

Industrial Hygiene and Environmental Consulting

**1783 Highway 20, RR#2
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Total & Hexavalent Chromium Study

DuroAir Technologies nInc.
5850 Don Murie Street, Unit D
Niagara Falls, Ontario

Submitted To: DuroAir Technologies Inc.

Issued: May 21, 2019

OESN Project #: 00305.002



1-888-271-2111

www.oesn.net

May 21, 2019

Total & Hexavalent Chromium Study Duroair Technologies Inc.

Field Consultant: Shayne Chesney
Report Author: Shayne Chesney
OESN Job#: 00305.002

Client: Duroair Technologies Inc.
5850 Don Murie Street, Unit D
Niagara Falls, ON
L2G 0B3
289-277-1157

Contact(s): Nina Powell
Kelly Rankin

1.0 SUMMARY

Ontario Environmental & Safety Network Ltd. (herein referred to as OESN) was requested by Duroair Technologies Inc. to collect air samples to determine if Total Chromium (CrIII) and/or Hexavalent Chromium (CrVI) is present during spray painting. The study was conducted: Elite Door & Industrial Inc., 247 Armstrong Ave, Unit 1A, Georgetown, ON on April 22, 2019.

The request for sampling was to determine if 'bleed-thru' occurs during spray application of High Solids Epoxy Primer 10P20-13. Substance ingredients contains Strontium Chromate (25-30%) and Barium Chromate (0-1%). The patented DuroPure System, 6 stage filtration system was used for the challenge testing.

The challenge testing consisted of 7 air samples + 2-field blanks to determine if total & hexavalent chromium was present during spray painting. Air samples collected for Total Chromium were collected on 37mm, 3-piece MCE filters and Hexavalent Chromium were collected on 37mm, 3-piece PVC filters. Sample conditions:

Table 1

Sample #	Location	Sampling Stage	Media
01	Desk	Background Sample	PVC
02	Inside Booth	During Spray Painting	PVC
03	Inside Booth	During Spray Painting	MCE
04	Above Exhaust / Discharge	During Spray Painting	PVC
05	Above Exhaust / Discharge	During Spray Painting	MCE
06	Area, Room Air - Near Exhaust	During Spray Painting	PVC
07	Area, Room Air - Near Exhaust	During Spray Painting	MCE

Area air samples were collected prior to the challenge test to provide a background condition within the plant.

Hexavalent Chromium Results

Table 2

Sample #	Location	Total Mass (µg)	Concentration (µg/m ³)	Presence / Absence
01	Desk - Background	<0.071**	<0.32	Absent
02	Inside Booth During Spray Painting	360	Na	Present*
04	Above Exhaust During Spray Painting	<0.071	Na	Absent
06	Area - Room Air Near Exhaust	<0.071	<0.20	Absent

*The presence of chromium was expected to be present during spray painting

** Detection limit: <0.071 µg

Total Chromium Results

Table 3

Sample #	Location	Total Mass (µg)	Concentration (µg/m ³)	Presence / Absence
03	Inside Booth During Spray Painting	730	Na	Absent
05	Above Exhaust During Spray Painting	<7.5*	Na	Absent
06	Area - Room Air Near Exhaust	<7.5	<0.021	Absent

*Detection limit: <7.5µg

Laboratory footnotes within the laboratory results were observed and mean recovery for parameters were within accepted confidence intervals.

Results of air sampling, at the time of the assessment during spray painting activities, suggest the filtration of the DuroPure System is capable and adequate for the collection and removal of Total Chromium and Hexavalent Chromium. Room air sample collection in proximity to the discharge of the DuroPure System indicated no occupational exposure to Total and Hexavalent Chromium occurred during Spray Painting activities. Conditions for operation and maintenance of the equipment must be maintained for effectiveness.

2.0 METHODOLOGY

Air Samples

Air samples were collected using SKC™ 224--XR series pumps calibrated using a BIOS Drycal primary standard calibrator (flow rate ranged 1.7 - 2.1 LPM). Total Chromium air samples were collected using MCE filters and Hexavalent Chromium air samples were collected using PVC filters.

Air samples were positioned on a work bench with an elevated height above the bench approximately 2 feet (overall height approximately 5 feet), within the room air at a height approximately 5.5 feet. The air samples are considered active sampling. Filter media was positioned within the paint booth near the exhaust filtration bank to determine presence / absence of Total and Hexavalent Chromium. Samples collected within the spray booth and above the exhaust are considered static samples. The filter media was positioned to capture substances directly onto the media.

