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Report of...

Compliance Emission Testing

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AIR QUALITY DIVISION  
GRAND RAPIDS DISTRICT

performed for...

Lacks Enterprises, Inc.

Airplane North Plant

Kentwood, Michigan

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on the

Chrome Plating Tanks and Etch Scrubber  
Exhausts

SVN-2 and SVN-6

September 9 & 11, 2014

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Network Environmental, Inc.  
Grand Rapids, MI

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**I. INTRODUCTION**

Network Environmental, Inc. was retained by Lacks Enterprises to perform Total Chromium (Cr) compliance emission sampling on the Chrome Plating Tanks (SVN-2) exhaust and the Chrome Etch exhaust located at their Airline North facility in Kentwood, Michigan. The purpose of the study was to quantify the Cr emissions from the exhausts.

The sampling was performed by R. Scott Cargill and Richard D. Eerdmans of Network Environmental, Inc. on September 9th and 11th, 2014 by employing U.S. EPA Method 306. Assisting in the study was Mr. Phil Schneider and Ms. Karen Baweja of Lacks Industries. Mr. David L. Morgan of the Michigan Department of Natural Resources and Environment was present to observe the testing and source operation.

**II. PRESENTATION OF RESULTS**

**II.1 TABLE 1  
CHROMIUM (Cr) EMISSION RESULTS  
CHROME PLATING TANKS (SVN-2) EXHAUST  
LACKS ENTERPRISES  
KENTWOOD, MICHIGAN  
SEPTEMBER 9, 2014**

Sample	Time	Air Flow Rate DSCFM	Concentration Mg/M <sup>3</sup>	Mass Emission Rate Lbs/Hr
1	8:04-10:31	21,529	8.30E <sup>-4</sup>	6.69E <sup>-5</sup>
2	10:58-13:02	21,229	7.31E <sup>-4</sup>	5.81E <sup>-5</sup>
3	13:37-15:48	21,034	8.50E <sup>-4</sup>	6.69E <sup>-5</sup>
<b>Average</b>		<b>21,264</b>	<b>8.04E<sup>-4</sup></b>	<b>6.40E<sup>-5</sup></b>

**II,2 TABLE 2**  
**CHROMIUM (Cr) EMISSION RESULTS**  
**CHROME ETCH (SVN-6) EXHAUST**  
**LACKS ENTERPRISES**  
**KENTWOOD, MICHIGAN**  
**SEPTEMBER 11, 2014**

Sample	Time	Air Flow Rate DSCFM	Concentration Mg/M <sup>3</sup>	Mass Emission Rate Lbs/Hr
1	8:46-10:49	23,673	0.0014	1.21E <sup>-4</sup>
2	11:07-13:11	23,693	0.0015	1.30E <sup>-4</sup>
3	13:39-15:42	23,494	0.0013	1.10E <sup>-4</sup>
<b>Average</b>		<b>23,620</b>	<b>0.0014</b>	<b>1.20E<sup>-4</sup></b>

### **III. DISCUSSION OF RESULTS**

The Cr emission results are presented in Tables 1 and 2 (Section II.1 and II.2).

### **IV. SAMPLING AND ANALYTICAL PROTOCOL**

The sampling locations were on the forty-eight (48) inch I.D. chrome plating exhaust and the forty-six (46) inch I.D. chrome etch exhaust stacks at locations which met the minimum test location requirements of U.S. EPA Reference Method 1. Twelve (12) sampling points per port were used for the testing (24 points total). The points are as follows:

<b>Chrome Plating Exhaust</b>	
<b>Point #</b>	<b>Point Location (Inches)</b>
1	1.01
2	3.22
3	5.66
4	8.50
5	12
6	17.09
7	30.91
8	36
9	39.5
10	42.34
11	44.78
12	46.99

Chrome Etch Exhaust	
Point #	Point Location (Inches)
1	0.97
2	3.08
3	5.43
4	8.14
5	11.50
6	16.38
7	29.62
8	34.50
9	37.86
10	40.57
11	42.92
12	45.03

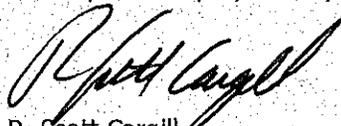
**IV.1 Chromium (Cr)** - The sampling was performed in accordance with U.S. EPA Reference Method 306. Three (3) samples, each 120 minutes in duration, were collected from each exhaust. The samples were collected isokinetically in a 0.1N Sodium Bicarbonate solution as outlined in the method. The samples were analyzed for total chromium (Cr) by ICP - MS. All the quality assurance and quality control procedures listed in the method were incorporated in the sampling and analysis.

A diagram of the sampling train can be seen in Figure 1.  
 Process data can be found in Appendix E.

