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ANALYTICAL REPORT

PROJECT NO. 142541

Focus/US Filter Westates 26A

Lot #: H6D040103

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ANALYTICAL METHODS SUMMARY

H6D040103

PARAMETER	ANALYTICAL METHOD
Chlorine Emissions	KNOX 0050/26A Mod
Hydrogen Chloride Emissions	KNOX 0050/26A Mod

References:

KNOX Severn Trent Laboratories Knoxville, Facility Standard Operating Procedure.

SAMPLE SUMMARY

H6D040103

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
H2H69	001	G-2978-R1-M5 0.1N H2SO4 IMPINGER SOLUTION	03/28/06	
H2H7E	002	G-2979-R1-M5 0.1N NAOH IMPINGER SOLUTION	03/28/06	
H2H7F	003	G-2982-R1-M5 0.1N H2SO4 IMPINGER SOLUTION RB	03/28/06	
H2H7G	004	G-2983-R1-M5 0.1N NAOH IMPINGER SOLUTION RB	03/28/06	
H2H7J	005	G-3065-R2-M5 0.1N H2SO4 IMPINGER SOLUTION	03/29/06	
H2H7K	006	G-3066-R2-M5 0.1N NAOH IMPINGER SOLUTION	03/29/06	
H2H7P	007	G-3149-R3-M5 0.1N H2SO4 IMPINGER SOLUTION	03/30/06	
H2H7V	008	G-3150-R3-M5 0.1N NAOH IMPINGER SOLUTION	03/30/06	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H6D040103

The results reported herein are applicable to the samples submitted for analysis only.

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The original chain of custody documentation is included with this report.

Sample Receipt

Custody seals were not present upon sample receipt at STL Knoxville; however, samples were hand delivered.

The "Relinquished by" field on the chain of custody documentation did not contain a signature.

Quality Control

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

Samples were analyzed for chloride by ion chromatography using SOP number KNOX-WC-005 (based on EPA methods 9056, 9057 and 26A). All sample results were reported as total µg hydrogen chloride (HCl) and total µg chlorine (Cl_2). Results were calculated using the following equations:

$$\text{HCl, ug} = (\text{Chloride, ug/mL}) * (\text{Sample Volume, mL}) * \left(\frac{\text{Molecular Weight HCl}}{\text{Molecular Weight Cl}}\right) * \text{Bench Dilution}$$

$$\text{Cl}_2\text{, ug} = (\text{Chloride, ug/mL}) * (\text{Sample Volume, mL}) * \text{Bench Dilution}$$

NaOH impinger samples were treated with sodium thiosulfate ($Na_2S_2O_3$) prior to the final analysis in order to convert residual hypochlorite (OCl^-) to chloride ion.

STL Knoxville maintains the following certifications, approvals and accreditations: Arkansas DEQ Cert. #05-043-0, California DHS ELAP Cert. #2423, Colorado DPHE, Connecticut DPH Cert. #PH-0223, Florida DOH Cert. #E87177, Georgia DNR Cert. #906 (SDWA, expires 6/24/05), Hawaii DOH, Illinois EPA Cert. #000687, Indiana DOH Cert. #C-TN-02, Iowa DNR Cert. #375, Kansas DHE Cert. #E-10349, Kentucky DEP Lab ID #90101, Louisiana DEQ Cert. #03079, Louisiana DOHH Cert. #LA030024, Maryland DHMH Cert. #277, Massachusetts DEP Cert. #M-TN009, Michigan DEQ Lab ID #9933, New Jersey DEP Cert. #TN001, New York DOH Lab #10781, North Carolina DPH Lab ID #21705, North Carolina DEHNR Cert. #64, Ohio EPA VAP Cert. #CL0059, Oklahoma DEQ ID #9415, Pennsylvania DEP Cert. #68-00576, South Carolina DHEC Lab ID #84001001, Tennessee DOH Lab ID #02014, Utah DOH Cert. # QUAN3, Virginia DGS Lab ID #00165, Washington DOE Lab #C120, West Virginia DEP Cert. #345, Wisconsin DNR Lab ID #998044300, US Army Corps of Engineers, Naval Facilities Engineering Service Center and USDA Soil Permit #S-46424. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

PROJECT NARRATIVE
H6D040103

Note: A sample volume of 100 mL was used to convert the results to total µg for the method blanks, laboratory control samples, and client reagent blanks in order to standardize the analyte sample total.

For demonstration of analytical method performance on these samples, STL Knoxville analyzed matrix spikes (MS) and matrix spike duplicates (MSD). Acceptable recoveries of these spikes demonstrate that quantitation from this particular stack gas matrix is accurate and acceptable. Impinger samples containing 0.1N H_2SO4 and 0.1N NaOH display matrix interference effects causing poor method performance and possibly giving unreliable data unless the interference is removed. Therefore, the samples were diluted in the lab to remove the interference for a more accurate chloride response. The samples may be analyzed at increasing dilutions along with matrix spikes until matrix spikes recover from the sample within laboratory control limits. The ion chromatograph calibration range used to quantitate the sample results permits a standard ten-fold sample dilution while supporting the reporting limit with the low calibration standard.

