

Utilizations of the United States Environmental Protection Agency - Environmental Response Team's Mobile Trace Atmospheric Gas Analyzer Laboratories to Address Environment Issues

CLU-IN Webinar
30 August 2018



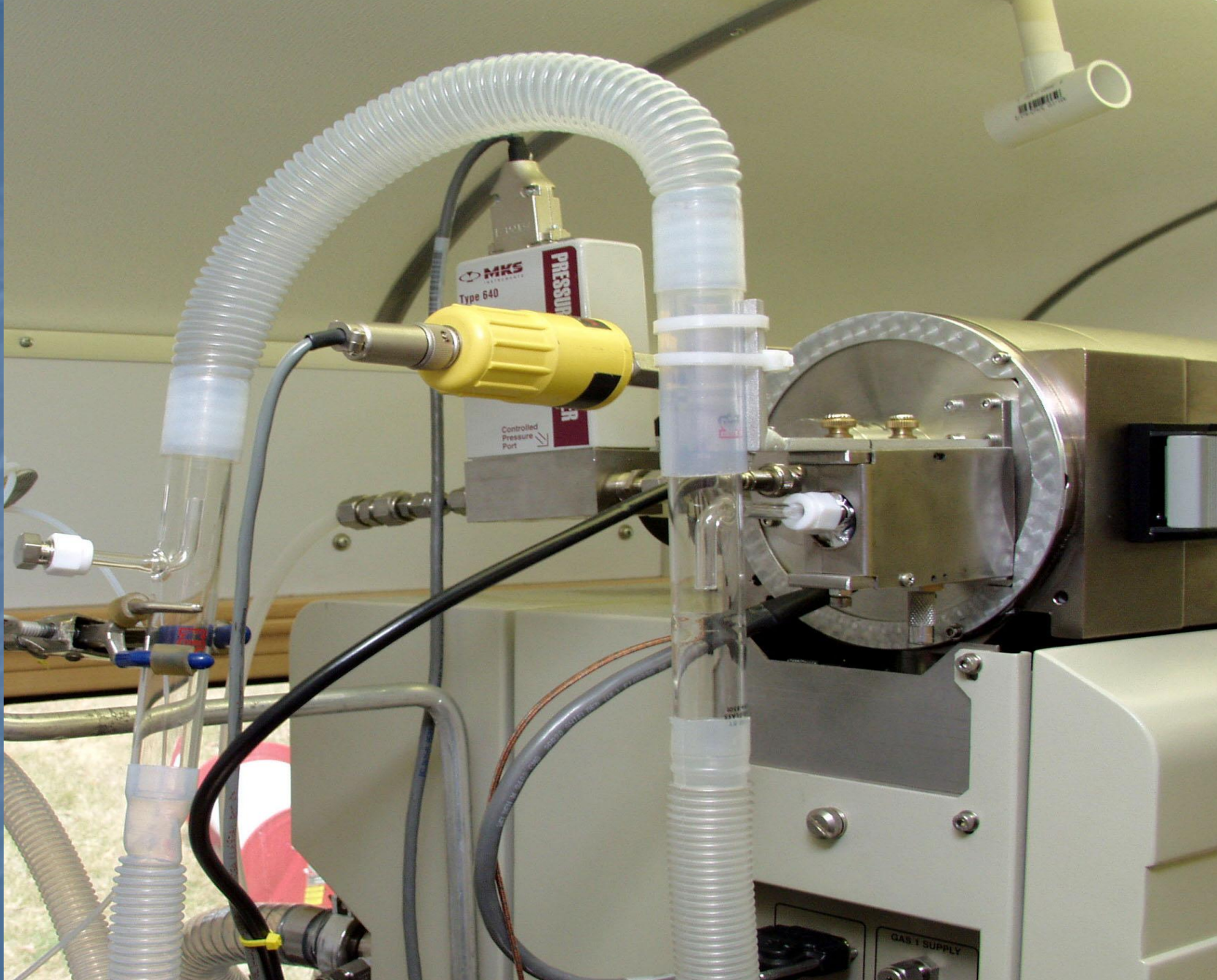
David Mickunas
US EPA/ERT



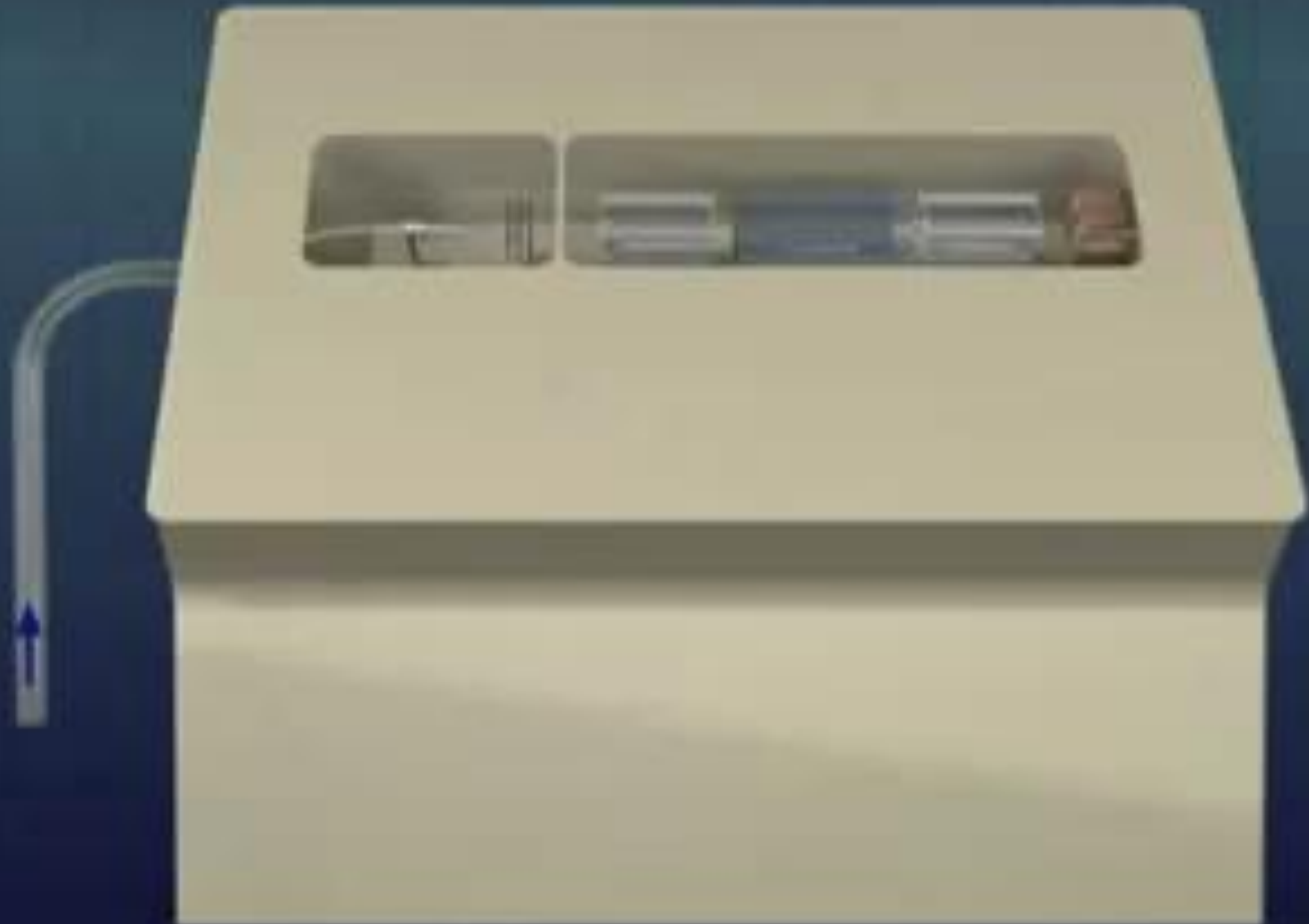


Trace Atmospheric Gas Analyzer (TAGA) Mobile Laboratories

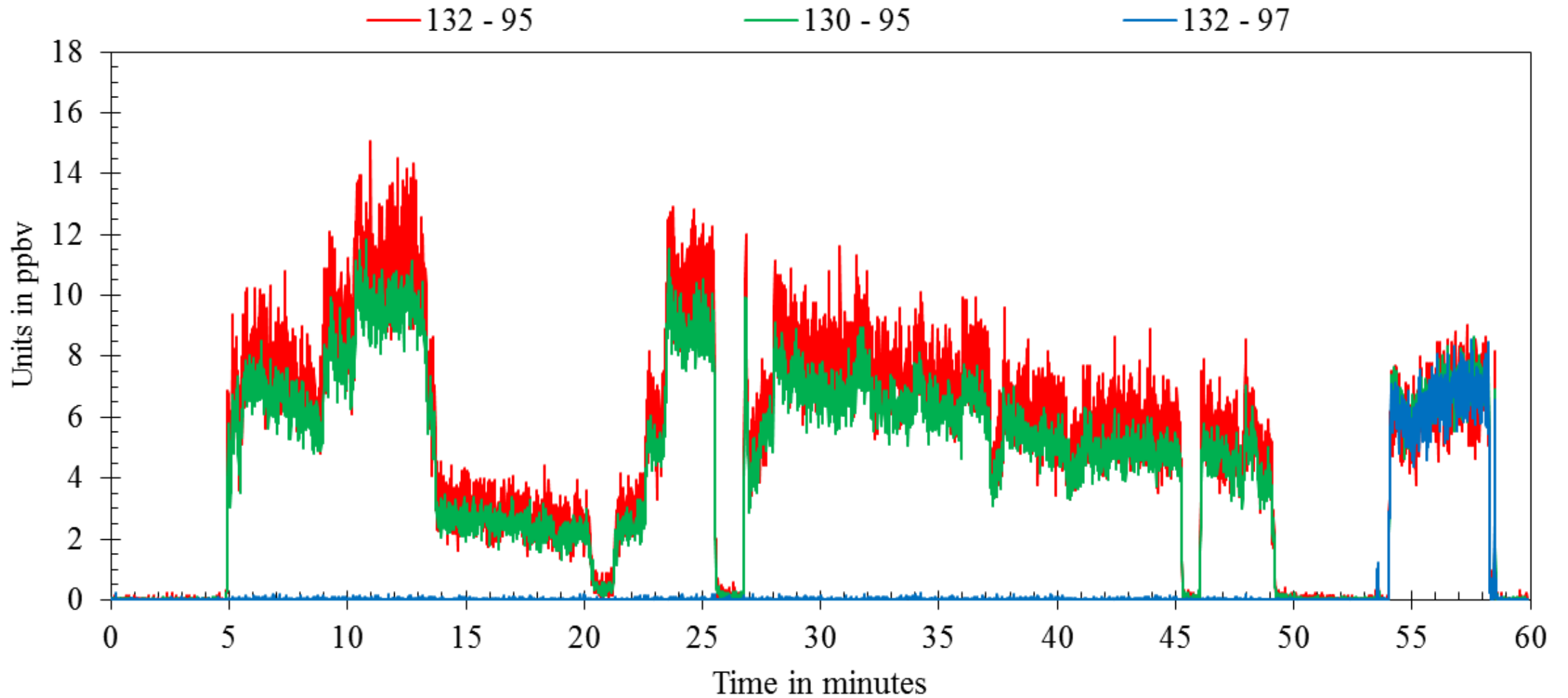
TAGA MOBILE LABORATORY'S MASS SPECTROMETER/MASS SPECTROMETER



Low Pressure Chemical Ionization (LPCI) Source



Trichloroethene (64MSMS00577)

