: Flammable aerosol.
Class D-2B: Material causing other toxic effects (TOXIC).

T.D.G. CLASSIFICATION: Consumer Commodity

SUPPLIER NAME AND ADDRESS: ADVANTAGE SPECIALTIES
P.O. BOX 244
BRIGHTON, ON K0K 1H0
(613)475-4572

EMERGENCY PHONE: CANUTEC (613) 996 6666

SECTION II. HAZARDOUS INGREDIENTS

Name	CAS#	% by Weight	TLV/PEL	LC50	LD50
Ethanol	64-17-5	10-30	TWA: 1000 ppm	8000 ppm/4hr (Vapour Rat)	7060 mg/kg (Oral Rat)
Naphtha, hydrotreated heavy	64742-48-9	30-60	TWA: 300 ppm	Not available	Not available
Liquefied petroleum gas	068476857	10-30	TWA: 1000 CEIL: 1250 ppm TWA: 1800 CEIL: 2250 mg/m ³	Not available	Not available

SECTION III. PHYSICAL DATA

BOILING POINT:	78.5°C (173.3°F)	VOLATILITY:	99% (w/w)
VAPOR PRESSURE:	42.34 mm of Hg (@ 20°C)	EVAPORATION RATE:	Not available
VAPOR DENSITY:	3.61 (Air = 1)	pH(1% soln/water):	Not applicable
SOLUBILITY:	Miscible in water	VISCOSITY:	Not available
PHYSICAL STATE & COLOR:	Pale yellow liquid, pleasant odour	ODOUR THRESHOLD:	Not available
SPECIFIC GRAVITY:	0.75(Water = 1)		

SECTION IV. FIRE AND EXPLOSION DATA

FLAMMABILITY: Flammable Aerosol

AUTO-IGNITION TEMPERATURE: 415°C (779°F)

FIRE DEGRADATION PRODUCTS: These products are carbon oxides (CO, CO₂) and other irritating gases.

FLASH POINTS: CLOSED CUP: 7°C (44.6°F) TAGLIABUE.

FLAMMABLE LIMITS: LOWER: 0.6% UPPER: 19% (Trimethyl benzene)

FIRE EXTINGUISHING PROCEDURES: Flammable liquid, miscible in water. SMALL FIRE Use DRY chemicals, CO₂, alcohol foam or water spray. LARGE FIRE Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

FLAMMABILITY: Highly flammable in presence of open flames and sparks. Flammable in presence of heat, of oxidizing materials, of reducing materials, of combustible materials. The flashpoint of WHMIS is determined by its flame-extension or its flashbask. The flame-extension of this product is greater than 45 cm. Cdn. NFC, Level 3.

RISKS OF EXPLOSION: Risks of explosion of the product in presence of mechanical impact: Do NOT subject aerosol cans to impact. Risk of explosion of the product in the presence of static discharge: Aerosol spray may be sensitive to static discharge due to flammable concentrate and flammable propellant. Vapours of this product may form a flammable/explosive mixture when vapours present are between the lower (0.6%) and upper (19%) flammable limits and come into contact with open flames, sparks or static discharge. Do not expose aerosol containers to open flames, heat or ignition sources.

SECTION V. REACTIVITY DATA

STABILITY:	Stable
HAZARDOUS DECOMP. PRODUCTS:	Not available
PRODUCTS OF DEGRADATION:	These products are carbon oxides (CO, CO ₂) and other irritating gases.
REACTIVITY:	Reactive with oxidizing agents, reducing agents, organic materials, acids and alkalis. Slightly reactive to reactive with metals.

SECTION VI. TOXICOLOGICAL PROPERTIES

ROUTES OF ENTRY:	Eye contact, Skin contact, Inhalation, Ingestion
EFFECTS OF ACUTE EXPOSURE:	
EYE:	May cause irritation, redness, watering and itching.
SKIN CONTACT:	May cause moderate irritation.
INHALATION:	Hazardous if inhaled.
INGESTION:	Hazardous if ingested. Aspiration of material into the lungs can cause chemical pneumonitis, which can be fatal.
EFFECTS OF CHRONIC EXPOSURE:	
IRRITANCY:	Very hazardous in case of skin contact (irritant), of eye contact (irritant).
RESPIRATORY TRACT SENSITIZATION:	Not available.
CARCINOGENIC EFFECTS:	Classified A4 (Not classified for human or animal.) by ACGIH (Ethanol).
MUTAGENIC EFFECTS:	Not available.
TERATOGENIC EFFECTS:	Not available.
SYNERGISTIC MATERIALS:	Not available.
TOXIC EFFECTS ON REPRODUCTION:	Developmental toxicity: Proven (Ethanol). The substance is toxic to the reproductive system, blood, kidneys, liver. Repeated or prolonged exposure to the substance can produce target organ damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

SECTION VII. PREVENTIVE MEASURES

GLOVES:	Not normally required when used as directed.
EYE PROTECTION:	Not normally required when used as directed.
RESPIRATORY PROTECTION:	Not normally required when used as directed.
OTHER PROTECTIVE EQUIPMENT:	As required by employer code.
ENGINEERING CONTROLS:	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.
LEAK AND SPILL PROCEDURE:	Dilute with water and mop up or absorb with an inert DRY material and place in an appropriate waste disposal container. Large spills not applicable for aerosol containers.
WASTE DISPOSAL:	Not available.
STORAGE REQUIREMENTS:	CONTENTS UNDER PRESSURE: Do not puncture, incinerate, store the container at temperatures above 49°C (120°F) or in direct sunlight. Store and use away from heat, sparks and open flame or any other ignition source. Store in a dry, cool and well ventilated area.

SECTION VIII. FIRST AID MEASURES

EYE CONTACT:	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation persist, seek medical attention.
SKIN CONTACT:	Wash contaminated skin with soap and water. If irritation persists, seek medical attention. Remove contaminated clothing and wash before reuse.
INHALATION:	Remove to fresh air. Oxygen may be administered if breathing is difficult. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.
INGESTION:	Do NOT induce vomiting. Have conscious person drink several glasses of water or milk. NEVER give an unconscious person anything to ingest. Seek medical attention.

DISCLAIMER: Information for this material safety data sheet was obtained from sources considered technically accurate and reliable. No warranty, expressed or implied, is made and the supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this form.

SECTION I - PRODUCT IDENTIFICATION AND PREPARATION INFORMATION

PRODUCT NAME:	BIOZYME 100	EFFECTIVE DATE:	01/01/12
WHMIS CLASS:	Class D - Division 2B Enzymatic Cleaner, Degreaser, Deodorant and Emulsifier	CODE NO.:	6274
T.D.G. CLASSIFICATION:	Not regulated under TDG		
SUPPLIER NAME AND ADDRESS:	ADVANTAGE SPECIALTIES P.O. BOX 244 BRIGHTON, ON K0K 1H0 (613) 475-4572		
EMERGENCY PHONE:	CANUTEC (613) 996 6666		

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENTS:	CAS#	WT%	ACGIH-TLV	LC50	LD50
Viable Bacterial Cultures (non-Pathogenic)	Not available	3-7	Not available	Not available	Not available

SECTION III- PHYSICAL DATA

BOILING POINT (DEG C):	Not available	SPECIFIC GRAVITY (H2O=1):	1.284
VAPOUR PRESSURE (mm Hg):	Not applicable	PERCENT VOLATILE (WT%):	13
VAPOUR DENSITY (AIR=1):	Not applicable	EVAPORATION RATE (Water=1):	Not available
SOLUBILITY IN WATER:	Partly Soluble	pH (AS SUPPLIED):	5% Solution 8.0
PHYSICAL STATE:	Powder	VISCOSITY:	Not applicable
APPEARANCE AND ODOUR:	Tan, fragrant		

SECTION IV- FIRE AND EXPLOSION DATA

FLAMMABILITY:	Not flammable
FLASH POINT:	Not applicable
LEL:	Not applicable
UEL:	Not applicable
HAZARDOUS COMBUSTION PRODUCTS:	Not applicable
MEANS OF EXTINCTION:	Treat for surrounding material.
SPECIAL FIRE HAZARDS:	None known at this time.

SECTION V- REACTIVITY DATA

CONDITIONS FOR CHEMICAL INSTABILITY:	Stable
INCOMPATIBILITY:	Strong oxidizing agents
HAZARDOUS DECOMPOSITION:	None known at this time

SECTION VI- TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY: Eye, skin contact, inhalation, ingestion

EFFECTS OF ACUTE EXPOSURE:

EYE: Contact can cause mild irritation due to abrasive nature of the product.

INGESTION: May cause vomiting, headache and medical problems.

INHALATION: (due to dust) can cause nose, throat and respiratory tract irritation, coughing and headache.

SKIN: Contact with abraded skin may result in infection. Bacteria culture is non-pathogenic.

EFFECTS OF CHRONIC EXPOSURE: Not normally a chronic health problem.

IRRITANCY: Non-hazardous by WHMIS criteria.

RESPIRATORY TRACT SENSITIZATION: No data available

CARCINOGENICITY: Non-hazardous by WHMIS criteria.

TERTATOGENICTY: Insufficient data available

MUTAGENICITY: Insufficient data available

SYNERGISTIC MATERIALS: Not available

SECTION VII-PREVENTATIVE MEASURES

GLOVES:	Not normally required.
EYE PROTECTION:	Not normally required.
RESPIRATORY PROTECTION:	Not normally required.
OTHER PROTECTIVE EQUIPMENT:	As required by employer codes.
ENGINEERING CONTROLS:	General ventilation is normally adequate.
LEAK AND SPILL PROCEDURE:	Before attempting clean up, refer to hazard data given above. Use broom and dry vacuum to collect material for proper disposal. Rinse area with water. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice.
WASTE DISPOSAL:	Review federal, provincial and local government requirements prior to disposal.
STORAGE REQUIREMENTS:	Store in closed containers. Store away from incompatible materials.