Upon completion of sampling, sample cassettes were sent to SGS Galson Labs for analysis by NIOSH Method 7303/mod. OSHA ID-125G;ICP (Total Chromium) and mod. OSHA ID-215 (version 2); IC/UV (Hexavalent Chromium). SGS Galson Labs is Accredited/Recognition in the American Industrial Hygiene Association's (AIHA) Industrial hygiene sector, Lab ID#: 100324.

3.0 OBSERVATIONS

The following observations were made during the site visit:

April 22, 2019

- The retractable spray booth made of galvanized steel frame construction and NFPA 701 PVC fabric enclosure was positioned with a cross draft 8000 CFM DuroPure Filtration System. The booth was approximately 20 feet long by 8 feet wide with a height of 10 feet. Cardboard material was hung from a frame as well as positioned on a work bench within the booth. Spray painting occurred applying the coatings to the cardboard as a test material. Approximately 1-gallon of coating was continuously applied to the material. The continuous coating application was approximately 2-hour duration.
- The filter media positioned near the filtration / exhaust was hung on the exhaust frames in direct line with the air flow to the filter bank. The air sampling media was removed and discoloured with 'overspray'.
- The filter media positioned above the exhaust grille was hung with clips attached to an aluminum stand. The media was in direct line with the exhaust flow rate passing over and through the filter cassette. No discolouration was observed on the filter media above the exhaust. The media was 37mm MCE and 37mm PVC filter, 3-piece cassettes.

4.0 RESULTS

Laboratory results are attached. The results of air sampling suggest, during the spray painting activities within the booth, both total and hexavalent chromium was present. The 'presence' of chromium within the booth was expected during spray painting activities. On the discharge side of the fan and within the room, no total or hexavalent chromium was present above analytical detection limits (DL). This study was to identify if the DuroPure Filtration System was capable of removal of Total and Hexavalent Chromium from spray painting activities. The data suggests the filtration is adequate and capable of removal of substances during spray painting.

5.0 CONCLUSION

Results of air sampling at the time of the assessment suggest no exposures to Total or Hexavalent Chromium was present within the room from the discharge side of the exhaust filtration equipment.

6.0 RECOMMENDATIONS

- Maintain filtration equipment as designed to ensure effective operation.

Should you have any questions regarding the above information, please contact our office.

Regards,

A handwritten signature in blue ink, appearing to read 'Shayne Chesney'.

Shayne Chesney, EP.
Occupational Hygienist

Attachments//

Appendix A: Air Sampling Results

Limitations

Where testing was performed, it was carried out in accordance with the terms of our contract. Other substances or hazards may be present onsite and may be revealed by different or other testing not provided for within this contract.

This report is for the sole use of the Client unless expressly stated otherwise in the report or contract. Any use which any third party makes of the report, in whole or in part, or any reliance thereon, or decisions made based on any information or conclusions in the report, is the sole responsibility of such third party.

OESN accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report or anything set out therein.

Appendix A: Air Sample Results

BULK SAMPLING METHODOLOGY

Bulk material samples are randomly collected during the assessment in strategic locations. Samples of materials suspected for containing asbestos minerals are collected by a knowledgeable, competent worker who is trained and experienced in asbestos bulk sampling. Safety measures are applied in accordance with OESN's Standard Operating Procedure (SOP).

Samples are representative of each homogeneous material (uniform in colour and texture) and the quantity of samples are collected in accordance with provincial regulation.

Table 1: Bulk Material Samples of O. Reg. 278/05 (as amended to 479/10).

Item	Type of Material	Size of homogeneous area	Minimum number of bulk material samples to be collected
1.	Surfacing material, including without limitation material that is applied to surfaces by spraying, by troweling or otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members	Less than 90 square metres	3
		90 or more square metres, but less than 450 square metres	5
		450 or more square metres	7
2.	Thermal insulation, except as described in item 3	Any size	3
3.	Thermal insulation patch	Less than 2 linear metres or 0.5 square metres any size	1
4.	Other material	Any size	3

Samples are tested using test method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials. June 1993. O. Reg. 278/05.

Sample locations are plotted on drawings designed to match the Chain of Custody produced on site.

The report of "suspect" materials is based on the field consultant's experience and knowledge regarding the historical use and applications of these chemicals in products. If observations do not confirm the presence of designated substances or hazardous materials, bulk samples of the material are collected and analyzed for the appropriate chemical or biological substance.