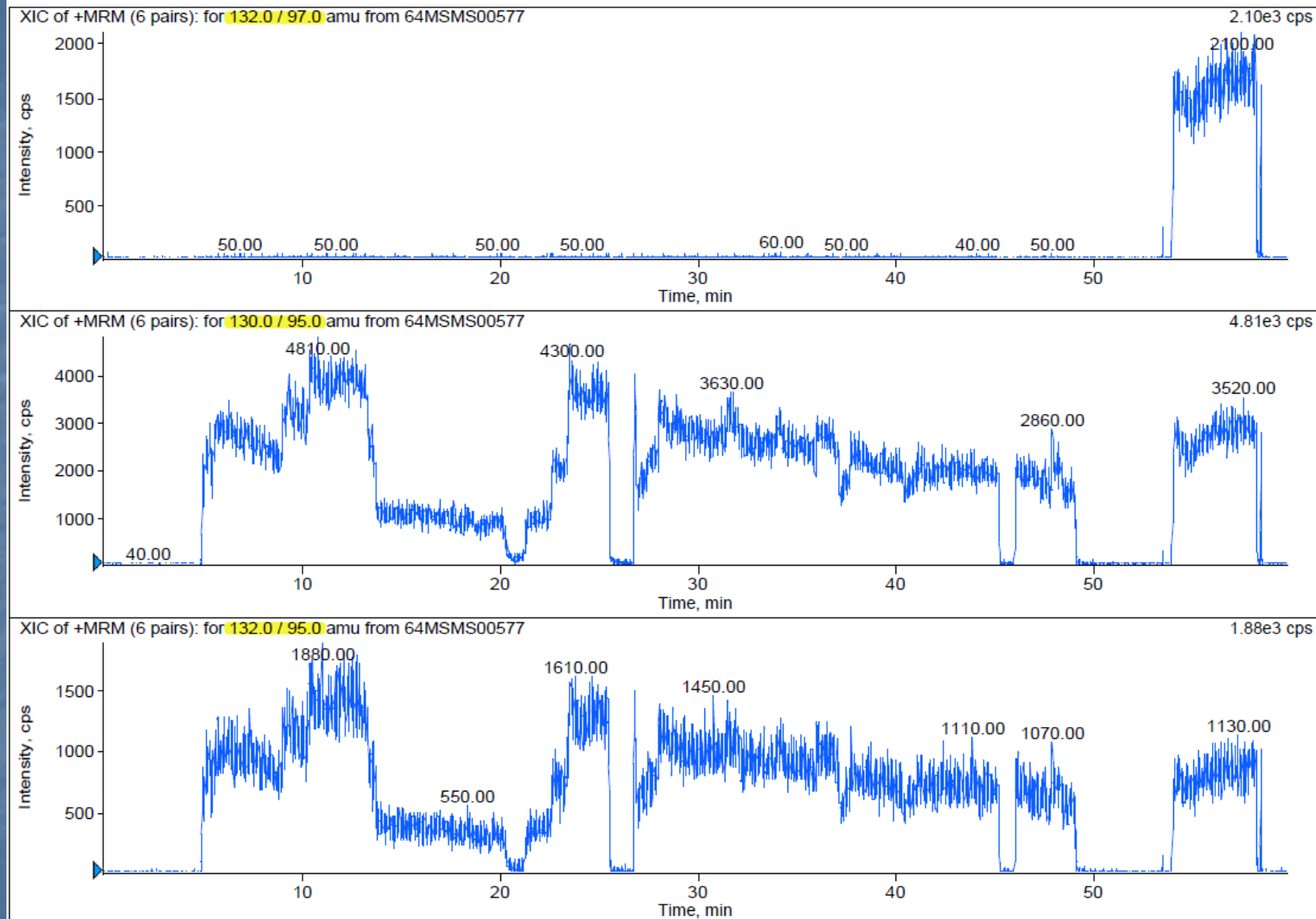


Parent/Daughter Ion Concentration Profile for Trichloroethene

Info for pane 1: 64MSMS00577

Period 1, Expt. 1; Dwell: 100.0 ms; Pause: 5.0 ms

Acq. Time: Wed, Feb 28, 2018 at 8:32:12 PM; Exp. Comment: nalyt: BPK



Parent/Daughter Ion Profile for Trichloroethene

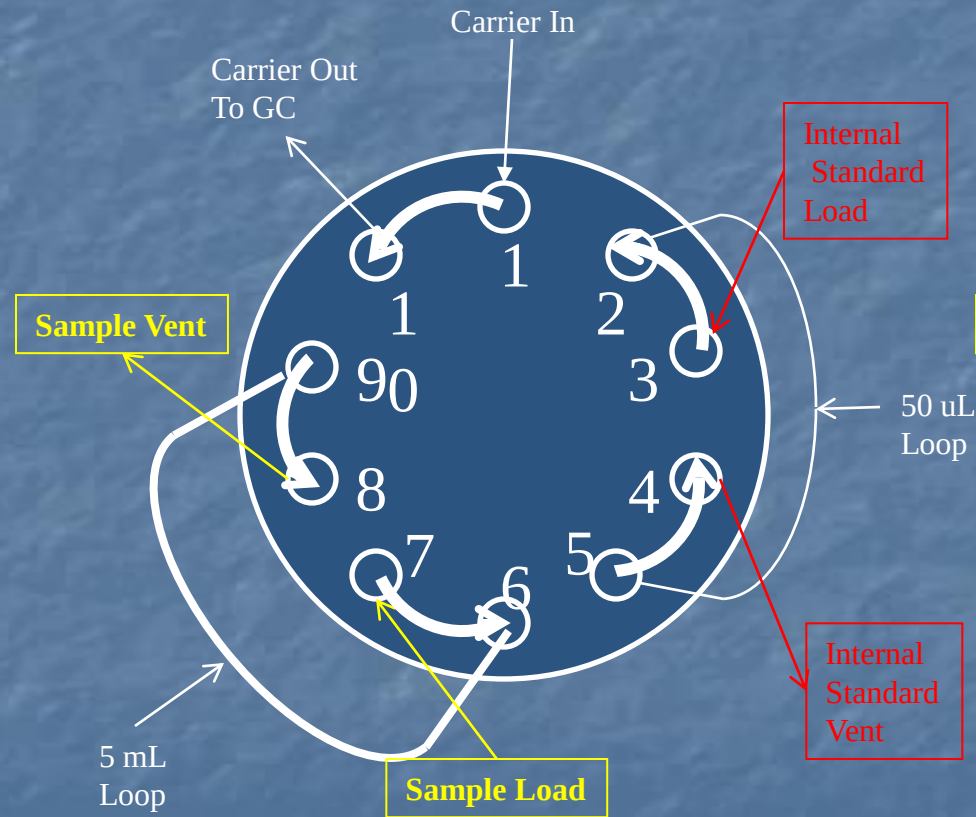
**TAGA MOBILE LABORATORY'S LOOP-INJECTION
GAS CHROMATOGRAPH/MASS SPECTROMETER**



Loop Injector with the GC/MS

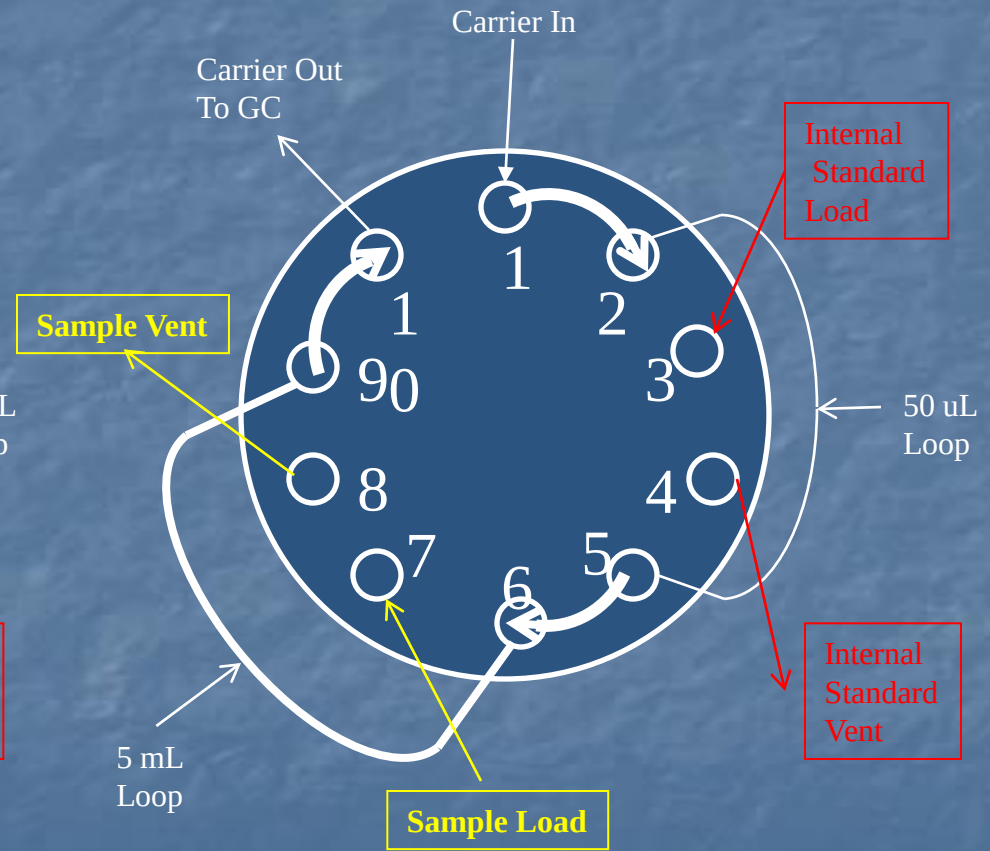
10-Port Valve Load Position

(flow in direction of arrow)