SECTION VIII- FIRST AID

EYE:	Flush with water for 15 minutes. If irritation persists, call a physician.
SKIN:	Rinse with water. In case of irritation discontinue use of product.
INHALATION:	Remove to fresh air. If symptoms persist, call a physician.
INGESTION:	Do not induce vomiting. Rinse mouth with water, then drink one glass of water. Call a physician. Never give anything by mouth if victim is unconscious, is rapidly losing consciousness or is convulsing.

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Material Safety Data Sheet

WHMIS 	Protective Clothing 	TDG Road / Rail
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Section 1. Product Identification and Uses

Product Name	CITRO BLAST 6900	CI#	Not applicable.
Synonyms		DSL	Not available.
Chemical Name	Not applicable.	CAS #	Not applicable.
Chemical Formula	Chemical mixture.	Code	1834-09-199/1834-09-198
Chemical Family	Various hydrocarbons.	Molecular Weight	Not applicable.
Supplier	Advantage Specialties P.O. Box 244, Brighton, Ontario K0K 1H0 PHONE: (613) 475-4572	Manufacturer	Manufactured for: Advantage Specialties
Material Uses	Odour counteractant & air freshener.		



Section 2. Hazardous Ingredients

Name	CAS #	% by Weight	LC ₅₀ /LD ₅₀
1) D'Limonene	5989-27-5	30-60	ORAL (LD50): Acute: 4400 mg/kg [Rat]. ORAL (LD50): Acute: 7060 mg/kg [Rat.]. 3450 mg/kg [Mouse]. 6300 mg/kg [Rabbit]. VAPOR (LC50): Acute: 31623 ppm 4 hour(s) [Rat.]. ORAL (LD50): Acute: 20000 mg/kg [Rat.]. DERMAL (LD50): Acute: 20800 mg/kg [Rat.]. Not available.
2) Ethanol	64-17-5	10-30	
3) Propylene glycol	57-55-6	1-5	
4) Liquefied petroleum gas	68476-85-7	15-40	

Section 3. Physical Data

Physical State and Appearance	Liquid (Aerosol Concentrate).	Odor	Citrus.
pH (1% Soln/Water)	Not applicable.	Taste	Not available.
Odor Threshold	Not available.	Color	Clear light yellow.
Volatility	Not available.		
Evaporation Rate	1.7 based on data for: Ethanol. [Butyl acetate=1.]		
Melting Point	Not available.		
Boiling Point	The lowest known value is 75°C (167°F) (Ethanol).		
Density	0.820 - 0.850 @ 20°C (68°F) (Water = 1)		
Vapor Density	Greater than 1 (Air = 1)		
Vapor Pressure	Not available.		
LogK_{ow}	Not available.		
Ionicity (Surface Active Agent)	Not available.		
Critical Temperature	Not available.		
Instability Temperature	Not available.		
Conditions of Instability	Not available.		
Dispersion Properties	See solubility in water.		
Solubility	Miscible in water.		

Continued on Next Page



WHMIS	Protective Clothing	TDG Road / Rail
		
A B-5 D-2B		CONSUMER COMMODITY.

Section 4. Fire and Explosion Data

The Product is:	Extremely Flammable Aerosol
Auto-ignition Temperature	422°C (791.6°F) based on data for: Ethanol.
Products of Combustion	These products are carbon monoxide, carbon dioxide and other irritating gases.
Flash Points	The lowest known value is CLOSED CUP: 13°C (55.4°F). (Ethanol).
Flammable Limits	LOWER: 0.7% UPPER: 19%
Extinguishing Media	SMALL FIRE: Use DRY chemicals, carbon dioxide or foam. LARGE FIRE: Use foam or water fog. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. Avoid spreading burning liquid with water used to cool containers. Self-contained respiratory protection should be provided for firefighters.
Flammability	The flammability of an aerosol by WHMIS definition is determined by its flame-extension or its flashback. The flame-extension of this product is greater than 45 cm. FIRE CODE: Level 3 Aerosol (as per NFPA 30B). Do not use in the presence of open flame or spark. Do not place in hot water or near radiator, stove or other sources of heat.
Risks of Explosion	Risks of explosion of the product in presence of mechanical impact: Do NOT subject aerosol cans to impact. Risk of explosion of the product in the presence of static discharge: Aerosol spray may be sensitive to static discharge due to flammable concentrate and flammable propellant. Vapours of this product may form a flammable/explosive mixture when vapours present are between the lower (0.7%) and upper (19%) flammable limits and come into contact with open flames, sparks or static discharge. Do NOT expose aerosol containers to open flames, heat or ignition sources. Container may explode if heated.

Section 5. Reactivity


Stability	The product is stable.
Hazardous Decomposition Products	These products are carbon oxides (CO, CO ₂) and other irritating gases.
Degradability	Not available.
Products of Degradation	Not available. Not available.
Corrosivity	No specific information is available in our data base regarding the corrosivity of this product in presence of various materials.
Reactivity	Avoid contact with strong oxidizing agents, strong acids, strong alkalies and iodine pentafluoride. Keep away from heat, sparks, open flame and all possible ignition sources.
Instability Temperature	Not available.
Conditions of Instability	Not available.

WHMIS	Protective Clothing	TDG Road / Rail
		
A B-5 D-2B		CONSUMER COMMODITY.



Section 6. Toxicological Properties

Routes of Entry	Ingestion. Inhalation. Eye contact. Skin contact.
TLV	Ethanol TWA: 1000 (ppm) from ACGIH Liquefied petroleum gas TWA: 1000 CEIL: 1250 (ppm) TWA: 1800 CEIL: 2250 (mg/m ³) Consult local authorities for acceptable exposure limits.
Toxicity to Animals	WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 4400 mg/kg [Rat] (D-Limonene). Acute oral toxicity (LD50): 3450 mg/kg [Mouse] (Ethanol). Acute oral toxicity (LD50): 20,000 mg/kg [Rat] (Propylene glycol). Acute toxicity of the vapor (LC50): 31623 ppm [Rat] (Ethanol).
Chronic Effects on Humans	Prolonged or repeated skin contact may lead to dermatitis.
Acute Effects on Humans	EYE CONTACT: May cause irritation, redness, tearing and pain. SKIN CONTACT: May cause irritation, defatting, drying and cracking of skin. INHALATION: Vapours may be irritating to nose, throat and respiratory tract. Excessive inhalation of vapours may cause Central Nervous System effects including dizziness, weakness, fatigue, nausea, headache and possible unconsciousness. INGESTION: May cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis, which can be fatal. Can be fatal if inhaled or ingested. This product may be irritating to the eyes, nose, skin and respiratory tract.
Synergetic Products (Toxicologically)	Not available.
Irritation/Corrosivity	See acute effects on humans.
Sensitization	Not available.
Carcinogenic Effects	Not available.
Toxic Effects on Reproduction	Not available.
Teratogenic Effects	Not available.
Mutagenic Effects	Not available.

Section 7. Preventive Measures

Small Spill and Leak	Ventilate area and eliminate all sources of ignition. Keep away from heat. Absorb with an inert DRY material and place in an appropriate waste disposal container.	
Personal Protective Equipment	Recommend safety glasses.	
Large Spill and Leak	Not applicable for aerosol containers.	
Protective Clothing	Not applicable for aerosol containers.	
Engineering Controls	Use with adequate ventilation.	
Precautions	Contents under pressure. Container may explode if heated. Keep out of reach of children.	

Continued on Next Page

WHMIS	Protective Clothing	TDG Road / Rail
		
A B-5 D-2B		CONSUMER COMMODITY.

Storage	Store in a cool, dry place. Do not place in hot water or near radiator, stove or other sources of heat. Do not puncture or incinerate container or store at temperatures over 50°C or in direct sunlight.
Handling	Do not use in the presence of open flame, sparks or other sources of ignition. Keep away from heat. Avoid breathing vapours or spray mists. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. After handling, always wash hands thoroughly with soap and water.
Waste Disposal	Recycle to process, if possible. Consult your local or regional authorities. When container is empty, press button to release all pressure, then dispose of in garbage can. Do not puncture or incinerate container.
Special Shipping Information	None.

Section 8. First Aid

Eye Contact	Flush eyes with plenty of running water for at least 15 minutes, lifting upper and lower lids, occasionally. If irritation persists, get medical attention.
Skin Contact	Wash with soap and water. If irritation persists, get medical attention. Remove contaminated clothing and wash before reuse.
Hazardous Skin Contact	No additional information.
Slight Inhalation	Remove affected person to fresh air. If breathing is difficult, administer oxygen. If breathing stops give artificial respiration. Get medical attention.
Hazardous Inhalation	No additional information.
Slight Ingestion	If swallowed, call physician or poison control centre immediately. DO NOT induce vomiting. Rinse mouth with water. Aspiration of material into lungs due to vomiting may cause chemical pneumonitis which can be fatal.
Hazardous Ingestion	No additional information.

Section 9. MSDS Preparation



References	Not available.
No additional remark.	
Validated by Regulatory Affairs Dept. on 01-01-2012.	Verified by Regulatory Affairs Dept..
	Printed 01-01-2012.

Emergency Phone: CANUTEC 613-996-6666

Responsible Name/ Telephone No.
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Classification

TDG Road / Rail	CONSUMER COMMODITY.	
	Not applicable.	

WHMIS	Protective Clothing	TDG Road / Rail
		
A B-5 D-2B		CONSUMER COMMODITY.

WHMIS

WHMIS CLASS A: Compressed gas.
WHMIS CLASS B-5: Flammable aerosol.
WHMIS CLASS D-2B: Material causing other toxic effects (TOXIC).