INTERPRETATION OF RESULTS

All bulk samples were analyzed using Polarized Light Microscopy (PLM) Method EPA 600/R93/116 and EPA 600/M4-82/020. The limit of quantitation for the test method is <1% asbestos by weight as determined by visual estimation.

Asbestos is present within the sample when the test result indicates a percentage of <1 to 100. A result reported as “<1% asbestos” indicates that trace amounts of asbestos were observed but could not be quantified by the test method. When this occurs, additional analysis can be requested to achieve a lower limit of quantitation.

A result reported as “None Detected” indicates that no traces of asbestos were observed in the sample. For most materials, a “None Detected” result can be interpreted as 0% asbestos. Due to the limitations of EPA 600 test method, non friable organically bound materials such as vinyl floor tiles can be difficult to analyze using PLM. For these materials, EPA recommends that a “None Detected” result be followed with analysis by Transmission Electron Microscopy (TEM) to confirm that asbestos is not present within the material.

The province of Ontario considers any material testing equal or greater than 0.5% by dry weight as asbestos.

**Mr. Shayne Chesney
Ontario Environmental & Safety Network
1783 Highway #20
Allanburg, ON L0S 1A0
Canada**

May 08, 2019

Account# 12757

Login# L478581

Dear Shayne Chesney:

**Enclosed are the analytical results for the samples received by our laboratory on May 03, 2019.
All samples on the chain of custody were received in good condition unless otherwise noted.**

**Please contact client services at (888) 432-5227 if you would like any additional information regarding
this report. Thank you for using SGS Galson.**

Sincerely,

SGS Galson



**Lisa Swab
Laboratory Director**

Enclosure(s)

Terms and Conditions & General Disclaimers

- This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.
- Any holder of this document is advised that information contained herein reflects the Company’s findings at the time of its intervention only and within the limits of Client’s instructions, if any. The Company’s sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Analytical Disclaimers

- Unless otherwise noted within the report, all quality control results associated with the samples were within established control limits or did not impact reported results.
- Note: The findings recorded within this report were drawn from analysis of the sample(s) provided to the laboratory by the Client (or a third party acting at the Client’s direction). The laboratory does not have control over the sampling process, including but not limited to the use of field equipment and collection media, as well as the sampling duration, collection volume or any other collection parameter used by the Client. The findings herein constitute no warranty of the sample’s representativeness of any sampled environment, and strictly relate to the samples as they were presented to the laboratory. For recommended sampling collection parameters, please refer to the Sampling and Analysis Guide at www.sgs.com.
- Unrounded results are carried through the calculations that yield the final result and the final result is rounded to the number of significant figures appropriate to the accuracy of the analytical method. Please note that results appearing in the columns preceding the final result column may have been rounded and therefore, if carried through the calculations, may not yield an identical final result to the one reported.
- The stated LOQs for each analyte represent the demonstrated LOQ concentrations prior to correction for desorption efficiency (if applicable).
- Unless otherwise noted within the report, results have not been blank corrected for any field blank or method blank data.

Accreditations SGS Galson holds a variety of accreditations and recognitions. Our quality management system conforms with the requirements of ISO/IEC 17025. Where applicable, samples may also be analyzed in accordance with the requirements of ELAP, NELAC, or LELAP under one of the state accrediting bodies listed below. Current Scopes of Accreditation can be viewed at <http://www.sgs.com> in the accreditations section of the "About" page. To determine if the analyte tested falls under our scope of accreditation, please visit our website or call Client Services at (888) 432-5227.

National/International	Accreditation/Recognition	Lab ID#	Program/Sector
AIHA-LAP, LLC - IHLAP, ELLAP, EMLAP	ISO/IEC 17025 and USEPA NLLAP	Lab ID 100324	Industrial Hygiene, Environmental Lead, Environmental Microbiology

State	Accreditation/Recognition	Lab ID#	Program/Sector
New York (NYSDOH)	ELAP and NELAC (TNI)	Lab ID: 11626	Air Analysis, Solid and Hazardous Waste
New Jersey (NJDEP)	NELAC (TNI)	Lab ID: NY024	Air Analysis
Louisiana (LDEQ)	LELAP	Lab ID: 04083	Air Analysis, Solid Chemical Materials
Texas	Texas Dept. of Licensing and Regulation	Lab ID: 1042	Mold Analysis Laboratory license