10-Port Valve Injecton Position

(flow in direction of arrow)



10-Port Gas Valve Sample Introduction System For The GC/MS

**TAGA MOBILE LABORATORY'S INSTRUMENTATION TO SUPPORT
EMERGENCY RESPONSES
THROUGHOUT THE UNITED STATES OF AMERICA**



Train Derailment Vinyl Chloride Tank Car - Paulsboro, NJ - 2012





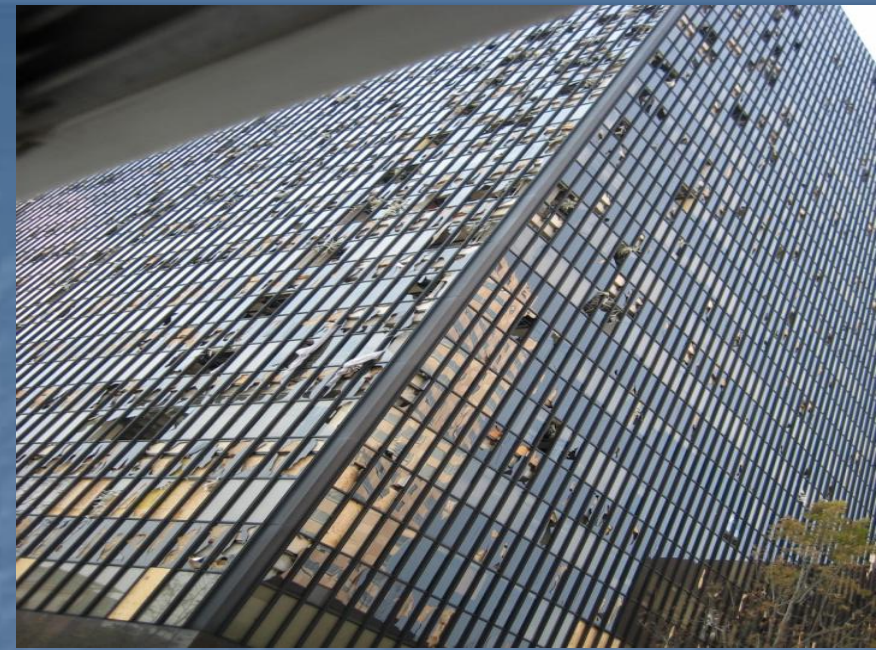
Enbridge Diluted Bitumen Oilspill – Marshall, MI - 2010





Deepwater Horizon Oil Spill – Gulf of Mexico - 2010





Hurricanes Katrina and Rita – New Orleans, LA - 2005





EQ Resources Explosion and Fire – Romulus, MI - 2005



**TAGA MOBILE LABORATORY'S INSTRUMENTATION TO RESOLVE VAPOR
INTRUSION ISSUES
THROUGHOUT THE UNITED STATES OF AMERICA**

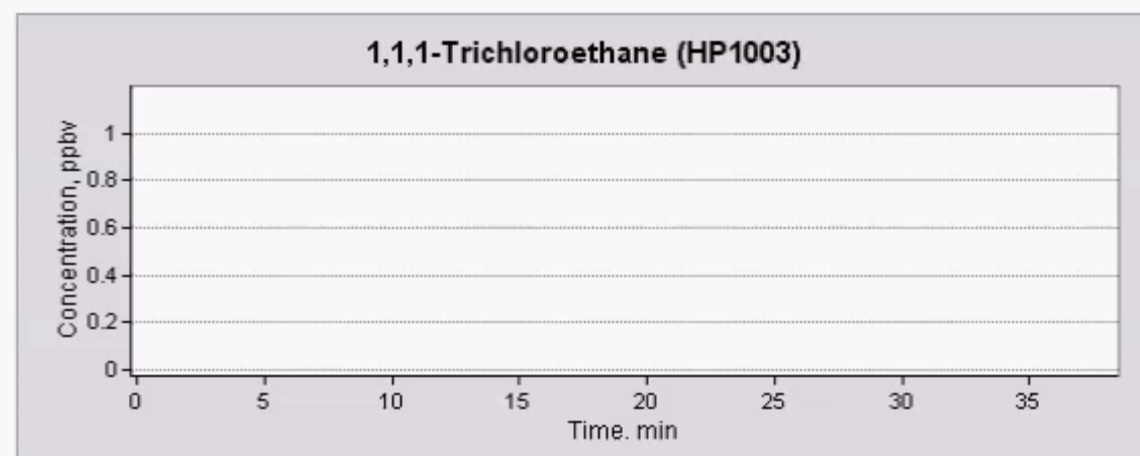
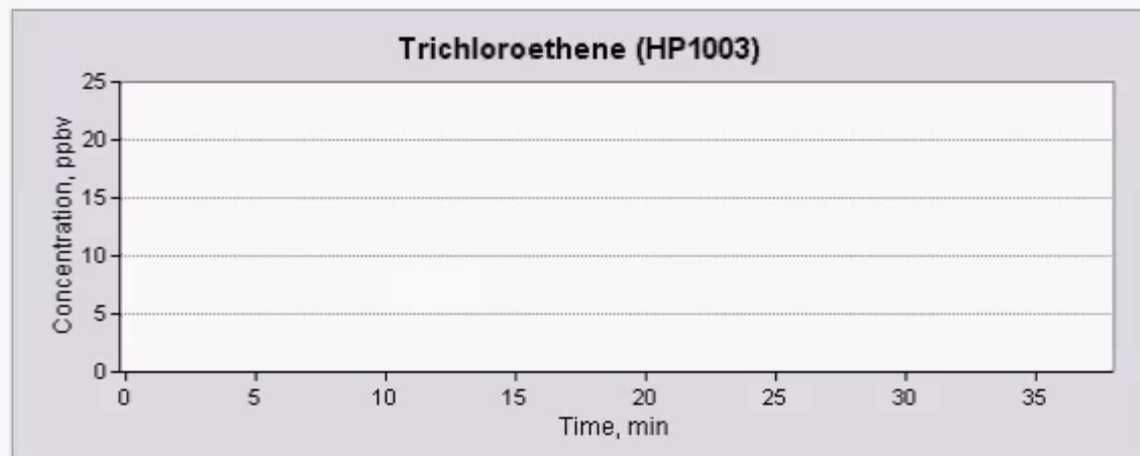
MASS SPECTROMETER/MASS SPECTROMETER MONITORING

Monitoring For Subsurface Intrusion Source

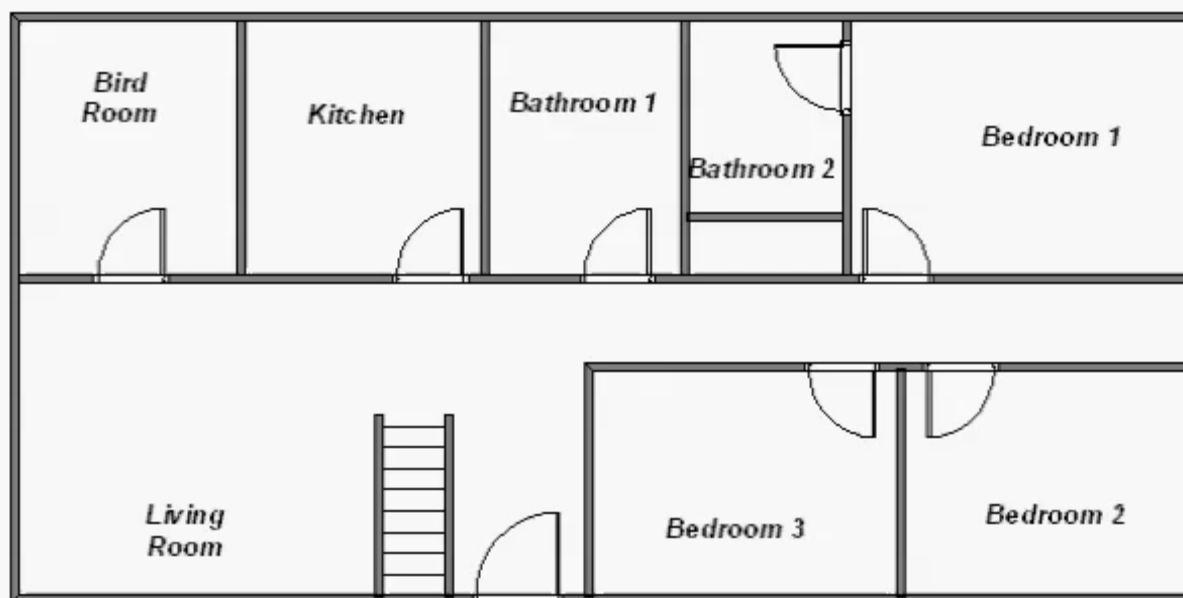
TCE Site
Region 2



Region 2 - TCE Site



1ST FLOOR



Legend

Trichloroethene

- 0.000 - 2.165
- 2.166 - 5.183
- 5.184 - 8.869
- 8.870 - 15.024
- 15.025 - 22.648