**IV.2 Exhaust Gas Parameters** - In addition to the Cr sampling, the exhaust gas parameters (air flow

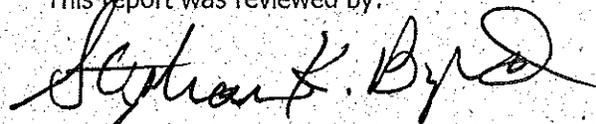
rate, temperature, moisture, and density) were determined by employing U.S. EPA Reference Methods 1 through 4. All the quality control and quality assurance requirements listed in the methods were incorporated in the sampling and analysis.

This report was prepared by:



R. Scott Cargill  
Project Manager

This report was reviewed by:



Stephan K. Byrd  
President

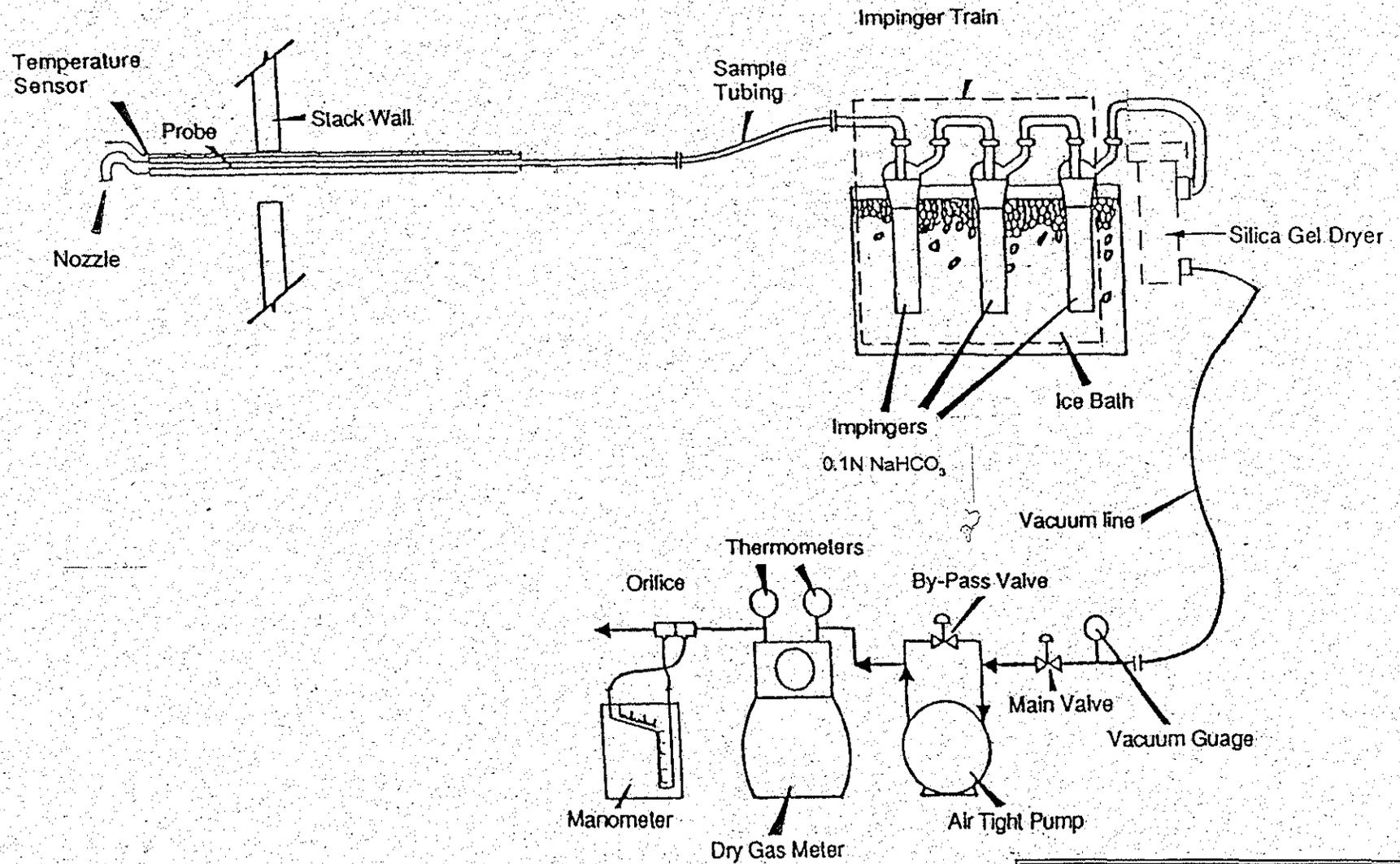


FIGURE 1  
TOTAL CHROME SAMPLING TRAIN