The dilution factor reported on the sample result form does not represent the bench dilution factor. It is actually the combination of factors required by the method to convert the anion reporting limit and method detection limit from µg/mL to total µg. It may appear to be elevated because it includes the total sample volume in mL.

Samples G-2979-R1-M5 0.1N NAOH Impinger Solution and G-3150-R3-M5 0.1 N NAOH Impinger Solution were analyzed at several dilutions along with matrix spikes. The matrix spike recoveries for Cl_2 improved with each successive dilution, but the matrix spike recoveries for the twenty-fold dilution were still outside laboratory control limits. Analyzing the samples at a fifty-fold dilution resulted in the samples being over-diluted; therefore, the results from the twenty-fold dilution were reported. The laboratory control samples showed acceptable results indicating that the analysis was in control.

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Sample Data Summary

STL Knoxville - ACS

Client Sample ID: G-2978-R1-M5 0.1N H2SO4 IMPINGER SOLUTION

General Chemistry

Lot-Sample #...: H6D040103-001 Work Order #...: H2H69 Matrix.....: AIR
Date Sampled...: 03/28/06 Date Received..: 04/02/06

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Hydrogen chloride	11800	1860	ug	KNOX 0050/26A Mod	04/21/06	6114264

Dilution Factor: 1856.3 MDL.....: 557

STL Knoxville - ACS

Client Sample ID: G-2979-R1-M5 0.1N NAOH IMPINGER SOLUTION

General Chemistry

Lot-Sample #...: H6D040103-002 Work Order #...: H2H7E Matrix.....: AIR
Date Sampled...: 03/28/06 Date Received..: 04/02/06

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chlorine	1950	610	ug	KNOX 0050/26A Mod	04/17/06	6116184
		Dilution Factor: 610		MDL.....: 183		

STL Knoxville - ACS

Client Sample ID: G-2982-R1-M5 0.1N H2SO4 IMPINGER SOLUTION RB

General Chemistry

Lot-Sample #...: H6D040103-003 **Work Order #...:** H2H7F **Matrix.....:** AIR
Date Sampled...: 03/28/06 **Date Received..:** 04/02/06

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Hydrogen chloride	ND	514	ug	KNOX 0050/26A Mod	04/25/06	6115303

Dilution Factor: 514.2 MDL.....: 154

STL Knoxville - ACS

Client Sample ID: G-2983-R1-M5 0.1N NAOH IMPINGER SOLUTION RB

General Chemistry

Lot-Sample #...: H6D040103-004 **Work Order #...:** H2H7G **Matrix.....:** AIR
Date Sampled...: 03/28/06 **Date Received..:** 04/02/06

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chlorine	ND	100	ug	KNOX 0050/26A Mod	04/17/06	6116184

Dilution Factor: 100 MDL.....: 30.0

STL Knoxville - ACS

Client Sample ID: G-3065-R2-M5 0.1N H2SO4 IMPINGER SOLUTION

General Chemistry

Lot-Sample #...: H6D040103-005 Work Order #...: H2H7J Matrix.....: AIR
Date Sampled...: 03/29/06 Date Received..: 04/02/06

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Hydrogen chloride	6950	1940	ug	KNOX 0050/26A Mod	04/21/06	6114264

Dilution Factor: 1938.6 MDL.....: 582

STL Knoxville - ACS

Client Sample ID: G-3066-R2-M5 0.1N NAOH IMPINGER SOLUTION

General Chemistry

Lot-Sample #...: H6D040103-006 Work Order #...: H2H7K Matrix.....: AIR
Date Sampled...: 03/29/06 Date Received..: 04/02/06

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chlorine	2010	720	ug	KNOX 0050/26A Mod	04/17/06	6116184

Dilution Factor: 720 MDL.....: 216

STL Knoxville - ACS

Client Sample ID: G-3149-R3-M5 0.1N H2SO4 IMPINGER SOLUTION

General Chemistry

Lot-Sample #...: H6D040103-007 Work Order #...: H2H7P Matrix.....: AIR
Date Sampled...: 03/30/06 Date Received..: 04/02/06

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Hydrogen chloride	6490	1940	ug	KNOX 0050/26A Mod	04/21/06	6114264

Dilution Factor: 1938.6 MDL.....: 582

STL Knoxville - ACS

Client Sample ID: G-3150-R3-M5 0.1N NAOH IMPINGER SOLUTION

General Chemistry

Lot-Sample #...: H6D040103-008 Work Order #...: H2H7V Matrix.....: AIR
Date Sampled...: 03/30/06 Date Received..: 04/02/06

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chlorine	1940	610	ug	KNOX 0050/26A Mod	04/25/06	6116088

Dilution Factor: 610 MDL.....: 183