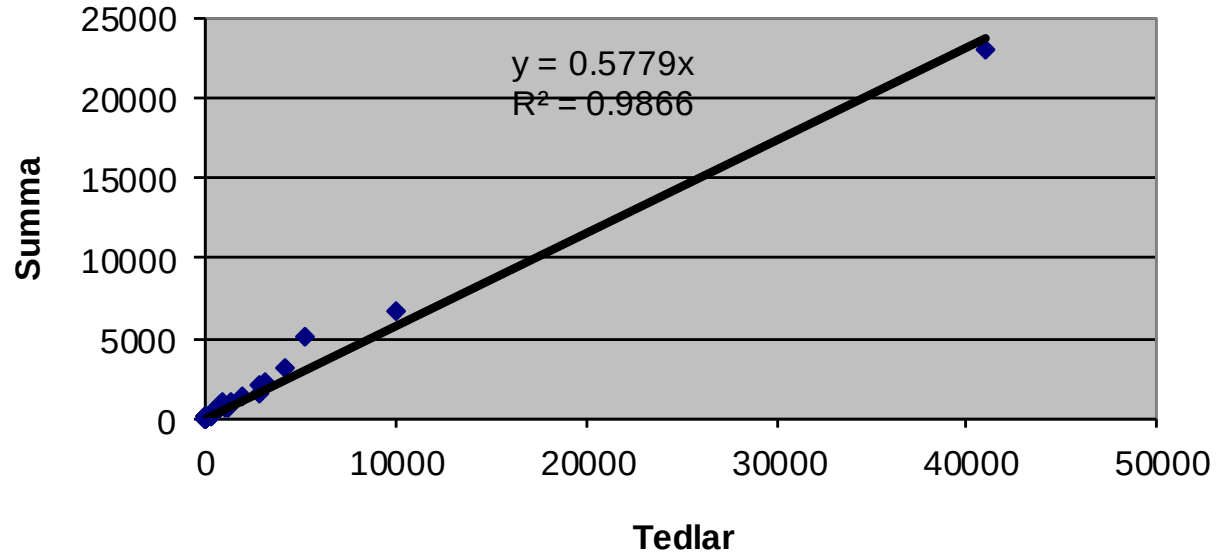
1,1,1-Trichloroethane

- 0 - 0.728
- 0.729 - 6.098
- 6.099 - 10.55

● Ambient Location

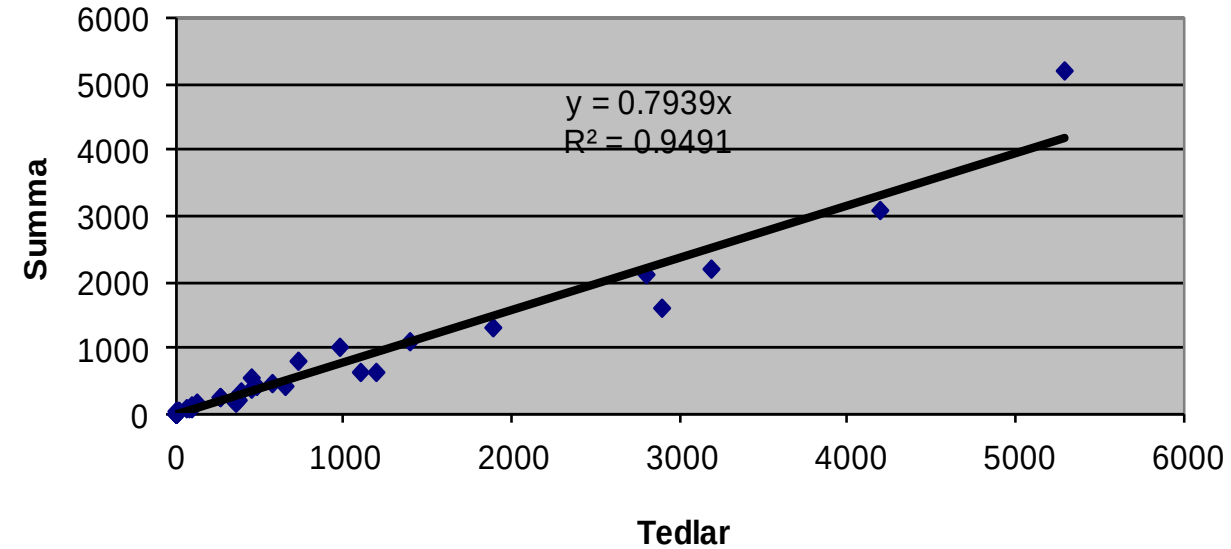
LOOP-INJECTION GAS CHROMATOGRAPH/MASS SPECTROMETER ANALYSIS

TCE Concentrations in Tedlar Bags vs Summa Canisters

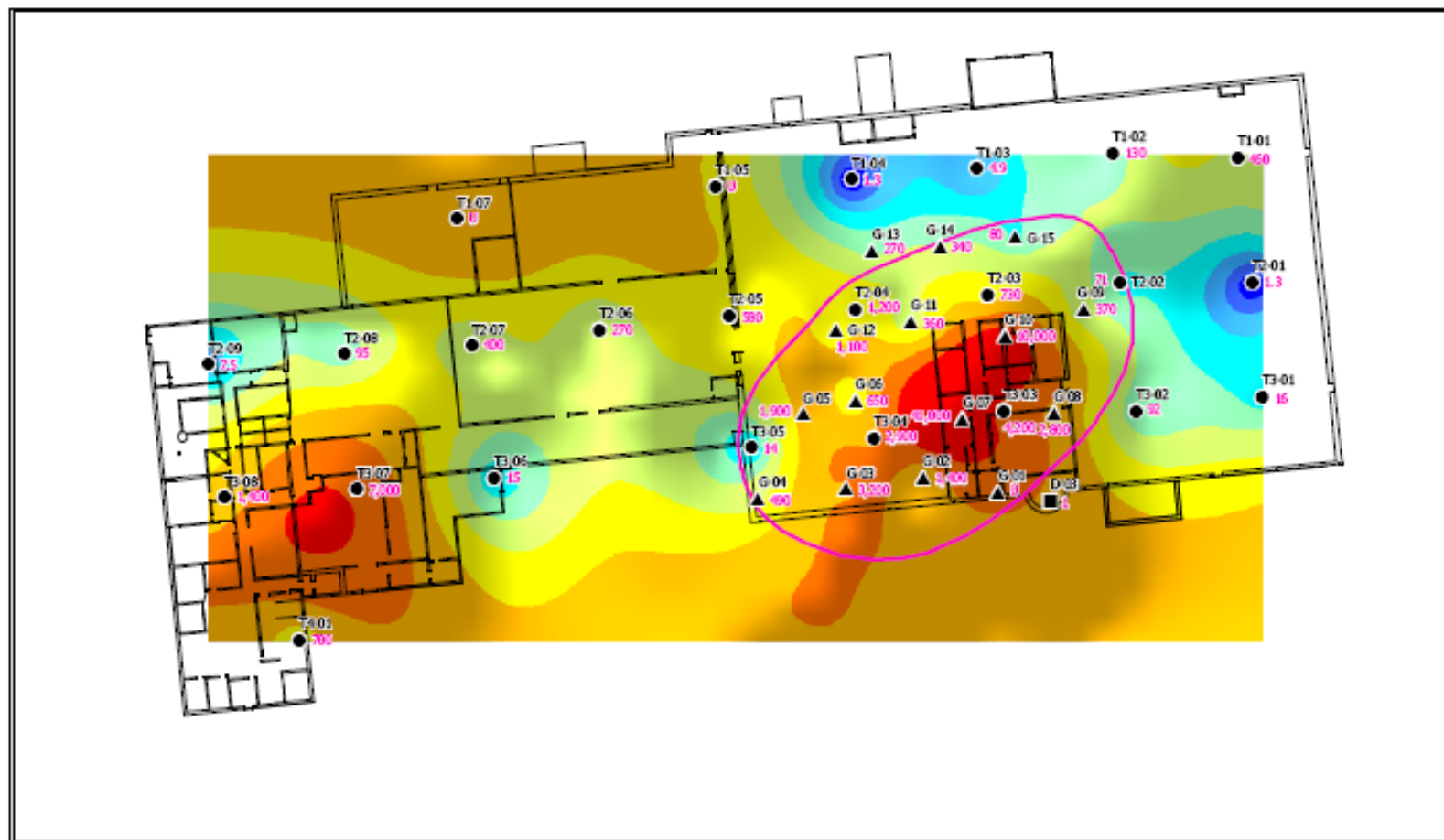


Vestal Chlorinated Hydrocarbon Site – Vestal, NY
42 Subslab Locations

TCE Concentrations in Tedlar Bags vs Summa Canisters



Vestal Chlorinated Hydrocarbon Site – Vestal, NY
42 Subslab Locations less the two highest



Geostatistical Summary

Input datasets:	Trichloroethene
Method:	Kriging
Type:	Single
Output type:	Prediction
Output ID:	1
Model type:	None
Transformation:	Normal Score Transformation
Approximation:	Linear
Data declustering:	Cell
Cell size:	73.90633520825717
Anisotropy:	0
Angle:	0
Search neighborhood:	12
Neighbors to include:	Standard
Include at least:	5
Sector type:	Four and 45 degree
Angle:	0
Major semivariance:	30.7165956063555
Minor semivariance:	30.7165956063555
Heterogeneity:	0
Number of logs:	12
Log size:	30.069
Measurement error:	0
Model type:	Spherical
Range:	58.70064660813035
Anisotropy:	0
Partial sill:	0.2040657596429029

Map created using randomly generated sample locations and site-provided AutoCAD building footprints. Samples produced using Visual Sample Plan (VSP) for plume area, and a random number generator for transect locations.

Map Creation Date: 23May2007

Coordinate system: New York State Plane East
 PRS: 2002
 Datum: NAD83
 Units: Feet

Date: g:\arcview\projects\mex4\00-198
 MID file: g:\arcview\projects\mex4\00-198_Vestal198_postsummit_flow203
 Revision Number: 000

Legend

Sample Type

- Discretionary
- ▲ Grid
- Transect
- U = Not Detected
- Estimated Plume

15 Foot Buffer Applied for Sample Design

Trichloroethene

Units in parts per billion by volume (ppbv).



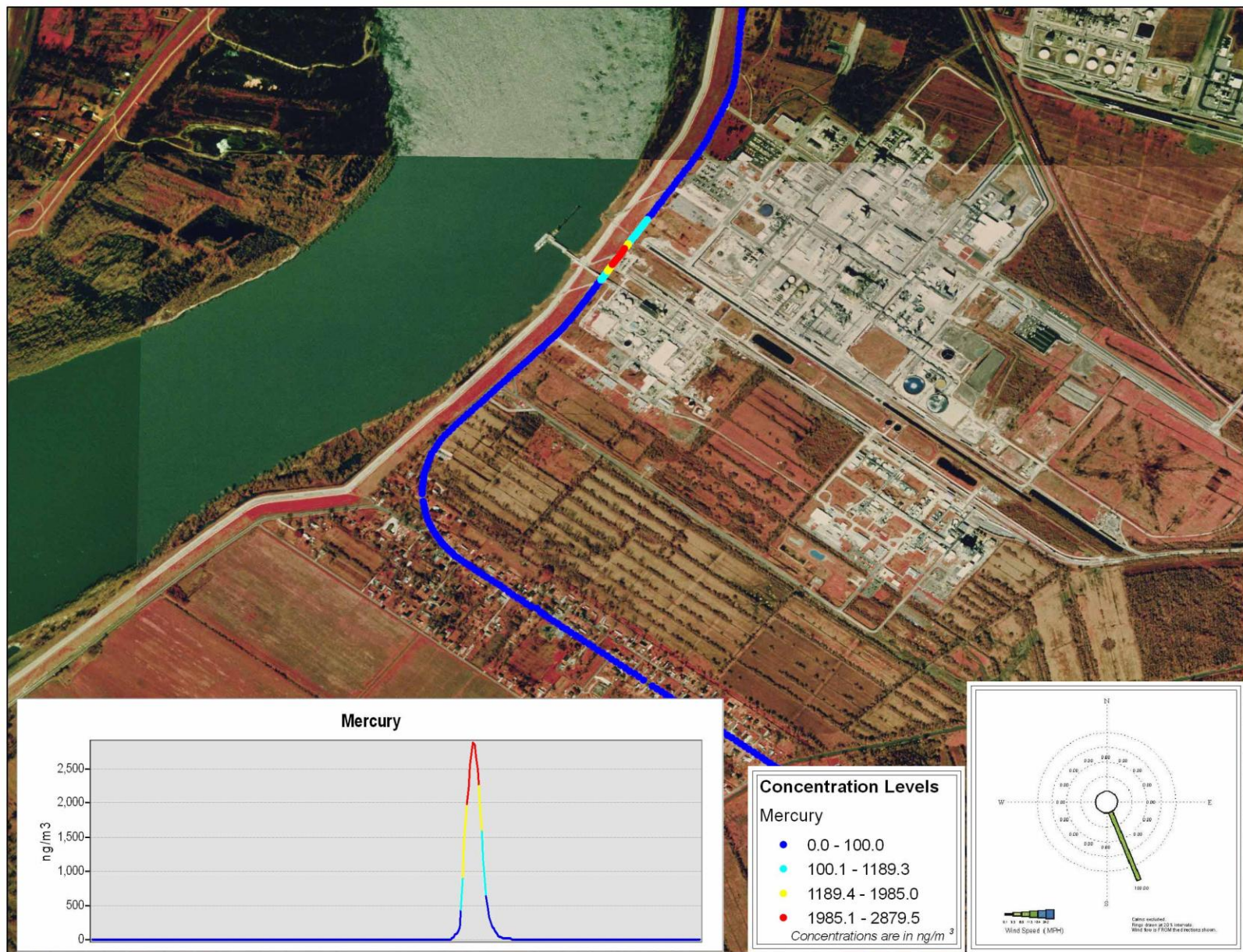
1 - 5.16
 5.16 - 15.39
 15.39 - 40.55
 40.55 - 102.38
 102.38 - 254.38
 254.38 - 628.03
 628.03 - 1,546.56
 1,546.56 - 3,804.53
 3,804.53 - 9,355.17
 9,355.17 - 23,000