To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SECTION I. PRODUCT IDENTIFICATION AND USES

PRODUCT NAME:	CLEAR SIGHT	EFFECTIVE DATE: 01/01/12
		CODE: 71709
WHMIS CLASS:	Class A: Compressed gas. Class B-5: Flammable aerosol. Class D-2B: Material causing other toxic effects (TOXIC).	
T.D.G. CLASSIFICATION:	Consumer Commodity	
SUPPLIER NAME AND ADDRESS:	ADVANTAGE SPECIALTIES P.O. BOX 244 BRIGHTON, ON K0K 1H0 (613) 475-4572	
EMERGENCY PHONE:	CANUTEC (613) 996 6666	

SECTION II. HAZARDOUS INGREDIENTS

Name	CAS#	% by Weight	TLV/PEL	LC50	LD50
Isopropyl Alcohol	67-63-0	5-10	TWA: 400 CEIL: 500 ppm TWA: 900 CEIL: 1225 mg/ m ³	16970 ppm Vapour 4 hour(s) (Rat)	3600 mg/kg Oral (mouse)
Ethylene glycol monobutyl ether	111-76-2	1-5	TWA: 50 CEIL: 150 ppm TWA: 240 CEIL: 720 mg/m ³	Not available.	470 mg/kg (Oral Rat) 220 mg/kg (Dermal Rabbit)
Liquified petroleum gas	068476857	3-7	Not available	Not available	Not available

SECTION III. PHYSICAL DATA

BOILING POINT:	82.22°C(180°F)	VOLATILITY:	Not available
VAPOR PRESSURE:	18.24 mm of Hg (@ 20°C)	EVAPORATION RATE:	2.5
VAPOR DENSITY:	0.93 (Air = 1)	pH(1% soln/water):	Neutral
SOLUBILITY:	Soluble in water	VISCOSITY:	Not available
PHYSICAL STATE & COLOUR:	Liquid (Aerosol) Cloudy	ODOUR THRESHOLD:	Not available
SPECIFIC GRAVITY:	0.974(Water = 1)		
MELTING POINT:	May start to solidify at -70°C(-94°F) based on data for Ethylene glycol monobutyl ether. Weighted average: -84.04°C(-119.3°F)		

SECTION IV. FIRE AND EXPLOSION DATA

FLAMMABILITY:	Flammable Aerosol
AUTO-IGNITION TEMPERATURE:	244°C(471.2°F)
PRODUCTS OF COMBUSTION:	These products are carbon oxides (CO, CO2), and other irritating gases.
FLASH POINTS:	CLOSED CUP: 11.67°C(53°F). (Tagliabue)
FLAMMABLE LIMITS:	LOWER: 1.1% UPPER: 12%
FIRE EXTINGUISHING MEDIA:	SMALL FIRE: Use Dry chemicals, CO2, water spray or foam LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet.
FLAMMABILITY OF THE PRODUCT:	Flammable in presence of combustible materials. Slightly flammable to flammable in presence of open flames and sparks, of heat, of oxidizing materials. The flashpoint of an aerosol by WHMIS definition is determined by its flame-extension or its flashback. The flame-extension of this product is 0cm – 15cm. Cdn. NFC, Level 1.
RISKS OF EXPLOSION:	Risks of explosion of the product in presence of mechanical impact: DO NOT subject aerosol cans to impact. Risk of explosion of the product in the presence of static discharge: Aerosol spray may be sensitive to static discharge due to flammable concentration and flammable propellant. Vapours of this product may form a flammable/explosive mixture when vapours are present between the lower (1.1%) and upper (12%) flammable limits and come into contact with open flames, sparks or static discharge. DO not expose aerosol containers to open flames, heat or ignition source.

SECTION V. REACTIVITY DATA

STABILITY:	Stable
HAZARDOUS DECOMP. PRODUCTS:	Not available
PRODUCTS OF DEGRADATION:	These products are carbon oxides (CO, CO ₂) and other irritating gases. The products of degradation are less toxic than the product itself.
CORROSIVITY:	Not available
REACTIVITY:	Avoid contact with strong oxidizing agents, strong acids and strong alkalis. Keep away from heat, sparks, open flame.

SECTION VI. TOXICOLOGICAL PROPERTIES

ROUTES OF ENTRY:	Absorbed through the skin. Eye contact, Inhalation, Ingestion
EFFECTS OF ACUTE EXPOSURE:	
EYE:	Contact may cause irritation, redness, tearing and itching.
SKIN CONTACT:	Contact may cause irritation. Prolonged and repeated contact may lead to dermatitis.
INHALATION:	May cause nasal and respiratory irritation, dizziness, weakness, fatigue, nausea, headache and possible unconsciousness.
INGESTION:	May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

This product may irritate eyes and skin upon contact. Aspiration of material into the lungs can cause chemical pneumonitis, which can be fatal.

EFFECTS OF CHRONIC EXPOSURE: The substance is toxic to the reproductive system. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by accumulation in one or many human organs.

SYNERGETIC PRODUCTS: (Toxicologically)	Not available.
SKIN IRRITATION/CORROSIVITY:	Hazardous in case of skin contact (irritant), of eye contact (irritant).
CARCINOGENIC EFFECTS:	Not available
TOXICITY TO REPRODUCTIVE SYSTEM:	Developmental Toxicity Proven (Isopropyl alcohol)
TERATOGENIC EFFECTS:	Not available
MUTAGENIC EFFECTS:	Not available

SECTION VII. PREVENTIVE MEASURES

GLOVES:	Gloves
EYE PROTECTION:	Safety glasses to avoid possible contact.
RESPIRATORY PROTECTION:	Wear suitable respiratory equipment. Be sure to use an NSHA/NIOSH approved respirator or equivalent.
OTHER PROTECTIVE EQUIPMENT:	As required by employer code.
ENGINEERING CONTROLS:	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit values. Ensure that eyewash stations and safety showers are proximal to the workstation location.
LEAK AND SPILL PROCEDURE:	Small Spill: Ventilate area. Dilute with water and mop up, or absorb with an inert DRY material and place in an appropriate waste disposal container. Large Spill: Not applicable for aerosol containers.
WASTE DISPOSAL:	Review federal, provincial and local government requirements prior to disposal. Recycle to process, if possible. Do not dispose in sewers. When container is empty, press button to release all pressure, then dispose of in garbage can.
PRECAUTIONS:	CONTENTS UNDER PRESSURE. Container may explode if heated. DO NOT use in presence of open flame or sparks. Keep away from heat. Avoid breathing vapors or spray mists. Avoid contact with skin and eyes. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles, strong oxidizing agents, strong acids and strong alkalis. Use only in well \-ventilated areas.
STORAGE REQUIREMENTS:	Keep in a cool, well-ventilated place. Keep away from heat, sparks and flame. Keep away from sources of ignition. Do not puncture, incinerate, store the container at temperatures above 49°C (120°F) or in direct sunlight.

SECTION VIII. FIRST AID MEASURES

EYE CONTACT:	Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. If irritation persists, seek medical attention.
SKIN CONTACT:	Wash contaminated skin with soap and water. If irritation persists, seek medical attention. Remove contaminated clothing and wash before reuse.
SLIGHT INHALATION:	Remove to fresh air. Oxygen may be administered if breathing is difficult. If the victim is not breathing, perform mouth-to-mouth resuscitation. Keep person warm, quiet and get medical attention.
SLIGHT INGESTION:	DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. NEVER give and unconscious person anything to ingest. Seek immediate medical attention..

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HAZARDS IDENTIFICATION

(ANSI Section 3)

Primary route(s) of exposure : Inhalation, skin contact, eye contact, ingestion.

Effects of overexposure :

Inhalation : Irritation of respiratory tract. Prolonged inhalation may lead to loss of appetite, mucous membrane irritation, fatigue, drowsiness, dizziness and/or lightheadedness, headache, uncoordination, nausea, vomiting, coughing, central nervous system depression, intoxication, anesthetic effect or narcosis, difficulty of breathing, allergic response, asthmatic reaction, severe lung irritation or damage, liver damage, kidney damage, convulsions, pneumoconiosis, loss of consciousness, asphyxiation. Possible sensitization to respiratory tract.

Skin contact : Irritation of skin. Prolonged or repeated contact can cause dermatitis, defatting, allergic response. Skin contact may result in dermal absorption of component(s) of this product which may cause blurred vision, central nervous system depression.

Eye contact : Irritation of eyes. Prolonged or repeated contact can cause conjunctivitis, blurred vision, tearing of eyes, redness of eyes.

Ingestion : Ingestion may cause lung inflammation and damage due to aspiration of material into lungs, mouth and throat irritation, mucous membrane irritation, headache, uncoordination, nausea, vomiting, diarrhea, gastro-intestinal disturbances, abdominal pain, central nervous system depression, difficulty of breathing, convulsions, loss of consciousness.

Medical conditions aggravated by exposure : Eye, skin, respiratory disorders, lung disorders.

FIRST-AID MEASURES

(ANSI Section 4)

Inhalation : Remove to fresh air. Restore and support continued breathing. Get emergency medical attention. Have trained person give oxygen if necessary. Get medical help for any breathing difficulty. Remove to fresh air if inhalation causes eye watering, headaches, dizziness, or other discomfort.

Skin contact : Wash thoroughly with soap and water. If any product remains, gently rub petroleum jelly, vegetable or mineral/baby oil onto skin. Repeated applications may be needed. Remove contaminated clothing. Wash contaminated clothing before re-use.

Eye contact : Flush immediately with large amounts of water, especially under lids for at least 15 minutes. If irritation or other effects persist, obtain medical treatment.

Ingestion : If swallowed, obtain medical treatment immediately.

FIRE-FIGHTING MEASURES

(ANSI Section 5)

Fire extinguishing media : Dry chemical or foam water fog. Carbon dioxide. Closed containers may explode when exposed to extreme heat or fire. Vapors are heavier than air and may travel long distances to a source of ignition and flash back. Vapors can form explosive mixtures in air at elevated temperatures. May decompose under fire conditions emitting irritant and/or toxic gases.

Fire fighting procedures : Water may be used to cool and protect exposed containers. Firefighters should use full protective clothing, eye protection, and self-contained breathing apparatus.

Hazardous decomposition or combustion products : Carbon monoxide, carbon dioxide, oxides of nitrogen, acrid fumes, phosphorous, ammonia, toxic gases. Oxides of calcium.

