Appendix O Source Testing Reports

Test Report

Evaluation of Hexavalent Chromium Emissions
from the
T107 Furnace and Forehearth Stacks
at the
Owens Corning Guelph Plant

June and September 2014

FOR USE AS PART OF A SITE SPECIFIC STANDARD APPLICATION

Prepared for:

Owens Corning Canada LP
247 York Road
Guelph, ON
N1E 3G4

Attention: Rob Nixon

Prepared by:

LEHDER Environmental Services Limited
704 Mara Street, Suite 210
Point Edward, ON
N7V 1X4

Project No.: 144539B
November 26, 2014

Executive Summary

Owens Corning Canada LP retained LEHDER Environmental Services (LEHDER) to carry out a stack sampling program at its Guelph, Ontario facility (OC Guelph). The program involved the evaluation of hexavalent chromium emissions from three sources exhausting emissions from the T107 glass melting process. **The intention of this program was to establish emission rate estimates from these sources for the purpose of a Site Specific Standard Application for hexavalent chromium and comparison to the future annual standard.** Specifically, the following sources were sampled:

- T107 Furnace West Stack (Source B1);
- T107 West Forehearth Stack (Source B11); and
- T107 East Forehearth Stack (Source B38).

The sources were sampled for hexavalent chromium emissions according to Ontario Ministry of the Environment (MOE) recognized source sampling methods. Three test runs were performed for each of the three sources. Testing was performed on June 12, 2014. Re-testing on Source B38 was performed on September 15-16, 2014. Table I summarizes the testing results.

Table I: Furnace and Forehearth Hexavalent Chromium Test Results

Parameter	**Units**	**Source B1 West Furnace Averages June 2014**	**Source B11 West Forehearth Averages June 2014**	**Source B38 East Forehearth Averages September 2014**
Hexavalent Chromium				
Concentration	µg/R.m^3	17	96	19
Mass Rate	µg/s	36	151	33
	g/h	0.13	0.54	0.12
Effluent Measurements				
Avg. Effluent Temperature	°C	324	128	106
Average O_2 Content	%	19.2	21.3	20.7
Average CO_2 Content	%	5.78	1.24	1.18
Average Moisture Content	%	13.4	3.90	3.51
Actual Effluent Flow Rate	A.m^3/s	5.28	2.29	2.40
Reference Flow Rate (wet)	R.m^3/s	2.47	1.63	1.82
Reference Flow Rate (dry)	R.m^3/s	2.14	1.57	1.76
Average Pull Rate	lb/hr	6,849	4,552	2,297

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Full copy of the report provided to the MOECC

Test Report

Evaluation of Hexavalent Chromium Emissions
from
Selected General Ventilation Exhausts
at the
Owens Corning Guelph Plant

May 2014

FOR USE AS PART OF A SITE SPECIFIC STANDARD APPLICATION

Prepared for:

Owens Corning Canada LP
247 York Road
Guelph, ON
N1E 3G4

Attention: Rob Nixon

Prepared by:

LEHDER Environmental Services Limited
704 Mara Street, Suite 210
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Project No.: 144539A
August 1, 2014

Executive Summary

LEHDER Environmental Services Limited (LEHDER) was retained by the Owens Corning Canada LP Guelph, Ontario facility (OC Guelph) to perform a source sampling program of limited scope to confirm or refute the presence of hexavalent chromium in air that is exhausted from Furnace Hall general ventilation units. Based upon the meeting of June 12, 2014 with MOE personnel including Guillermo Azocar, Caitlyn Ruddy, and Bruce Gillies, the intention of the program was expanded to establish emission rate estimates from these sources for the purpose of a **Site Specific Standard Application for hexavalent chromium and comparison to the future annual standard.** Specifically, the following sources were sampled:

- **Source B8**: General Exhaust located above the melter/ furnace
- **Source B10**: General Exhaust located above the T107B forehearth
- **Source C80**: General Exhaust located above the T107 East (CFM) forehearth

The sources were sampled for hexavalent chromium emissions using a modified version of US EPA Method 0061: *Determination of Hexavalent Chromium Emissions from Stationary Sources.* The three ventilation fans were sampled concurrently for hexavalent chromium emissions over an approximate 7½ hour period on May 7, 2014. An extended sample period was selected to improve the concentration reporting limit for the samples and to ensure each sample was more representative of general exhaust conditions, mitigating possible emissions variability due to process operations. A single sample was collected from each source for this program, with one duplicate sample collected from one source for quality assurance purposes. Table I summarizes the testing results. The results confirmed the presence of hexavalent chromium at low but measurable concentrations in the Furnace Hall general ventilation exhaust gases.