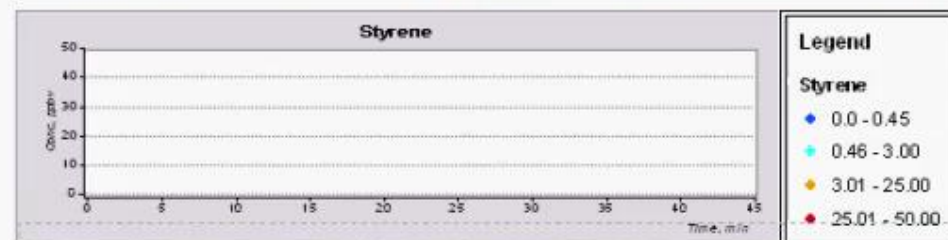
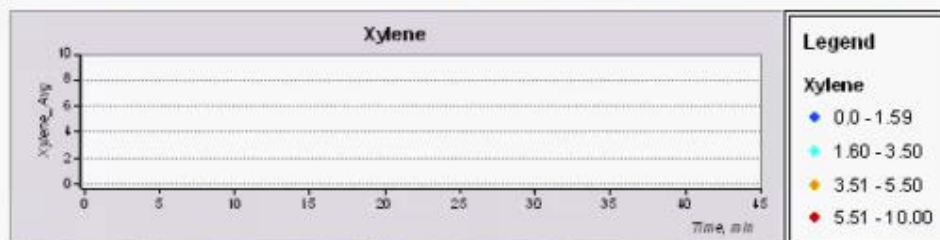
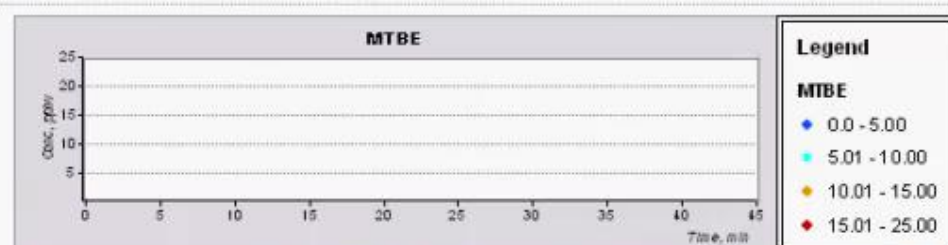
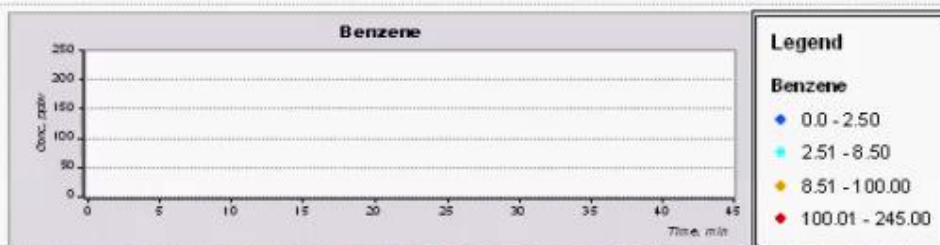
U.S. EPA Environmental Response Team
 Response Engineering and Analytical Contract
 EP-C-04-032
 W.A.# 0-198

Figure 8c
 Post-Summit Tedlar Bag Results
 Trichloroethene
 Vestal Chlorinated Hydrocarbon Site
 Vestal, NY
 April 11, 2007

**TOXIC URBAN AIR MONITORING
LOUISIANA AND TEXAS
2005 - 2006**



Ambient Air Monitoring along the Mississippi River
Baton Rouge, LA - 2005

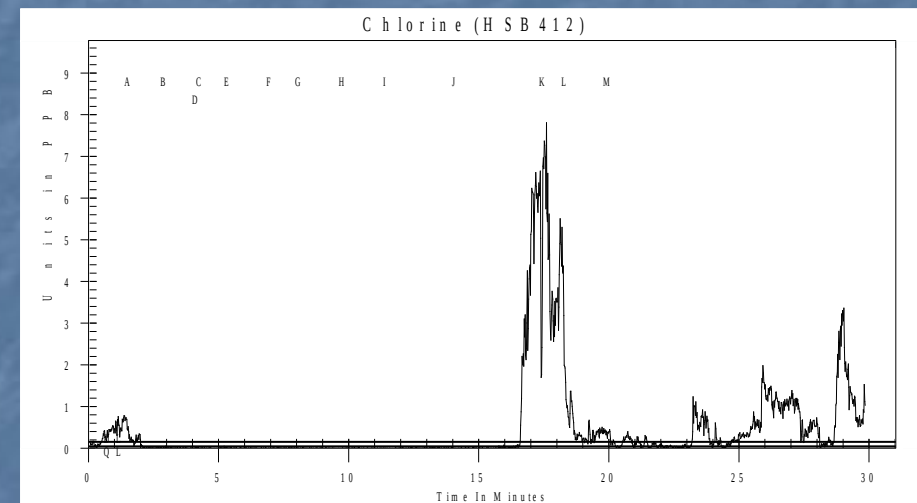
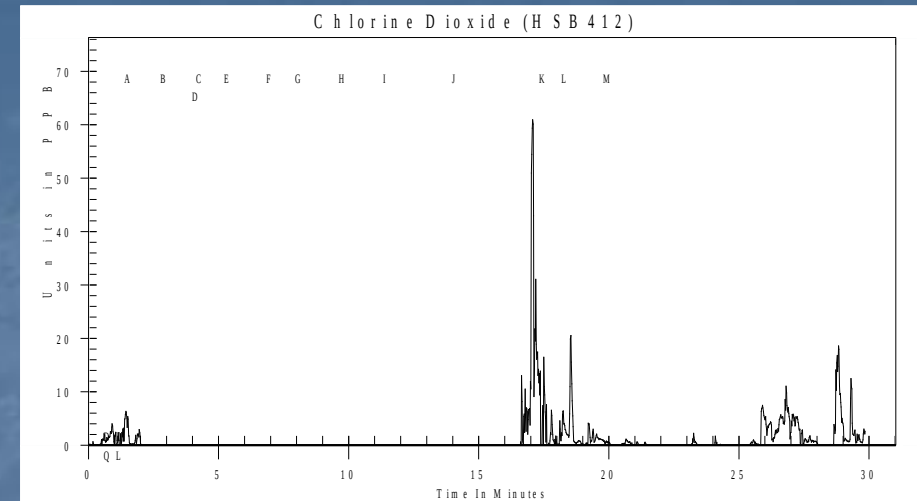
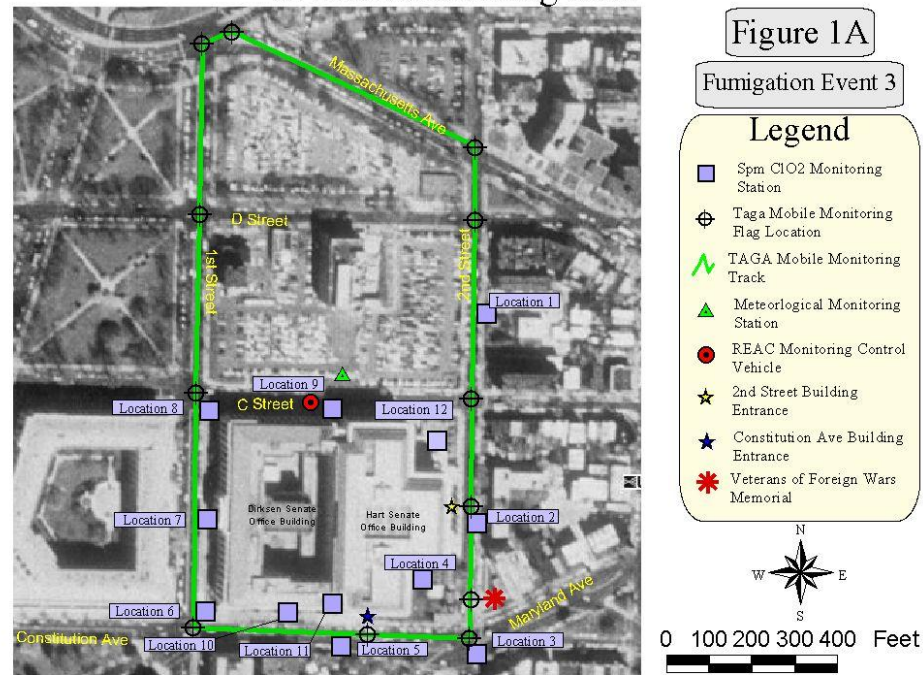