ACCIDENTAL RELEASE MEASURES

(ANSI Section 6)

Steps to be taken in case material is released or spilled : Comply with all applicable health and environmental regulations. Eliminate all sources of ignition. Ventilate area. Evacuate all unnecessary personnel. Place collected material in proper container. Complete personal protective equipment must be used during cleanup. Large spills - shut off leak if safe to do so. Dike and contain spill. Pump to storage or salvage vessels. Use absorbent to pick up excess residue. Keep salvageable

material and rinse water out of sewers and water courses. Small spills - use absorbent to pick up residue and dispose of properly.

HANDLING AND STORAGE

(ANSI Section 7)

Handling and storage : Store below 100F (38C). Keep away from heat, sparks and open flame.

Other precautions : Use only with adequate ventilation. Do not take internally. Keep out of reach of children. Avoid contact with skin and eyes, and breathing of vapors. Wash hands thoroughly after handling, especially before eating or smoking. Keep containers tightly closed and upright when not in use. Empty containers may contain hazardous residues. Ground equipment when transferring to prevent accumulation of static charge.

EXPOSURE CONTROLS/PERSONAL PROTECTION

(ANSI Section 8)

Respiratory protection : Control environmental concentrations below applicable exposure standards when using this material. When respiratory protection is determined to be necessary, use a NIOSH/MSHA (Canadian z94.4) Approved elastomeric sealing- surface facepiece respirator outfitted with organic vapor cartridges and paint spray (dust/mist) prefilters. Determine the proper level of protection by conducting appropriate air monitoring. Consult 29CFR1910.134 For selection of respirators (Canadian z94.4).

Ventilation : Provide dilution ventilation or local exhaust to prevent build-up of vapors. Use explosion-proof equipment.

Personal protective equipment : Eye wash, safety shower, safety glasses or goggles. Impervious gloves, impervious clothing.

STABILITY AND REACTIVITY

(ANSI Section 10)

Under normal conditions : Stable see section 5 fire fighting measures

Materials to avoid : Oxidizers, acids, bases, ammonium salts. Styrene monomer.

Conditions to avoid : Elevated temperatures, contact with oxidizing agent, sparks, open flame, ignition sources.

Hazardous polymerization : Will not occur

TOXICOLOGICAL INFORMATION

(ANSI Section 11)

Supplemental health information : Notice - reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Carcinogenicity : Inhalation of non-asbestiform cosmetic grade talc for 2 years at 6 and 18 mg/m³ produced clear evidence of carcinogenicity in female rats (lung and adrenal tumors) and some evidence of carcinogenicity in male rats (adrenal tumors). No evidence of carcinogenicity was demonstrated in male and female mice exposed under the same conditions. Microscopic examination of the lungs of rats and mice exposed to talc revealed additional exposure related effects primarily associated with the inflammatory response. Stoddard solvent iic has been shown to cause kidney tumors in male rats in a national toxicology program (NTP) study. These tumors were associated with a specific protein, alpha- 2u-microglobulin. Because humans do not produce this protein stoddard solvent iic has not been classified as a human carcinogen. Contains crystalline silica which is considered a hazard by inhalation. IARC has classified crystalline silica as carcinogenic to humans (group 1). Crystalline silica is also a known cause of silicosis, a noncancerous lung disease. The national toxicology program (NTP) has classified crystalline silica as a known human carcinogen. The international agency for research on cancer (IARC) has evaluated ethylbenzene and classified it as a possible human carcinogen (group 2b) based on sufficient evidence for carcinogenicity in experimental animals, but inadequate

evidence for cancer in exposed humans. In a 2 year inhalation study conducted by the national toxicology program (NTP), ethylbenzene vapor at 750 ppm produced kidney and testicular tumors in rats and lung and liver tumors in mice. Genetic toxicity studies showed no genotoxic effects. The relevance of these results to humans is not known. The international agency for research on cancer (IARC) has classified cobalt and certain cobalt compounds as possibly carcinogenic to humans (group 2b). Injection of metallic cobalt, cobalt alloys, and certain cobalt compounds has resulted in the development of localized tumors in laboratory animals. In a 2-year inhalation bioassay conducted by the national toxicology program (NTP), ethylene glycol butyl ether (egbe) caused an increased incidence of liver tumors in male mice and forestomach tumors in female mice exposed to 250 ppm, the highest concentration tested with mice. In rats, an increased incidence of tumors affecting the adrenal gland was seen in females exposed at 125 ppm only. This finding was not statistically significant. No increased incidence of any tumor type was seen in male rats exposed to the highest test concentration of 125ppm. The relevance of these findings to humans is unclear. In a lifetime inhalation study, exposure to 250 mg/m3 titanium dioxide resulted in the development of lung tumors in rats. These tumors occurred only at dust levels that overwhelmed the animals' lung clearance mechanisms and were different from common human lung tumors in both type and location. The relevance of these findings to humans is unknown but questionable. The international agency for research on cancer (IARC) has classified titanium dioxide as possibly carcinogenic to humans (group 2b) based on inadequate evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals. Contains methyl ethyl ketoxime (meko). In a lifetime, inhalation study, liver carcinomas were observed in rodents exposed to meko. The relevance to humans is unknown.

Reproductive effects : High exposures to xylene in some animal studies, often at maternally toxic levels, have affected embryo/fetal development. The significance of this finding to humans is not known.

Mutagenicity : No mutagenic effects are anticipated

Teratogenicity : No teratogenic effects are anticipated

ECOLOGICAL INFORMATION (ANSI Section 12)

No ecological testing has been done by akzo nobel paints llc on this product as a whole.

DISPOSAL CONSIDERATIONS (ANSI Section 13)

Waste disposal : Dispose in accordance with all applicable regulations. Avoid discharge to natural waters.

REGULATORY INFORMATION (ANSI Section 15)

As of the date of this MSDS, all of the components in this product are listed (or are otherwise exempt from listing) on the TSCA inventory. This product has been classified in accordance with the hazard criteria of the CPR (controlled products regulations) and the MSDS contains all the information required by the CPR.

Physical Data (ANSI Sections 1, 9, and 14)

Product Code	Description	Wt. / Gal.	VOC gr. / ltr.	% Volatile by Volume	Flash Point	Boiling Range	HMIS	DOT, proper shipping name
4308-0100	devguard 4308 alkyd industrial gloss enamel - white	9.34	430.64	54.65	105 f	277-415	*320	UN1263,paint,combustible liquid,PGIII
4308-0200	devguard 4308 alkyd industrial gloss enamel - pastel tint base	8.81	435.86	55.31	105 f	277-415	*320	UN1263,paint,combustible liquid,PGIII
4308-0300	devguard 4308 alkyd industrial gloss enamel - intermediate tint base	8.44	390.25	49.94	105 f	276-415	*320	UN1263,paint,combustible liquid,PGIII
4308-0400	devguard 4308 alkyd industrial gloss enamel - deep tint base	8.19	413.20	52.67	105 f	277-415	*320	UN1263,paint,combustible liquid,PGIII
4308-0900	devguard 4308 alkyd industrial gloss enamel - neutral tint base	8.24	439.96	55.77	105 f	277-415	*320	UN1263,paint,combustible liquid,PGIII
4308-1000	devguard 4308 alkyd industrial gloss enamel - white-high hiding	9.96	373.51	47.86	105 f	277-415	*320	UN1263,paint,combustible liquid,PGIII

Ingredients Product Codes with % by Weight (ANSI Section 2)

Chemical Name	Common Name	CAS. No.	4308-0100	4308-0200	4308-0300	4308-0400	4308-0900	4308-1000
benzene, ethyl-	ethylbenzene	100-41-4	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0
benzene, 1,4-dimethyl-	para-xylene	106-42-3			.1-1.0	.1-1.0		.1-1.0
benzene, 1,3-dimethyl-	1,3-dimethylbenzene	108-38-3	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0
ethanol, 2-butoxy-	2-butoxyethanol	111-76-2					.1-1.0	
limestone	limestone	1317-65-3					10-20	
benzene, dimethyl-	xylene	1330-20-7	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0
kaolin	clay	1332-58-7	1-5	1-5			1-5	
titanium oxide	titanium dioxide	13463-67-7	20-30	10-20	10-20	1-5		20-30
hexanoic acid, 2-ethyl-, cobalt(2+) salt	cobalt alkanoate	136-52-7	.1-1.0	.1-1.0		.1-1.0	.1-1.0	.1-1.0
talc	talc	14807-96-6				5-10		
quartz	quartz	14808-60-7					.1-1.0	
aluminum hydroxide	aluminum hydroxide	21645-51-2						1-5
solvent naphtha (petroleum), medium aliphatic	medium aliphatic solvent naphtha	64742-88-7	10-20	10-20	10-20	10-20	10-20	10-20
soybean oil, polymer with pentaerythritol, tdi and tung oil	alkyd resin	67989-28-0			5-10			
quaternary ammonium compounds, bis(hydrogenated tallow alkyl)di=methyl, salts with bentonite	dispersant, organoclay	68953-58-2			1-5			1-5
silica	amorphous silica	7631-86-9						1-5
lecithins	lecithin	8002-43-5		1-5	1-5			
stoddard solvent	mineral spirits	8052-41-3	20-30	20-30	20-30	20-30	20-30	10-20
benzene, 1,2-dimethyl-	ortho-xylene	95-47-6			.1-1.0	.1-1.0		.1-1.0
benzene,1,2,4-trimethyl-	pseudocumene	95-63-6			.1-1.0	.1-1.0		

Ingredients (Continued)

Product Codes with % by Weight (ANSI Section 2)

Chemical Name	Common Name	CAS. No.	4308-0100	4308-0200	4308-0300	4308-0400	4308-0900	4308-1000
castor oil derivative	rheological additive	Sup. Conf.		1-5			1-5	
long oil alkyd resin	long oil alkyd resin	Sup. Conf.	10-20	10-20	40-50	30-40	10-20	30-40
alkyd resin	alkyd resin	Sup. Conf.	20-30	20-30		5-10	20-30	

Chemical Hazard Data

(ANSI Sections 2, 8, 11, and 15)