Table I: Sampling Program Results – May 7, 2014

Parameter		Source B8	Source B10			Source C80
			B10A	B10B	Avg.	
Hexavalent Chromium Concentrations						
Raw Data	µg/R.m^3	**0.28**	0.44	0.28	**0.36**	**0.24**
Blank-Corrected	µg/R.m^3	**0.18**	0.33	0.18	**0.26**	**0.14**
Sampling Parameters						
Sample Times		8:17-15:47	8:40-16:10	8:42-16:12	---	8:56-16:33
Sample Duration	min	450	450	450	---	457
Sample Volume	R.m^3	9.71	9.85	10.4	10.1	10.5
Sample Rate	LPM	23.3	22.9	24.1	23.5	23.1
Moisture Content	%	0.26	0.51	0.42	0.47	0.48
Raw Hex Chrome Analysis	µg	2.7	4.3	2.9	3.6	2.5
Reagent Blank Hex Chrome*	µg	1.0				

** Average of three blank analyses on the capture reagent (0.5 N KOH solution)*

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LEHDER

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NOTIFICATION

To:	Caitlyn Ruddy (MOE SDB) Kevin Noll (MOE Guelph Office)	CC:	Bruce Gillies (MOE SDB) Rob Nixon (OC Guelph) Penny McInnis (LEHDER)
Company:	Ontario Ministry of Environment	Project:	144539B OC Guelph Validated Source Testing
From:	Guy Bastien (LEHDER)	Date:	May 27, 2014
Re:	Voluntary Validated Source Testing Program		

LEHDER Environmental Services Limited (LEHDER) has been retained by the Owens Corning Composite Materials Canada LP Guelph Glass Plant, 247 York Road, Guelph, Ontario (OC Guelph) to conduct a **voluntary, validated source testing program** for hexavalent chromium emissions from selected sources. Specifically, the sampling program involves measuring hexavalent chromium emissions from the following three sources servicing the T107 glass melting and transfer process:

- T107 Furnace West Stack (Source B1);
- T107 West Forehearth Stack (Source B11); and
- T107 East Forehearth Stack (Source B38).

The sources will be sampled according to the methods described in a Source Test Protocol submitted by LEHDER to the Ontario Ministry of the Environment Standards Development Branch Technology Standards Section (MOE SDB TSS) on May 8, 2014. The testing methodologies outlined in the Test Protocol were approved by Ms. Caitlyn Ruddy, Source Assessment Specialist of the MOE SDB TSS, in a letter dated May 20, 2014 (TSS File No.: WC:SA:109157:14).

Testing is scheduled for **Thursday June 12, 2014** and is expected to be completed the same day. All three sources will be sampled concurrently. LEHDER personnel will mobilize to the site and set up testing equipment on Wednesday June 11, 2014.

Please accept this Memorandum as formal notification of the date and location of the approved source testing program. If you have any questions please contact the undersigned at 519-336-4101, Ext. 248 or by e-mail at gbastien@lehder.com.

Respectfully submitted,

LEHDER Environmental Services

Guy Bastien, P.Eng., QSTI
Sr. Environmental Engineer

September 3, 2014
Project No.: 144539B

Guillermo Azocar
Source Assessment Specialist
Technology Standards Section
Standards Development Branch
40 St. Clair Ave. West, 7th Floor
Toronto, ON M4V 1M2

Re-Testing to Evaluate Hexavalent Chromium Emissions at Owens Corning Guelph Facility

LEHDER Environmental Services Limited (LEHDER) conducted a source emission survey at the Owens Corning Glass Plant in Guelph, Ontario on June 12, 2014. During the survey, three sources from the 107 furnace/forehearth were evaluated for emissions of hexavalent chromium in accordance with the accepted test protocol dated May 8, 2014. Notification of the date and location of the source testing was provided to the Ministry of Environment by LEHDER on May 27, 2014. Sampling was witnessed by Mr. Guillermo Azocar, Ms. Caitlyn Ruddy and Mr. Bruce Gillies over the course of the day.

After completion of testing, it was discovered that operating conditions which affect one of the three sources were not correct. Consequently, measured emissions from that source were not representative of typical/normal operations. The affected source was the 107 East Forehearth Stack (Source B38). This process condition has since been rectified and retesting of the source is proposed.

This represents formal notification for the retesting of Source B38 at the target process setpoint. Hexavalent chromium sampling will be carried out using the same protocol used for the June 2014 survey (i.e. USEPA Method 0061). Three test runs, each 72 minutes in duration, will be conducted. **The test date is Tuesday, September 16, 2014**. The LEHDER field leader is Mr. Guy Bastien (e-mail: gbastien@lehder.com). Please call me of Guy if you have any questions pertaining to this testing.

Respectfully submitted,

LEHDER Environmental Services

Mike Denomme

cc. Caitlyn Ruddy (MOE SDB)
Bruce Gillies (MOE SDB)
Rob Nixon (OC Guelph Glass)
Penny McInnis/Guy Bastien (LEHDER)

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MOECC Acceptance of the Pre-Test Plan is located in Appendix Q due to commercially sensitive information.