ANTHRAX REMEDIATION FUMIGATION MONITORING



Hart Senate Office Building

TAGA Monitoring Path



Wind from NW at 4.7 mph

TAGA File Event Summary

File: HSB412 acquired on 12/30/01 at 20:27:27

Title: Mobile Monitoring Around the Hart Senate Office Building

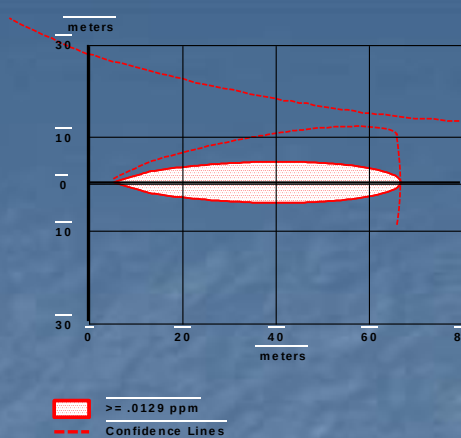
Flag	Time	Sequence	Description
A	1.4	82	Start at the Hart Senate Office Building Entrance on Second Street
B	2.8	163	Pass C Street
C	4.1	243	Pass D Street
D	4.5	265	Pause at the traffic light
E	5.2	306	Left turn onto Massachusetts Avenue from Second Street
F	6.9	402	Pause at the traffic light
G	7.9	466	Left turn onto First Street from Massachusetts Avenue
H	9.6	564	Pass D Street
I	11.3	664	Pass C Street
J	14.0	819	Left turn onto Constitution Avenue from First Street
K	17.3	1015	Stop at the corner of Constitution Avenue and Second Street
L	18.2	1065	Left turn onto Second Street from Constitution Avenue
M	19.8	1159	Stop at the Hart Senate Office Building Entrance on Second Street

PRE-DEPLOYMENT OPERATIONS

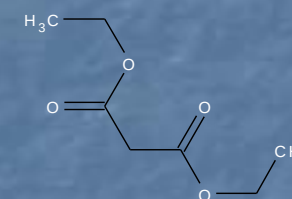


RESEARCH AND DEVELOPMENT OPERATIONS

ENVIRONMENTAL CANADA: FIELD DEMONSTRATION OF CHEMICAL
DECONTAMINATION TECHNOLOGIES DOWNWIND COMPOUND CONCENTRATIONS
AND EMISSION RATE DETERMINATIONS
SUFFIELD FACILITY, SUFFIELD, ALBERTA, CANADA
2006



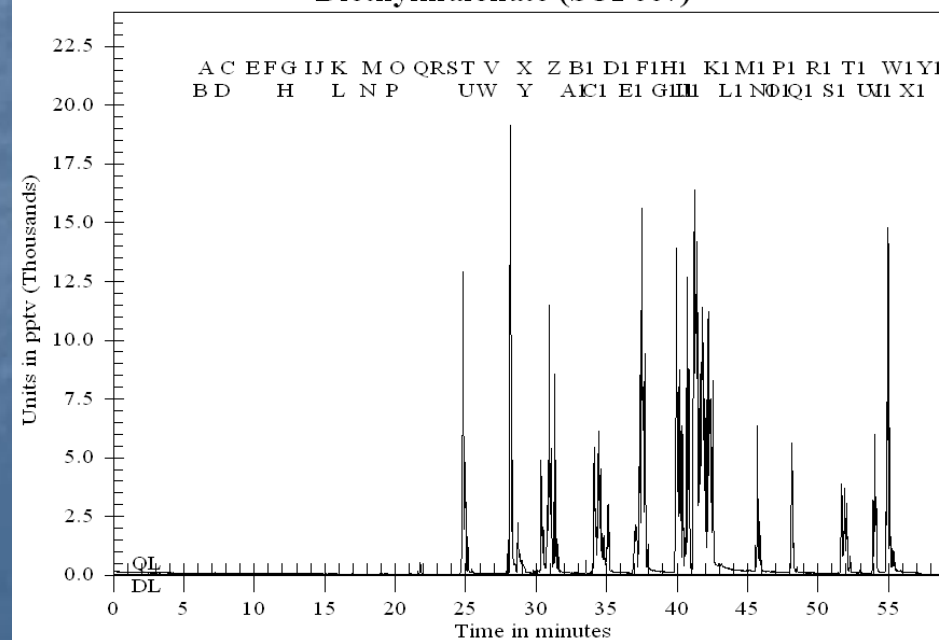
ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
 Wind: 4 meters/second from 315° true at 3 meters
 Ground Roughness: open country Cloud Cover: 0 tenths
 Air Temperature: 18.1° C Stability Class: D
 No Inversion Height Relative Humidity: 25%



CBRN Project at Suffield - 2006

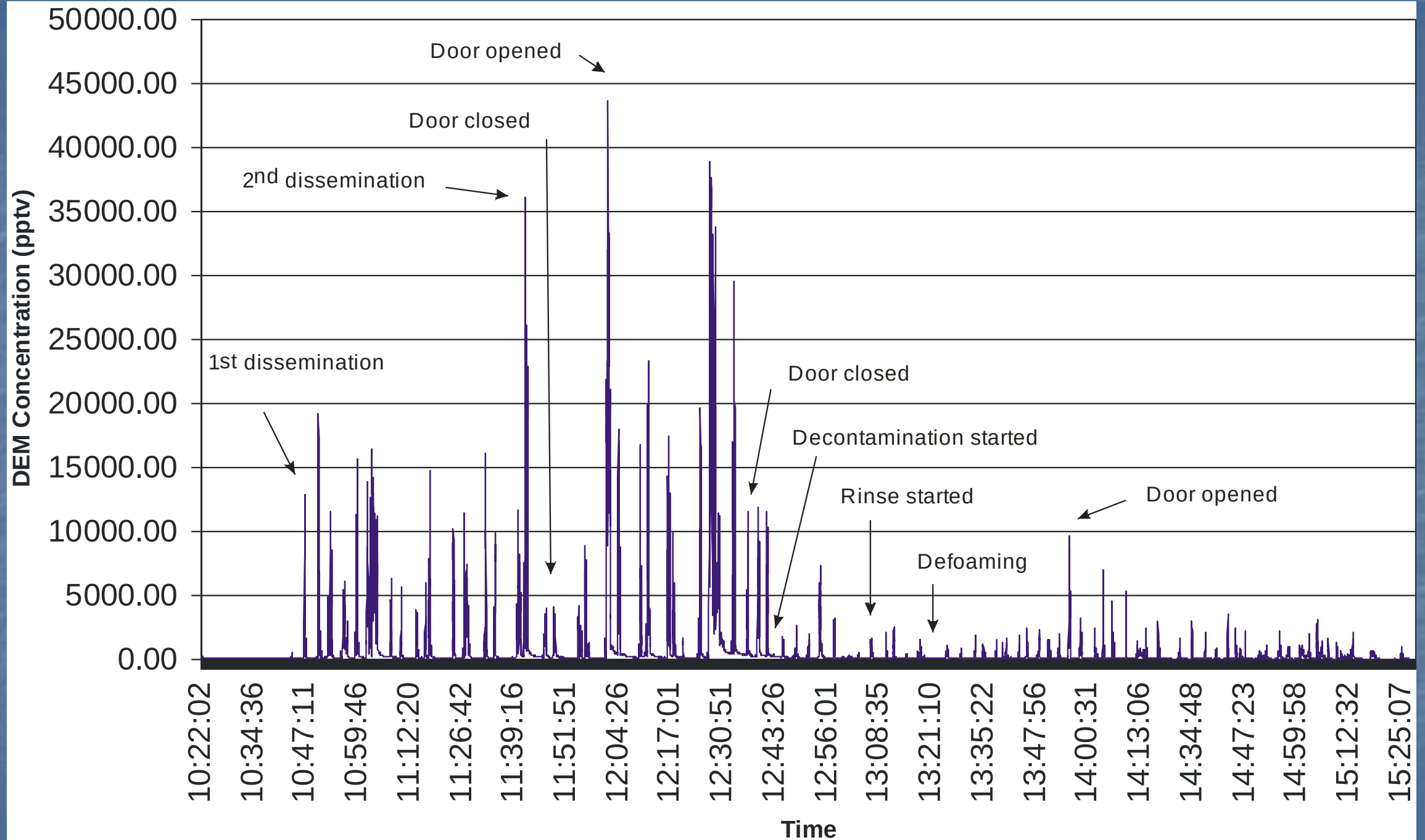


Diethylmalonate (SUF007)





Suffield Facility with Test Structure and TAGA Laboratory



DEM Concentration with Respect to Time and Operations

	Time (Mountain Daylight Time)	DEM concentration (parts per billion by volume)	Distance (meters)	Wind Speed (meters/ second)	Wind Direction (Degrees True)	Temperature (Celsius)	Emission Rate (grams/ second)	Event
	10:47	12.9	67	4	315	18.1	0.023	1 st Dissemination Room C
	11:42	36.1	51	3.5	320	20.2	0.062	2 nd Dissemination Rooms A & B
	11:47	2.7	49	4	310	20.6	0.005	Doors Closed 1
	12:02	43.7	49	4.2	314	20.8	0.083	Doors Open 1
	12:37	9.9	58	3.5	290	21.3	0.022	Doors Closed 2
	12:48	2.6	59	3.5	279	21.3	0.0059	Decon Start
	13:07	1.6	52	3.5	280	21.7	0.0028	Rinse Start
	13:27	1.1	53	4	295	21.6	0.0023	Defoam Start
	13:59	3.3	49	4.4	302	22.5	0.0065	Doors Open 2