Common Name	CAS. No.	ACGIH-TLV				OSHA-PEL				S.R. Std.	S2	S3	CC	H	M	N	I	O
		8-Hour TWA	STEL	C	S	8-Hour TWA	STEL	C	S									
ethylbenzene	100-41-4	100 ppm	125 ppm	not est.	not est.	100 ppm	not est.	not est.	not est.	not est.	n	y	y	y	n	n	y	n
para-xylene	106-42-3	100 ppm	150 ppm	not est.	not est.	100 ppm	not est.	not est.	not est.	not est.	n	y	y	y	n	n	n	n
1,3-dimethylbenzene	108-38-3	100 ppm	150 ppm	not est.	not est.	100 ppm	not est.	not est.	not est.	not est.	n	y	y	y	n	n	n	n
2-butoxyethanol	111-76-2	20 ppm	not est.	not est.	not est.	50 ppm	not est.	not est.	y	not est.	n	y	n	n	n	n	n	n
limestone	1317-65-3	10 mg/m3	not est.	not est.	not est.	5 mg/m3	not est.	not est.	not est.	not est.	n	n	n	n	n	n	n	n
xylene	1330-20-7	100 ppm	150 ppm	not est.	not est.	100 ppm	not est.	not est.	not est.	not est.	n	y	y	y	n	n	n	n
clay	1332-58-7	2 mg/m3	not est.	not est.	not est.	5 mg/m3	not est.	not est.	not est.	not est.	n	n	n	n	n	n	n	n
titanium dioxide	13463-67-7	10 mg/m3	not est.	not est.	not est.	10 mg/m3	not est.	not est.	not est.	not est.	n	n	n	n	n	y	y	n
cobalt alkanoate	136-52-7	.02 mg/m3	not est.	not est.	not est.	.05 mg/m3	not est.	not est.	not est.	not est.	n	y	n	y	n	n	n	n
talc	14807-96-6	2 mg/m3	not est.	not est.	not est.	.1 mg/m3	not est.	not est.	not est.	not est.	n	n	n	n	n	n	n	n
quartz	14808-60-7	.025 mg/m3	not est.	not est.	not est.	0.1 mg/m3	not est.	not est.	not est.	not est.	n	n	n	n	n	y	y	n
aluminum hydroxide	21645-51-2	10 mg/m3	not est.	not est.	not est.	5 mg/m3	not est.	not est.	not est.	not est.	n	n	n	n	n	n	n	n
medium aliphatic solvent naphtha	64742-88-7	100 ppm	not est.	not est.	not est.	500 x ppm	not est.	not est.	not est.	not est.	n	n	n	n	n	n	n	n
dispersant, organoclay	68953-58-2	10 mg/m3	not est.	not est.	not est.	15 mg/m3	not est.	not est.	not est.	not est.	n	n	n	n	n	n	n	n
amorphous silica	7631-86-9	10 mg/m3	not est.	not est.	not est.	6 mg/m3	not est.	not est.	not est.	not est.	n	n	n	n	n	n	y	n
lecithin	8002-43-5	not est.	not est.	not est.	not est.	not est.	not est.	not est.	not est.	not est.	n	n	n	n	n	n	n	n
mineral spirits	8052-41-3	100 ppm	not est.	not est.	not est.	500 ppm	not est.	not est.	not est.	not est.	n	n	n	n	n	n	n	n
ortho-xylene	95-47-6	100 ppm	150 ppm	not est.	not est.	100 ppm	not est.	not est.	not est.	not est.	n	y	y	y	n	n	n	n
rheological additive	Sup. Conf.	not est.	not est.	not est.	not est.	not est.	not est.	not est.	not est.	not est.	n	n	n	n	n	n	n	n

Footnotes:

C=Ceiling - Concentration that should not be exceeded, even instantaneously.

S=Skin - Additional exposure, over and above airborne exposure, may result from skin absorption.

n/a=not applicable
not est.=not established
CC=CERCLA Chemical

ppm=parts per million
mg/m3=milligrams per cubic meter
Sup Conf=Supplier Confidential

S2=Sara Section 302 EHS
S3=Sara Section 313 Chemical
S.R.Std.=Supplier Recommended Standard

H=Hazardous Air Pollutant, M=Marine Pollutant
P=Pollutant, S=Severe Pollutant
Carcinogenicity Listed By:
N=NTP, I=IARC, O=OSHA, y=yes, n=no



SECTION I - PRODUCT IDENTIFICATION AND PREPARATION INFORMATION

PRODUCT NAME:	ENERGY	EFFECTIVE DATE: 01/01/12
WHMIS CLASS:	Liquid Drain Opener Class E: Corrosive Material Class D: Division 1A	CODE NO. 6250
T.D.G. CLASSIFICATION:	Sulphuric Acid Class: 8 UN: 1830 PG: II	
SUPPLIER NAME AND ADDRESS:	ADVANTAGE SPECIALTIES P.O. BOX 244 BRIGHTON, ON K0K 1H0 (613) 475-4572	
EMERGENCY PHONE:	CANUTEC (613) 996 6666	

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENTS:	CAS#	WT%	ACGIH-TLV	LC50	LD50
Sulphuric Acid	7664-93-9	60-100	1 mg/m ³ TWA	90 ppm/4hr (Rat)	2140 mg/kg (Oral Rat)

SECTION III- PHYSICAL DATA

BOILING POINT (DEG C):	327	SPECIFIC GRAVITY (H2O=1):	1.8
VAPOUR PRESSURE (mm Hg):	0.0018@20°C	PERCENT VOLATILE (WT%):	Not available
VAPOUR DENSITY (AIR=1):	3.4	EVAPORATION RATE (Water=1):	Not available
SOLUBILITY IN WATER:	Soluble	PH (AS SUPPLIED):	<1.0
PHYSICAL STATE:	Liquid	VISCOSITY:	Water Thin
APPEARANCE AND ODOUR:	Clear amber, pungent odour.		

SECTION IV- FIRE AND EXPLOSION DATA

FLAMMABILITY:	Not flammable
FLASH POINT:	Not applicable
LEL:	Not available
UEL:	Not available
HAZARDOUS COMBUSTION PRODUCTS:	Not applicable
MEANS OF EXTINCTION:	Treat for surrounding material.
SPECIAL FIRE HAZARDS:	Corrosive material. Container may burst in heat of fire. Contact with moisture may result in heating or ignition. Capable of igniting finely divided combustibles on contact.

SECTION V- REACTIVITY DATA

CONDITIONS FOR CHEMICAL INSTABILITY:	Stable
INCOMPATIBILITY:	Organics, metals and combustible materials.
HAZARDOUS DECOMPOSITION:	Not applicable

SECTION VI- TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY:	Eye, skin contact, inhalation, ingestion
EFFECTS OF ACUTE EXPOSURE:	
EYE:	Contact can cause burns, severe corneal damage and permanent loss of vision.
SKIN:	Contact can cause severe tissue damage.
INHALATION:	Can cause nose, throat, and respiratory tract irritation coughing, headache and medical problems.
INGESTION:	Can cause burns to mouth, throat, stomach and medical problems.
EFFECTS OF CHRONIC EXPOSURE:	
SKIN:	Prolonged or repeated exposure can cause skin burns.
IRRITANCY:	Hazardous by WHMIS criteria.
RESPIRATORY TRACT SENSITIZATION:	No data available
CARCINOGENICITY:	Non-hazardous by WHMIS criteria.
TERATOGENICTY:	Insufficient data available
MUTAGENICITY:	Insufficient data available
SYNERGISTIC MATERIALS:	Not available

SECTION VII-PREVENTATIVE MEASURES

GLOVES:	Butyl, nitrile rubber or natural rubber. Confirm with reputable supplier first.
EYE PROTECTION:	Chemical goggles and face shield.
RESPIRATORY PROTECTION:	If inhalation of high concentration of mist is likely, use high efficiency air respirator.
OTHER PROTECTIVE EQUIPMENT:	As required by employer codes.
ENGINEERING CONTROLS:	Local exhaust recommended.
LEAK AND SPILL PROCEDURE:	Before attempting clean-up, refer to hazard data given above. Dilute small spills with water and mop up with non-reactive absorbent and placed in suitable, covered labeled containers. If necessary, neutralize the residue with a dilution solution of sodium carbonate. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice.
WASTE DISPOSAL:	Review federal, provincial and local government requirements prior to disposal.
STORAGE REQUIREMENTS:	Store in closed containers. Store away from incompatible materials. Store in a cool, dry well-ventilated area.

SECTION VIII- FIRST AID

EYE:	Immediately flush with water for 15 minutes. Call a doctor immediately.
SKIN:	Flush with water. Call a doctor if irritation develops. Completely decontaminate clothing, shoes and leather goods before reuse or discard.
INHALATION:	Remove to fresh air. If symptoms persist, call a doctor.
INGESTION:	Do not induce vomiting. Rinse mouth with water, then drink one glass of water. Contact a doctor immediately. Never give anything by mouth if victim is unconscious, is rapidly losing consciousness or is convulsing.

DISCLAIMER:

Information for this material safety data sheet was obtained from sources considered technically accurate and reliable.

No warranty, expressed or implied, is made and the supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this form.