Legend

< - Less than	mg - Milligrams	MDL - Method Detection Limit	ppb - Parts per Billion
> - Greater than	ug - Micrograms	NA - Not Applicable	ppm - Parts per Million
l - Liters	m3 - Cubic Meters	NS - Not Specified	ppbv - ppb Volume
LOQ - Limit of Quantitation	kg - Kilograms	ND - Not Detected	ppmv - ppm Volume
ft2 - Square Feet	cm2 - Square Centimeters	in2 - Square Inches	ng - Nanograms



GALSON

LABORATORY ANALYSIS REPORT

6601 Kirkville Road
 East Syracuse, NY 13057
 (315) 432-5227
 FAX: (315) 437-0571
 www.sgsgalson.com

Client : Ontario Environmental & Safety Account No.: 12757
 Site : Georgetown Login No. : L478581
 Project No. : Duro-Air
 Date Sampled : 22-APR-19 Date Analyzed : 06-MAY-19 - 08-MAY-19
 Date Received : 03-MAY-19 Report ID : 1133252

Chromium

<u>Sample ID</u>	<u>Lab ID</u>	<u>Air Vol</u> <u>liter</u>	<u>Total</u> <u>ug</u>	<u>Conc</u> <u>mg/m3</u>
03 INSIDE BOOTH	L478581-3	NA	730	NA
05 ABOVE EXHAUST	L478581-5	NA	<7.5	NA
07 NEAR EXHAUST	L478581-7	357	<7.5	<0.021
09 FIELD BLANK	L478581-9	NA	<7.5	NA

COMMENTS: Please see attached lab footnote report for any applicable footnotes.

Level of Quantitation: 7.5 ug Submitted by: LZM/EJB/KEG Approved by: JJL
 Analytical Method : mod. NIOSH 7303/mod. OSHA ID-125G; ICP Date : 08-MAY-19
 Collection Media : MCE UW 37mm Supervisor : KEG



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LABORATORY ANALYSIS REPORT

6601 Kirkville Road
 East Syracuse, NY 13057
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 www.sgsgalson.com

Client : Ontario Environmental & Safety Account No.: 12757
 Site : Georgetown Login No. : L478581
 Project No. : Duro-Air
 Date Sampled : 22-APR-19 Date Analyzed : 07-MAY-19
 Date Received : 03-MAY-19 Report ID : 1133285

Hexavalent Chromium (Painting/Pigment)

Sample ID	Lab ID	Air Vol liter	Total ug	Conc ug/m3
01 DESK	L478581-1	225.6	<0.071	<0.32
02 INSIDE BOOTH	L478581-2	NA	360	NA
04 ABOVE EXHAUST	L478581-4	NA	<0.071	NA
06 NEAR EXHAUST	L478581-6	357	<0.071	<0.20
08 FIELD BLANK	L478581-8	NA	<0.071	NA

COMMENTS: Please see attached lab footnote report for any applicable footnotes.

Level of Quantitation: 0.075 ug	Submitted by: MCM	Approved by: MLN
Analytical Method : mod. OSHA ID-215 (version 2); IC/UV	Date : 08-MAY-19	
Collection Media : PVC UW 37mm	Supervisor : MWJ	



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LABORATORY FOOTNOTE REPORT

6601 Kirkville Road
 East Syracuse, NY 13057
 (315) 432-5227
 FAX: (315) 437-0571
 www.sgsgalson.com

Client Name : Ontario Environmental & Safety Network
 Site : Georgetown
 Project No. : Duro-Air
 Date Sampled : 22-APR-19 Account No.: 12757
 Date Received: 03-MAY-19 Login No. : L478581
 Date Analyzed: 06-MAY-19 - 08-MAY-19

L478581 (Report ID: 1133252):
 Reported results reflect elemental analysis of the requested metals. Certain compounds may not be solubilized during digestion, resulting in data that is biased low.
 SOPs: MT-SOP-27(6), MT-SOP-29(5)

L478581 (Report ID: 1133252):
 Accuracy and mean recovery data presented below is based on a 95% confidence interval (k=2). The estimated accuracy applies to the media, technology, and SOP referenced in this report and does not account for the uncertainty associated with the sampling process. The accuracy is based solely on spike recovery data from internal quality control samples. Where N/A appears below, insufficient data is available to provide statistical accuracy and mean recovery values for the associated analyte.


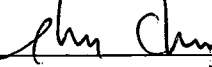
Parameter	Accuracy	Mean Recovery
Chromium	+/-6.5%	101%

L478581 (Report ID: 1133285):
 SOPs: IC-SOP-15(23)
 LOQ reflects additional extraction procedure needed for spray paint samples as stated in Method OSHA ID-215.
 Total ug corrected for a desorption efficiency of 105%.
 SGS Galson Laboratories pretests all media lots distributed for Hexavalent Chromium analysis and can provide data confirming that no significant background is present. We may not be able to verify lot background levels for media obtained through alternate vendors.