Modeling Inputs and Outputs

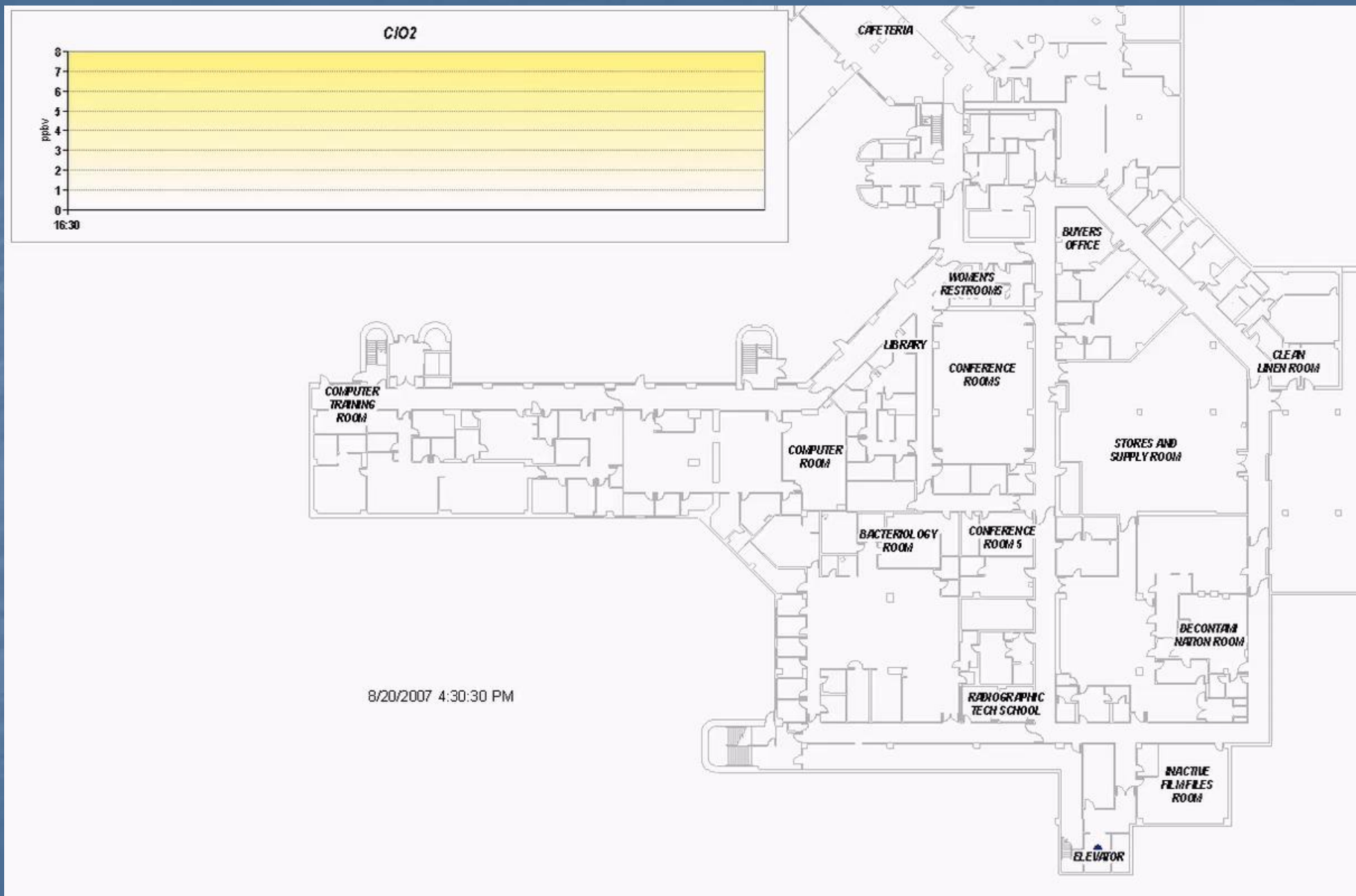
BUILDING CLEARANCE: TAGA MS/MS CHLORINE DIOXIDE
INDOOR AIR MONITORING
ST. JOHN'S REGIONAL MEDICAL CENTER
OXNARD, CA
2007



St. John's Regional Medical Center (SJRMC)



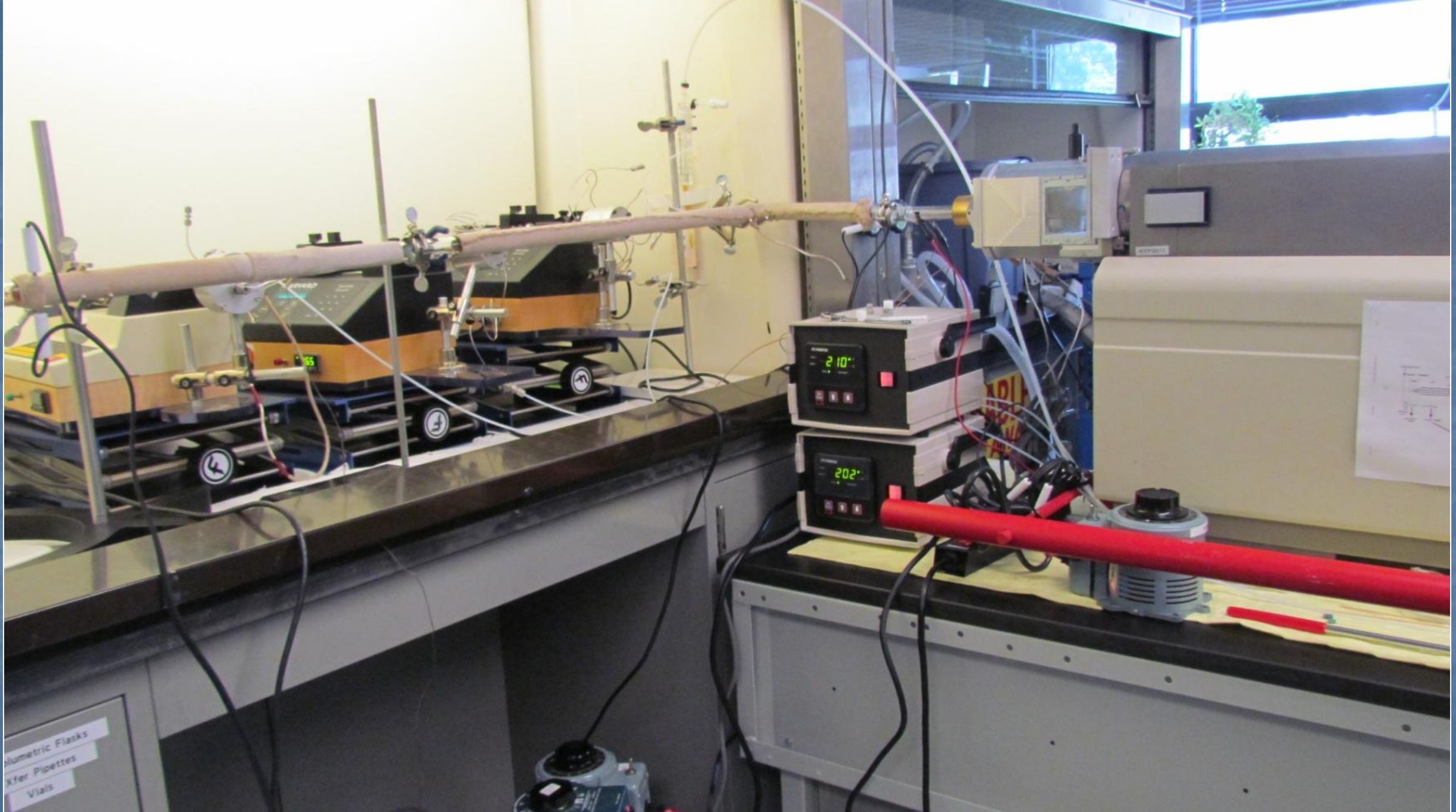
TAGA on the Cart Used at the SJRMC Fumigation





Improved TAGA on the Cart Designed

BUILDING CLEARANCE: TAGA MS/MS CHEMICAL WARFARE AGENT
AIR AND MATERIAL MONITORING
US ARMY EDGEWOOD CHEMICAL AND BIOLOGICAL CENTER
EDGEWOOD, MD
2011

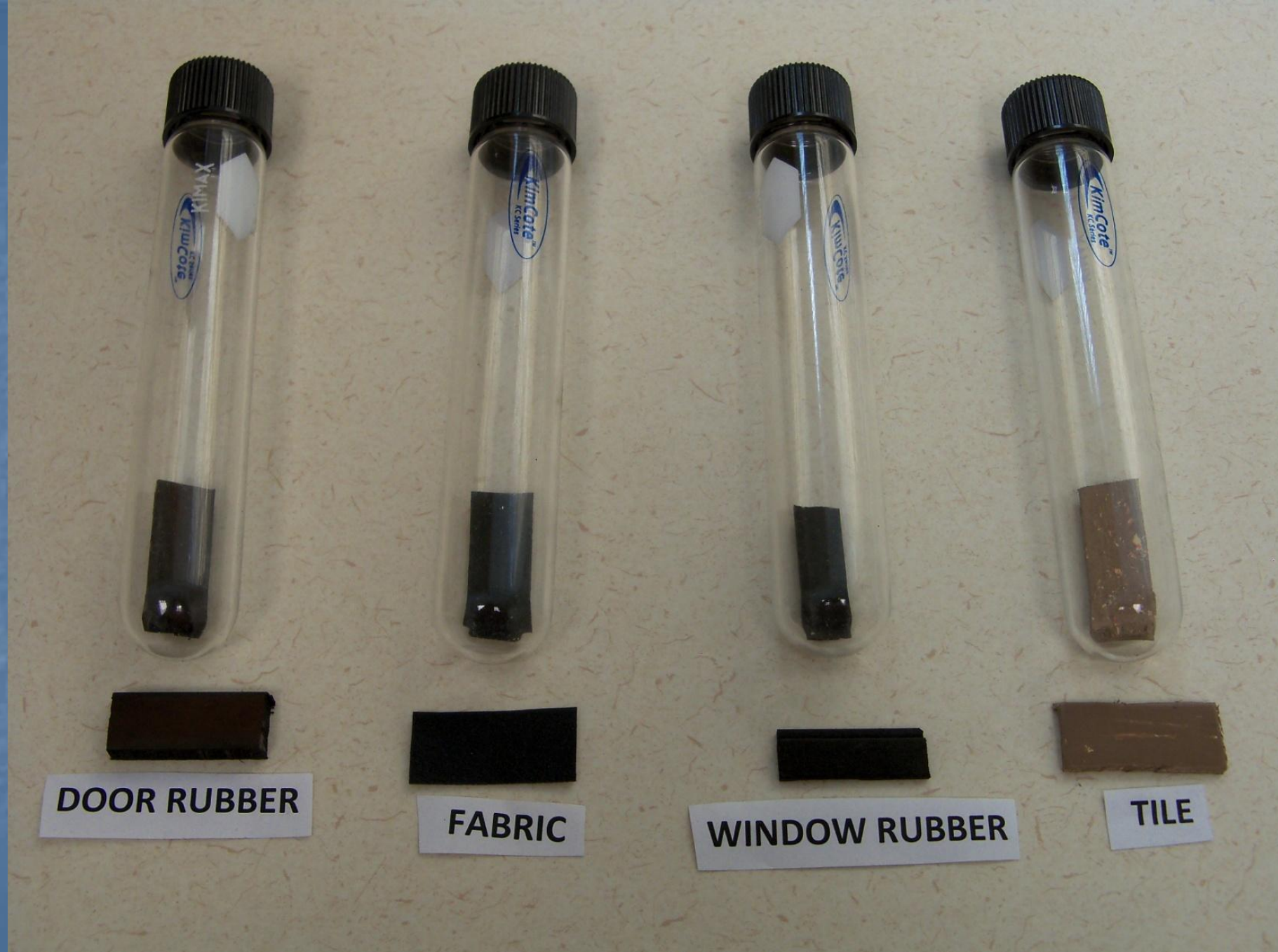


TAGA MS/MS Testing System at the ECBC Facility

[illegible]