Material Safety Data Sheet

Greenplus Hydraulic Fluid ES

Material Identification and Use

MANUFACTURER'S NAME.....	Greenland Corporation
MANUFACTURER'S ADDRESS.....	7016 – 30 St SE
	Calgary, AB., CANADA
	T2C 1N9
EMERGENCY PHONE NUMBER.....	1-800-598-7636
SUPPLIER IDENTIFIER.....	
SUPPLIER'S ADDRESS.....	
SUPPLIER'S EMERGENCY PHONE NUMBER.....	
PRODUCT IDENTIFIER.....	GREENPLUS HYDRAULIC
FLUID ES	
PRODUCT USE.....	Lubricant

Hazardous Ingredients of Materials

Chemical Identify	Concentration	CAS# / NA# / UN#	LD (50)	LC (50)
This is not a WHMIS controlled product.				>40,000 PPM Fingerling
Rainbow Trout				

Physical Data For Product

PHYSICAL STATE.....	Liquid
ODOUR AND APPEARANCE.....	Dark Brown, Distinctive
ODOUR THRESHOLD.....	N / A
SPECIFIC GRAVITY.....	.910
VAPOUR PRESSURE.....	N / A
VAPOUR DENSITY (air = 1).....	N / A
EVAPORATION RATE.....	N / A
BOILING POINT.....	>300°C
POUR POINT.....	-36°C
pH.....	7.0 - 7.2
DENSITY (g/ml).....	N / A
COEFFICIENT OF WATER / OIL DISTRIBUTION.....	N / A

Fire and Explosion Hazard of Product

CONDITIONS OF FLAMMABILITY.....	Open flame, above flashpoint
MEANS OF EXTINCTION.....	Foam, CO ₂ , Dry
Chemical, Water spray	
FLASHPOINT AND METHOD OF DETERMINATION.....	279°C C.O.C.
UPPER EXPLOSION LIMIT (% by volume).....	N / A
LOWER EXPLOSION LIMIT (% by volume).....	N / A
AUTO-IGNITION TEMPERATURE.....	N / A

FLAMMABILITY CLASSIFICATION.....

N / A

Material Safety Data Sheet

Greenplus Hydraulic Fluid ES

HAZARDOUS COMBUSTION PRODUCTS.....
on burning
EXPLOSION DATA.....
SENSITIVITY TO STATIC DISCHARGE.....

Toxic fumes may evolve
N / A
None

Reactivity Data

CHEMICAL STABILITY.....
INCOMPATIBLE MATERIALS.....
CONDITIONS OF REACTIVITY.....
HAZARDOUS DECOMPOSITION PRODUCTS.....
Carbon

Stable
None
None
Oxides of sulphur,

Toxicological Properties of Product

ROUTES OF ENTRY
SKIN CONTACT.....
SKIN ABSORPTION.....
EYE.....
INHALATION.....
INGESTION.....
ACUTE OVER EXPOSURE EFFECTS.....
CHRONIC OVER EXPOSURE EFFECTS.....
EXPOSURE LIMITS.....
ml / kg
IRRITANCY OF PRODUCT.....
SENSITIZATION TO MATERIAL.....
CARCINOGENICITY, REPRODUCTIVE EFFECTS.....
TERATOGENICITY, MUTAGENICITY.....
TOXICOLOGICALLY SYNERGISTIC PRODUCTS.....

None
None
None
None
None
None
None
LD 50 >5000
None
None
None
None
None

Preventive Measures

PERSONAL PROTECTIVE EQUIPMENT.....
SPECIFIC ENGINEERING CONTROLS.....
LEAK AND SPILL PROCEDURES.....
environmentally safe,

None
None
Although product is
spills should be

contained and picked up	
WASTE DISPOSAL.....	Disposal shall be in
compliance with Federal,	
regulations	Provincial and Local
HANDLING PROCEDURES AND EQUIPMENT.....	None
STORAGE REQUIREMENTS.....	None
SPECIAL SHIPPING INFORMATION.....	None

Material Safety Data Sheet

Greenplus Hydraulic Fluid ES

First Aid Measures

SPECIFIC FIRST AID PROCEDURES.....	AS A PROCAUTION
FLUSH EYES WITH	
	ABUNDANT WATER.
WASH SKIN	
	WITH SOAP AND
WATER. IN CASE OF	
	INGESTION, DO NOT
INDUCE	
	VOMITING. CALL A
PHYSICIAN.	
	PRODUCT IS NOT
TOXIC.	

Preparation of Material Safety Data Sheet

PREPARED BY.....	Engineering Group
PHONE NUMBER OF PREPARER.....	1-800-598-7636
DATE PREPARED.....	January 20, 2005

The information contained herein is based on data believed to be reliable, but is presented without guaranty or warranty and Greenland Corporation disclaims any liability incurred from the use thereof.

SECTION I - PRODUCT IDENTIFICATION AND PREPARATION INFORMATION

PRODUCT NAME:	PINE ALL	EFFECTIVE DATE: 01/01/12
WHMIS CLASS:	Class D: Division 2B	
T.D.G. CLASSIFICATION:	Not controlled under TDG (Canada)	
SUPPLIER NAME AND ADDRESS:	ADVANTAGE SPECIALTIES P.O. BOX 244 BRIGHTON, ON K0K 1H0 (613) 475-4572	
EMERGENCY PHONE:	CANUTEC (613) 996 6666	

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENTS:	CAS#	WT%	ACGIH-TLV	LC50 / LD50
Pine Oil	008002093	1-5	Not available	Not available
Caustic potash	1310-58-3	1-5	Not available	Oral (LD50): Acute: 365 mg/kg (Rat)
Isopropyl Alcohol	67-63-10	1-5	TWA: 400 CEIL: 500 (ppm) TWA: 900 CEIL: 1225 (mg/m ³)	Oral (LD50): Acute: 3600 mg/kg (Mouse) Vapor (LC50): Acute: 16970 ppm 4 hour(s) (Rat)

SECTION III- PHYSICAL DATA

BOILING POINT:	82.2°C	SPECIFIC GRAVITY (H2O=1):	0.95
VAPOUR PRESSURE (mm Hg):	33 mm @ 20°C	PERCENT VOLATILE (WT%):	Not available
VAPOUR DENSITY (AIR=1):	5.3	EVAPORATION RATE (BuAc=1):	Not available
SOLUBILITY IN WATER:	Soluble	pH (AS SUPPLIED):	10
PHYSICAL STATE:	Liquid	VISCOSITY:	Not available
APPEARANCE AND ODOUR:	Green		

SECTION IV- FIRE AND EXPLOSION DATA

FLAMMABILITY:	Not flammable
FLASH POINT:	Not applicable
FLAMMABLE LIMITS:	Not applicable
HAZARDOUS COMBUSTION PRODUCTS:	Not applicable
MEANS OF EXTINCTION:	Wear self contained breathing apparatus and protective clothing. Cool fire exposed containers to prevent rupturing.
SPECIAL FIRE HAZARDS:	Exposure to temperature above 49°C may cause bursting.

SECTION V- REACTIVITY DATA

CONDITIONS FOR CHEMICAL INSTABILITY:	Stable
INCOMPATIBILITY:	Avoid contact with strong oxidizing agents.
HAZARDOUS DECOMPOSITION:	Carbon dioxide, carbon monoxide

SECTION VI- TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY:	Eye, ingestion, skin, ingestion
EFFECTS OF ACUTE EXPOSURE ON HUMANS:	
EYE:	Contact can cause slight irritation but does not injure the eye tissue.
SKIN:	May cause irritation.
INHALATION:	Irritation of nasal and respiratory passages.
INGESTION:	Can cause gastrointestinal irritation, nausea vomiting and diarrhea
EFFECTS OF CHRONIC EXPOSURE:	
SKIN:	Hazardous in case of skin contact. May cause irritant, sensitizer, permeator.
RESPIRATORY TRACT SENSITIZATION:	Not available
CARCINOGENICITY:	Not available
TERATOGENICTY:	Not available
MUTAGENICITY:	Not available
SYNERGISTIC MATERIALS:	Not available

SECTION VII-PREVENTATIVE MEASURES

GLOVES:	Gloves if contact is to be made.
EYE PROTECTION:	Safety glasses if a splash or spray back is anticipated.
RESPIRATORY PROTECTION:	Not normally required when used as directed.
OTHER PROTECTIVE EQUIPMENT:	Suggested protective clothing might not be sufficient: consult a specialist BEFORE handling this product.
ENGINEERING CONTROLS:	
LEAK AND SPILL PROCEDURE:	Cover with absorbent material and sweep up. Wash area to prevent slipping. Dispose of soaked absorbent material in accordance with Federal, Provincial and local laws.
WASTE DISPOSAL:	Review federal, provincial and local government requirements prior to disposal.
STORAGE REQUIREMENTS:	Store in a dry, cool and well ventilated area.

SECTION VIII- FIRST AID

EYE:	Check for and remove any contact lenses. Flush with water for 15 minutes. If irritation persists, call a physician.
SKIN:	Wash with soap and water. If irritation persists seek medical attention. Wash contaminated clothing before reusing.
INHALATION:	Remove to fresh air. If symptoms persist, call a physician. If breathing stops, perform artificial respiration.
INGESTION:	DO NOT induce vomiting. Examine the mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen any tight clothing. If the victim is not breathing, perform artificial resuscitation. Seek immediate medical attention immediately.

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SECTION I - PRODUCT IDENTIFICATION AND PREPARATION INFORMATION

PRODUCT NAME:	TRUE BLUE	EFFECTIVE DATE: 01/01/12
WHMIS CLASS:	Cleaner Class E – Corrosive Material	CODE NO: 7764
T.D.G. CLASSIFICATION:	Corrosive Liquid, n.o.s. (Phosphoric Acid) Class 8 UN: 1760 PG III	
SUPPLIER NAME AND ADDRESS:	ADVANTAGE SPECIALTIES P.O. BOX 244 BRIGHTON, ON K0K 1H0 (613) 475-4572	
EMERGENCY PHONE:	CANUTEC (613) 996 6666	

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENTS:	CAS#	WT%	ACGIH-TLV	LC50	LD50
Phosphoric Acid Polyoxethylene	7664-38-2	10-30	1 mg/m3	Not available	1.53 g/kg (Oral Rat)
Nonyl Phenol	9016-45-9	1-5	Not available	Not available	3000 mg/kg (Oral Rat)
Hydrochloric Acid	7647-01-0	1-5	5 ppm TWA	1562 ppm/4 hr (Vapour Rat)	900 mg/kg (Oral Rabbit)

SECTION III- PHYSICAL DATA

BOILING POINT (DEG C):	100	SPECIFIC GRAVITY (H20=1):	1.070
VAPOUR PRESSURE (mm Hg):	Not available	PERCENT VOLATILE (WT%):	>80%
VAPOUR DENSITY (AIR=1):	Similar	EVAPORATION RATE (BuAc=1):	Similar
SOLUBILITY IN WATER:	Soluble	pH (AS SUPPLIED):	<1.0
PHYSICAL STATE:	Liquid	VISCOSITY:	Not available
APPEARANCE AND ODOUR:	Opaque blue liquid, viscous, mint odour		

SECTION IV- FIRE AND EXPLOSION DATA

FLAMMABILITY:	Not flammable
FLASH POINT:	Not applicable
FLAMMABLE LIMITS:	Not available
HAZARDOUS COMBUSTION PRODUCTS:	Not applicable
MEANS OF EXTINCTION:	As appropriate for surrounding fire
SPECIAL FIRE HAZARDS:	Not available

SECTION V- REACTIVITY DATA

CONDITIONS FOR CHEMICAL INSTABILITY:	Stable
INCOMPATIBILITY:	Strong caustics, strong oxidizing agents, metals, organics.
HAZARDOUS DECOMPOSITION:	Not applicable

SECTION VI- TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY:	Eye, skin contact, inhalation, ingestion
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EFFECTS OF ACUTE EXPOSURE ON HUMANS:

EYES:	Contact can cause eye irritation, reddening and swelling of tissues around the eye.
INHALATION:	Can cause nose, throat and respiratory tract irritation, coughing and headache.
SKIN:	Contact can cause moderate irritation.
INGESTION:	May cause vomiting, headache and medical problems.