L478581 (Report ID: 1133285):
 Accuracy and mean recovery data presented below is based on a 95% confidence interval (k=2). The estimated accuracy applies to the media, technology, and SOP referenced in this report and does not account for the uncertainty associated with the sampling process. The accuracy is based solely on spike recovery data from internal quality control samples. Where N/A appears below, insufficient data is available to provide statistical accuracy and mean recovery values for the associated analyte.

Parameter	Accuracy	Mean Recovery
Hexavalent Chromium (Painting/Pigment)	+/-8.2%	94.8%

478581

Laboratory: <u>SGS Galson</u> Sample Date: <u>APRIL 22</u>			Air Sampling Chain of Custody								
Sample Location: <u>GEORGETOWN</u>			Results By: <input type="checkbox"/> RUSH/SAME DAY <input type="checkbox"/> 24 HOURS <input checked="" type="checkbox"/> OTHER <u>3 DAY Lab</u>		Type of Analysis: <input type="checkbox"/> Phase Contrast Microscopy (PCM) Method: NIOSH 7400 <input type="checkbox"/> Transmission Electron Microscopy (TEM) Method: NIOSH 7402			Microvacuum Sampling and Indirect Analysis of Dust by TEM ASTM D 5755 - 10cm x 10cm template (Asbestos Structure Number Concentrations)			
Job Number:									Microvacuum Sampling and Indirect Analysis of Dust by TEM ASTM D 5756 - 10cm x 10cm template (Asbestos Mass Concentration)		
Job Name: <u>DURO-AIR</u>											
Filter Lot Number:											
Type of Sampling: <u>ACTIVE / STATIC</u>											
Sample Number	Sample/Pump Location	Sampling Stage	Pump Identification	Start (00:00)	Stop (00:00)	Total (mins.)	Start (L/min.)	Stop (L/min.)	Average (L/min.)	TOTAL VOLUME (L)	
<u>01</u>	<u>DESK</u>	<u>BKGD</u>	<u>1H09 NG</u>	<u>9:10</u>	<u>9:58</u>	<u>48</u>	<u>4.7</u>	<u>4.7</u>	<u>4.7</u>	<u>225.6</u>	
<u>02</u>	<u>INSIDE BOOTH</u>	<u>DURING</u>	<u>PVC</u>	<u>STATIC</u>	<u>SAMPLE</u>					R44	
<u>03</u>	<u>INSIDE BOOTH</u>	<u>DURING</u>	<u>MCE</u>	<u>STATIC</u>	<u>SAMPLE</u>						
<u>04</u>	<u>ABOVE EXHAUST</u>	<u>DURING</u>	<u>PVC</u>	<u>STATIC</u>	<u>SAMPLE</u>						
<u>05</u>	<u>ABOVE EXHAUST</u>	<u>DURING</u>	<u>MCE</u>	<u>STATIC</u>	<u>SAMPLE</u>						
<u>06</u>	<u>NEAR EXHAUST</u>	<u>DURING</u>	<u>PVC</u>	<u>10:01</u>	<u>12:00</u>	<u>119</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>		<u>357</u>
<u>07</u>	<u>NEAR EXHAUST</u>	<u>DURING</u>	<u>MCE</u>	<u>10:02</u>	<u>12:01</u>	<u>119</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	<u>357</u>	
<u>08</u>	<u>FIELD BLANK</u>		<u>PVC</u>								
<u>09</u>	<u>FIELD BLANK</u>										
			<u>5/3/19</u>						775120618397 Date: 05/03/19 Shipper: FEDEX Initials: MAK  Prep: UNKNOWN		
Notes: <u>HEX CHROME ANALYSIS -> PVC FILTER</u>			<u>MCE FILTER - TOTAL CHROME</u>			<u>02-05 PRESENCE/ABSENCE</u>			Sampling Stage B: Background or Pre-Abatement E: Environmental or During Abatement F: Final Verification or Post Abatement (Type 1, Type 2) C: Clearance or Post Abatement (Type 3)		
Sampling Technician Name: <u>SHAYNE CHEWNEY</u>			Analyst Technician Name:								
Sampling Technician Signature: 			Analyst Technician Signature:								
			Date Received: <u>Michelle Krause</u>			<u>5/3/19 0929</u>					



Ontario Environmental & Safety Network Ltd.

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