EFFECTS OF CHRONIC EXPOSURE:

SKIN:	Prolonged or repeated exposure can cause drying, defatting and dermatitis.
IRRITANCY:	Hazardous by WHMIS criteria.
RESPIRATORY TRACT SENSITIZATION:	Not available
CARCINOGENICITY:	Non-hazardous by WHMIS criteria
TERATOGENICITY:	Insufficient data available
MUTAGENICITY:	Insufficient data available
SYNERGISTIC MATERIALS:	Not available

SECTION VII-PREVENTATIVE MEASURES

GLOVES:	Neoprene, natural rubber, polyethylene
EYE PROTECTION:	Chemical splash goggles
RESPIRATORY PROTECTION:	Not normally required if good ventilation is maintained
OTHER PROTECTIVE EQUIPMENT:	As required by employer codes.
ENGINEERING CONTROLS:	General ventilation normally adequate
LEAK AND SPILL PROCEDURE:	Before attempting clean-up, refer to hazard data given above. Small spills may be absorbed with non reactive absorbent and placed in suitable, covered, labeled containers. Prevent large spill from entering sewers and waterways. Contact emergency services and suppliers for advice.
WASTE DISPOSAL:	Review federal, provincial and local government requirements prior to disposal.
STORAGE REQUIREMENTS:	Store in closed containers, away from incompatible materials. Store in a cool, dry, well ventilated area. Ensure storage area has adequate ventilation and no source of open flame or sparks.

SECTION VIII- FIRST AID

EYE:	Flush with water for 15 minutes. If irritation persists, call a physician.
SKIN:	Wash with soap and water. If irritation persists discontinue use of the product.
INHALATION:	Remove to fresh air. If symptoms persist, call a physician.
INGESTION:	DO NOT induce vomiting. Contact a physician immediately. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration.

DISCLAIMER:

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SECTION I - PRODUCT IDENTIFICATION AND PREPARATION INFORMATION

PRODUCT NAME: WICK IT **EFFECTIVE DATE:** 01/01/12
CODE: 34311

WHMIS CLASS: Class B-3; Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F)
Class D-2B: Material causing other toxic effects (TOXIC)

T.D.G. CLASSIFICATION: Not controlled under TDG (Canada)
Not applicable (PIN and PG)

SUPPLIER NAME AND ADDRESS: ADVANTAGE SPECIALTIES
P.O. BOX 244
BRIGHTON, ON K0K 1H0
(613) 475-4572

EMERGENCY PHONE: CANUTEC (613) 996 6666

SECTION II - HAZARDOUS INGREDIENTS

<u>INGREDIENTS:</u>	<u>CAS#</u>	<u>WT%</u>	<u>ACGIH-TLV</u>	<u>LC50 / LD50</u>
Isopropyl alcohol	67-63-0	1-5	TWA: 400 CEIL: 500 (ppm)	ORAL (LD50): Acute: 3600 mg/kg (Mouse) VAPOR (LC50): Acute: 16970 ppm 4 hour(s) (Rat)
Essential Oils	Not applicable	30-60	Not applicable	Not applicable

SECTION III- PHYSICAL DATA

BOILING POINT:	99°C (210.2°F)	SPECIFIC GRAVITY (H20=1):	0.84
VAPOUR PRESSURE (mm Hg):	33 mm (@ 20°C) (Isopropyl Alcohol)	PERCENT VOLATILE (WT%):	100%
VAPOUR DENSITY (AIR=1):	2.08 (Isopropyl Alcohol)	EVAPORATION RATE (BuAc=1):	Not available
SOLUBILITY IN WATER:	Easily soluble in hot water, methanol, diethyl ether. Partially soluble in n-octanol. Insoluble in cold water.	VISCOSITY:	Not available
pH (AS SUPPLIED):	Neutral		
PHYSICAL STATE:	Liquid		
APPEARANCE AND ODOUR:	Clear Yellow, Perfumed		

SECTION IV- FIRE AND EXPLOSION DATA

FLAMMABILITY: Combustible

FLASH POINT: More than 40°C

FLAMMABLE LIMITS: The greatest known range is LOWER: 2%, UPPER: 12% (Isopropyl alcohol)

HAZARDOUS COMBUSTION PRODUCTS: These products are carbon oxides (CO, CO²)

MEANS OF EXTINCTION: Combustible liquid, insoluble in water
SMALL FIRE: Use DRY chemicals, CO₂, alcohol foam or water spray.
LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

SPECIAL FIRE HAZARDS: Not available

SECTION V- REACTIVITY DATA

CONDITIONS FOR CHEMICAL INSTABILITY: Stable

INCOMPATIBILITY: Reactive with oxidizing agents, acids. Slightly reactive with moisture.

HAZARDOUS DECOMPOSITION: Not available.

SECTION VI- TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY: Eye contact. Ingestion. Skin contact. Inhalation.

EFFECTS OF ACUTE EXPOSURE ON HUMANS:

EYE: Contact can cause irritation.
SKIN: Hazardous (irritant, sensitizer, permeator)
INGESTION: Very hazardous
INHALATION: Irritant

EFFECTS OF CHRONIC EXPOSURE:

CARCINOGENICITY: Not available
TERATOGENICITY: Not available
MUTAGENICITY: Not available
SYNERGISTIC MATERIALS: Not available
DEVELOPMENTAL TOXICITY: Proven (Isopropyl Alcohol) Repeated or prolonged exposure to the substance can produce target organs damage.

SECTION VII-PREVENTATIVE MEASURES

GLOVES: Gloves.
EYE PROTECTION: Splash goggles.
RESPIRATORY PROTECTION: Not normally required if good ventilation is maintained and exposure guidelines are not exceeded.
OTHER PROTECTIVE EQUIPMENT: Other protective equipment as required by employer code.
ENGINEERING CONTROLS: General ventilation normally adequate.
LEAK AND SPILL PROCEDURE: Before attempting clean-up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered labeled containers. Prevent large spills from entering sewers or waterways.
WASTE DISPOSAL: Review federal, provincial and local government requirements prior to disposal.
STORAGE REQUIREMENTS: Store in closed container, away from incompatible materials. Store in a dry, cool and well ventilated area. Ensure storage area has adequate ventilation and no source of open flame or spark.

SECTION VIII- FIRST AID

EYE: IMMEDIATELY flush eyes with running water for at least 15 minutes keeping eyelids open. Seek medical attention.
SKIN: Flush with water. Call a doctor if irritation develops. Completely decontaminate clothing, shoes and leather goods before reuse or discard.
INHALATION: Remove to fresh air. If symptoms persist, call a physician. If breathing stops, perform artificial respiration.
INGESTION: DO NOT ingest. Contact doctor immediately, If vomiting occurs naturally have victim lean forward to reduce risk of aspiration. Never give anything by mouth if victim is unconscious, is rapidly losing consciousness or is convulsing.

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Appendix E

Curriculum Vitae



Professional Engineers Ontario

L i c e n c e

Issued under the Professional Engineers Act to

James Archie Bailey

who is hereby entitled to practise as a

P r o f e s s i o n a l E n g i n e e r

in the Province of Ontario and who is registered as a member of
the Association of Professional Engineers of Ontario

Given under the Corporate Seal of the Association at the
City of Toronto this:

10th day of January, 2003

L. W. Bradstock P.Eng. *Roger F. Barker* P.Eng.
President Registrar

Association of Professional Engineers Ontario. This certificate is the property of the
Association and must be surrendered on revocation, cancellation, suspension or resignation.





JAMES A. BAILEY, P.Eng.

Senior Project Manager

SUMMARY OF PROFESSIONAL EXPERIENCE

2006 - Present Senior Project Manager. Cambium Environmental Inc.
Peterborough, Ontario, Canada

Mr. Bailey currently provides senior project management in the form of budgeting, regular budget analysis, project scheduling, invoicing, and evaluation of the status of project deliverables. Mr. Bailey is also responsible for technical participation in projects including design and execution of site assessments, remedial programs, industrial compliance studies, and other related services. Mr. Bailey is also responsible for the coordination and management of key project team members as well as sales and marketing initiatives related to environmental compliance.

2004 - 2006 Environmental Management Group Leader. SGS Environmental Services
Lakefield, Ontario, Canada

Mr. Bailey provided project management assistance to senior project managers in the form of initial budget set-up, regular budget analysis, project scheduling, invoicing, and evaluation of the status of project deliverables. Mr. Bailey was also responsible for technical participation in projects including design and execution of site assessments, remedial programs, industrial compliance studies, and other related services. Mr. Bailey was also responsible for the coordination and management of key project team members as well as sales and marketing initiatives related to environmental compliance.

2001-2004 Project Manager/Satellite Office Manager. Terrapex Environmental Limited
Toronto/Peterborough, Ontario, Canada

Mr. Bailey's duties and responsibilities included the completion of Phase I and II Environmental Site Assessments, indoor air sampling, and Certificate of Approval (Air) applications for various industrial clients. Mr. Bailey was also involved in the remediation of many contaminated sites in Ontario, including the supervision of contractors, health and safety supervision of the site, collection of soil and water samples, and report generation. Business development, invoicing and client relations on a project manager basis were integral components of his roll.



2000 - 2001

Project Manager. Lakefield Research Limited
Lakefield, Ontario, Canada

Duties and responsibilities included:

- *Phase I Environmental Site Assessments including historical research, site inspection, interviews and report generation.*
- *Phase II and III Environmental Site Assessments including supervision of bedrock and overburden drilling and test pitting operations, soil logging and sampling, installation of monitoring wells, hydrogeological assessment of groundwater movement and contaminant plumes, report and proposal preparation.*
- *Development of off site Health and Safety Plan which included development of several standard procedures to ensure worker safety and consistent quality of work.*
- *Remediation projects involving emergency spills and underground storage tank decommissioning including supervision of contaminated soil and water removal.*
- *Environmental sampling during mineral extraction pilot plants.*
- *Business development, invoicing and client relations on a project manager basis.*

1999 - 2000

Environmental Scientist. Terrapex Environmental Limited
Toronto, Ontario, Canada

Duties and responsibilities included:

- *Phase I , II, and III Environmental Site Assessments including supervision of bedrock and overburden drilling and test pitting operations, soil logging and sampling, installation of monitoring wells, hydrogeological assessment of groundwater movement and contaminant plumes, report and proposal preparation.*
- *Installation and maintenance of in-situ remediation programs involving bio-, vapour extraction and pump and treat systems.*
- *Remediation projects involving emergency spills and underground storage tank decommissioning including supervision of contaminated soil and water removal.*
- *Business development, invoicing and client relations on a project manager basis.*

PROFESSIONAL ASSOCIATIONS

- Member of the Professional Engineers of Ontario
- Member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta
- Education Coordinator for the Peterborough Chapter of the Professional Engineers of Ontario



EDUCATION & TRAINING

1999	Honours degree B.Sc. (Environmental Engineering). University of Guelph Guelph, Ontario, Canada
1999 with current refresher training	40 hour Hazardous Waste Site Worker Training. DAS Environmental Training, Inc. Waterloo, Ontario, Canada
2000	Conducting Environmental Site Assessments in Canada. Associated Environmental Site Assessors of Canada Inc. Toronto, Ontario, Canada
2001	Course: Hazard Identification and Workplace Inspection. Unique Consulting Service Lakefield, Ontario, Canada
2001	Course: Due Diligence and the Occupational Health and Safety Act of Ontario. Unique Consulting Service Lakefield, Ontario, Canada
2001	Waste Management. The Canadian Institute Toronto, Ontario, Canada
2005	Current Standard First Aid and Adult CPR
2005	WHMIS Training Program
2006	Air Dispersion Modeling Workshop using AERMOD Model

PUBLICATIONS

Watson, Heather, and Jim Bailey "Opportunity Knocks" – Should Rural Ontario Municipalities Answer?" *Municipal World*, Volume 114, number 11, (November 2004) p.9-12.

LANGUAGES

- English



SELECTED EXPERIENCE

ENHANCED DESIGNATED SUBSTANCE SURVEYS

General Electric Nuclear: Conducted Enhanced Designated Substance Surveys for various buildings throughout the Peterborough, Ontario facility; assessing, documenting and sampling all designated substances, including asbestos, lead, mercury, etc. Involved with proposal preparation, project coordination, project supervision, infield assessment and sampling and report preparation.

ENVIRONMENTAL AUDITING AND COMPLIANCE

SGS Canada Inc: completed detailed environmental compliance audits at six locations throughout Ontario and Quebec, Canada as part of several business acquisitions. An environmental compliance audit (audit) is an investigation of specified information and activities to determine if a facility is in compliance with applicable environmental legislation and regulations. The audit offered a method by which SGS could evaluate both the site's current and future levels of compliance with environmental laws. The audits were conducted to ensure compliance with national, provincial, and local regulations and were conducted as per the protocols prescribed by the Canadian Standards Association's Z773-03 Environmental Compliance Auditing and CAN/CSA-ISO 19011:03, Guidelines for Quality and/or Environmental Management Systems Auditing in order to plan the audit process and determine compliance with said regulations and legislations. Each audit included the following activities: records and documentation review, interviews, site inspection, comprehensive compliance review and reporting.

REMEDIAL OPTIONS STUDIES

City of Quinte West: developed a remedial options study which reviewed several methods for the remediation of chlorinated hydrocarbons including risk assessment and multiple in-situ and ex-situ technologies. Using several criteria and constraints related to cost, effectiveness, time line and others, a remedial approach was selected.

Municipality of Brighton: developed a remedial options study which reviewed several methods for the remediation of petroleum hydrocarbons, chlorinated hydrocarbons, polycyclic aromatic hydrocarbons and several metals associated with a historical industrial facility. The study included the development of cost and time estimates as well as determined the effectiveness of the approach. Each option's estimated associated cost, effectiveness time line were used to select the remedial option.



Dry Cleaning Facility, Orillia: conducted a remedial options study which reviewed several methods for the remediation of chlorinated hydrocarbons associated with a former dry cleaning facility. Following a decision matrix analysis utilizing several criteria and constraints related to cost, effectiveness, time line and others, selected a remedial approach which would best suite the site.

HAZARDOUS AND NON-HAZARDOUS SITE REMEDIATIONS

Various Clients: Supervised the decommissioning of underground storage tanks and the removal of petroleum contaminated soil at over 20 sites in the Greater Toronto and Eastern Ontario area. Each site was remediated as per the methodologies and criteria set by Ministry of the Environment.

Sunoco Inc.: Supervision of remediation, including the decommissioning of underground storage tanks and removal of contaminated soil at petroleum retail outlets in Southern Ontario.

Honda: Project management of a multi pronged remedial approach which included the removal of a waste oil tank and associated impacted soils and groundwater which were accessible as well as the installation of an in-situ groundwater remediation system. The in-situ remedial system involved the collection of impacted groundwater from an existing building, treatment and discharge.

Pikangikum First Nations: Supervision of the decommissioning of one underground and two aboveground storage tanks and removal of petroleum hydrocarbon impacted soil at two locations in a Fist Nations community.

North Caribou Lake First Nations: Emergency site remediation of a fuel oil spill.

North Caribou Lake First Nations: Installation of liquid phase product recovery and groundwater treatment system.

City of Quinte West: Supervision of the excavation and removal of petroleum hydrocarbon impacted soil at a former commercial site.

MONITORING AND MAINTENANCE

First Nations: Maintenance, monitoring and sampling of bioremediation cells a First Nations community located in Northern Ontario including statistical analysis of data obtained.

Ultramar Canada Inc.: Bi-weekly maintenance and monitoring of a vapour extraction system at a petroleum retail outlet in Toronto.



Sunoco Inc.: Maintenance and monitoring of groundwater observation wells at four sites across Southern Ontario.

City of Quinte West: Monitoring and compliance management of a chlorinated hydrocarbon impacted site. The project involved the collection of soil, sediment, groundwater, surface water and sewer water samples. Following a quarterly sampling program, a detailed report was prepared and provided to the Ministry of the Environment on a yearly basis.

General Electric: Maintenance and monitoring of groundwater and surface water sampling locations a site in Southern Ontario.

PHASE I ENVIRONMENTAL SITE ASSESSMENTS

Various clients: Conducted Phase I assessments of various properties throughout Ontario for industrial, municipal, and residential clients.

PHASE II ENVIRONMENTAL SITE ASSESSMENTS

Ultramar Canada: Investigation and assessment of hydrocarbon impacts to soil and groundwater at a future service station. Several assessments have included coring through bedrock to assess geological and hydrogeological characteristics of the subsurface.

Maydwell Manufacturing: Soil and groundwater investigation and assessment at a manufacturing facility adjacent to a major railway line.

Sunoco Inc.: Investigation and assessment of impacts to soil and groundwater at several service station locations.

Sunoco Inc.: Potable water quality assessment of various retail sites throughout Ontario.

The Mattamy Development Company: Investigation of sub-surface impacts still present after a remediation project was performed at a decommissioned oil refinery.

UPI Inc.: Investigation and assessment of hydrocarbon impacts to soil and groundwater at existing service stations and bulk fuel storage plants. Several assessments have included tri-coning and coring through bedrock to assess geological and hydrogeological characteristics of the subsurface.

North Caribou Lake First Nations: Soil and groundwater investigation and assessment at the community airport.



Attawapiskat: Soil, air and water quality investigation at residential townhouse and community elementary school.

Petro-Canada, Investigation and assessment of hydrocarbon impacts to soil and groundwater at a future service station. Several assessments have included coring through bedrock to assess geological and hydrogeological characteristics of the subsurface.

Municipality of Brighton, Detailed subsurface investigation to environmentally assess a large industrial property. Contaminants of concern included petroleum hydrocarbons, chlorinated hydrocarbons, polycyclic aromatic hydrocarbons and several metals including lead and chromium. The investigation included the excavation of testpits, advancement of overburden and bedrock wells as well as the installation of monitoring wells. A full delineation of all impacted soil and groundwater was conducted.

WASTE MANAGEMENT

Mr. Bailey has been the project manager of municipal solid waste management projects for four sites in Eastern Ontario. Work included initial budget set-up, regular budget analysis, managing and updating the monitoring programs in conjunction with Ministry of the Environment comments, scheduling of required monitoring events and project tasks as per individual sites Certificates of Approval, landfill annual monitoring, landfill gas measurements, client interaction and meetings, correspondence preparation, invoicing, liaison with the Ministry of the Environment, and preparation of Annual Monitoring reports.

PCB DELISTING

City of Quinte West: conducted several poly chlorinated biphenyl (PCB) delisting programs for sites within the Municipality.

General Electric: developed and performed poly chlorinated biphenyl (PCB) delisting sampling at several decommissioned facilities and pieces of equipment.