SARIN	Media: AIR	Standard Name	Population	Exposure Scenario	H/HD/HT	GB (Sarin)	VX
	TAGA Detection Limits mg/m3				0.00078 [7.8xE-4]	0.000018 [1.8E-5]	0.0000064 [6.4E-6]
	Airborne Exposure Limits mg/m3	IDLH <i>Immediately Dangerous to Life and Health</i>	DoD Workers (civilian)	Acute 30 minute exposure	0.7	0.1	0.003
		STEL <i>Short Term Exposure Limit</i>	DoD Workers (civilian)	Occasional (4x day) 15 minute exposure	0.003 [3x10E-3]	0.0001 [1x10E-4]	0.00001 [1x10E-5]
		WPL <i>Worker Population Limit</i>	DoD Workers (civilian)	8 hr daily/ multi yr time weighted average (TWA)	0.0004 [4x10E-4]	0.00003 [3x10E-5]	0.000001 [1x10E-6]
		GPL <i>General Population Limit</i>	Civilian General Population	24 hr/daily lifetime time weighted average (TWA)	0.00002 [2x10E-5]	0.000001 [1x10E-6]	0.0000006 [6x10E-7]

	Acute Exposure Guideline Levels (AEGLs) mg/m3	Acute Exposure Guideline Levels	Emergency/Accident Scenario	1 time exposure	H/HD/HT	GB (Sarin)	VX
		AEGL – Level 1 Above this potential for some minor discomfort or noticeable but reversible effects	Civilian General Population	10 min 30 min 1 hr 4 hr 8 hr	0.40 0.13 0.067 0.017 0.008	0.0069 0.0040 0.0028 0.0014 0.0010	0.00057 0.00033 0.00017 0.00010 0.000071
		AEGL – Level 2 Above this more obvious effects begin; potentially impacting functional abilities or ability to escape; potential delayed recovery	Civilian General Population	10 min 30 min 1 hr 4 hr 8 hr	0.60 0.20 0.10 0.025 0.013	0.087 0.050 0.035 0.017 0.013	0.0072 0.0042 0.0029 0.0015 0.0010
		AEGL – Level 3 Above this level potential for serious effects potential life threatening	Civilian General Population	10 min 30 min 1 hr 4 hr 8 hr	3.9 2.7 2.1 0.53 0.27	0.38 0.19 0.13 0.070 0.051	0.029 0.015 0.010 0.0052 0.0038
	TAGA Detection Limits mg/m3				0.00078 [7.8xE-4]	0.000018 [1.8E-5]	0.0000064 [6.4E-6]

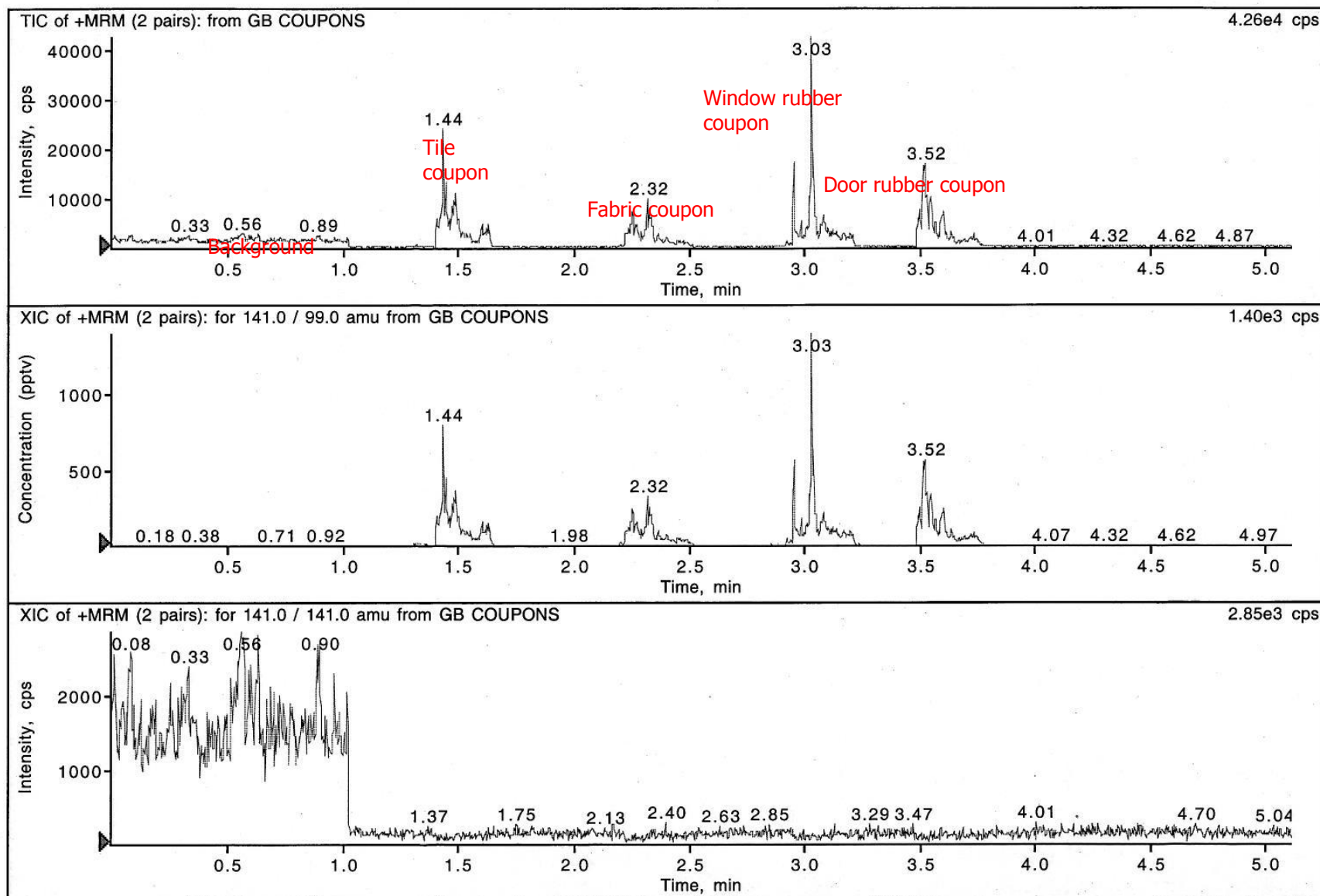


Material Coupons in Culture Tubes

Info for pane 3: GB COUPONS (No Title)

Period 1, Expt. 1; Dwell: 100.0 ms; Pause: 5.0 ms

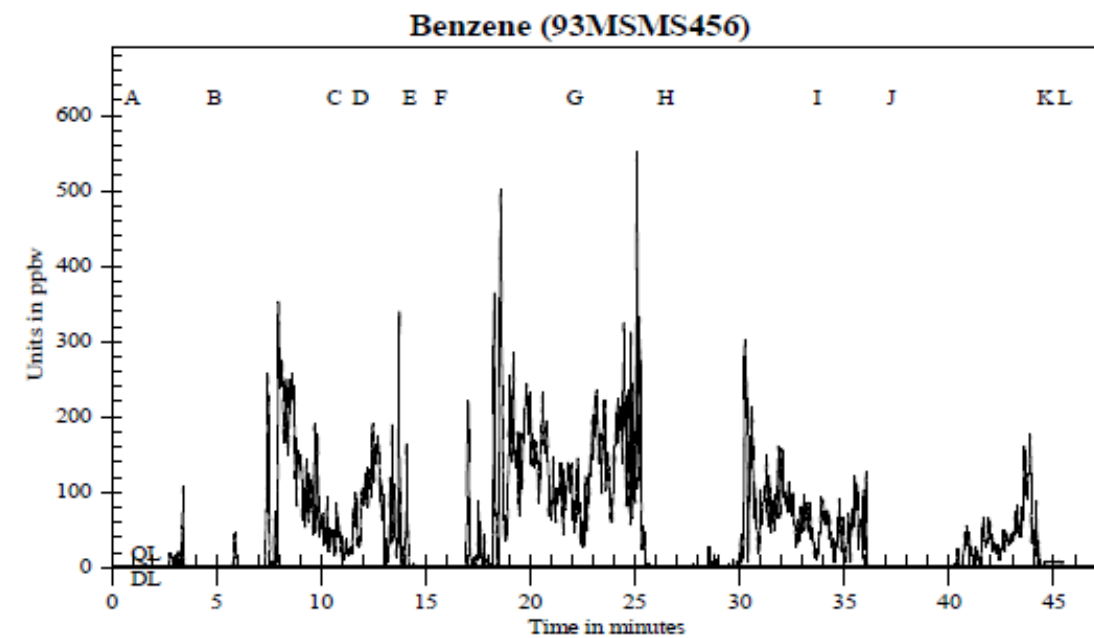
Acq. Time: Thu, Sep 15, 2011 at 21:05:13

2uL of 100 ug/mL GB = 200 ng of GB on 1.5cm x 3.5 cm (5.25 cm²) coupons or 38ng/cm²

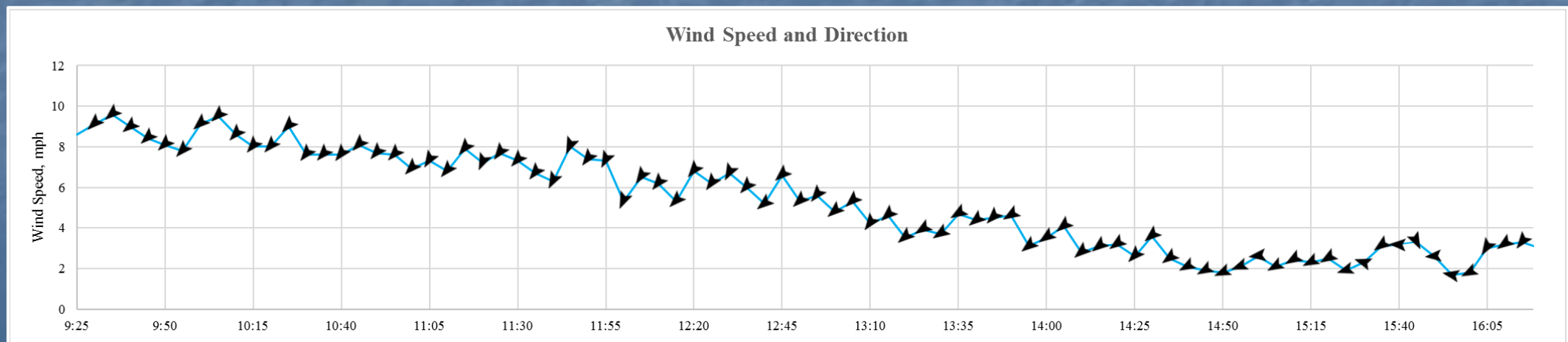
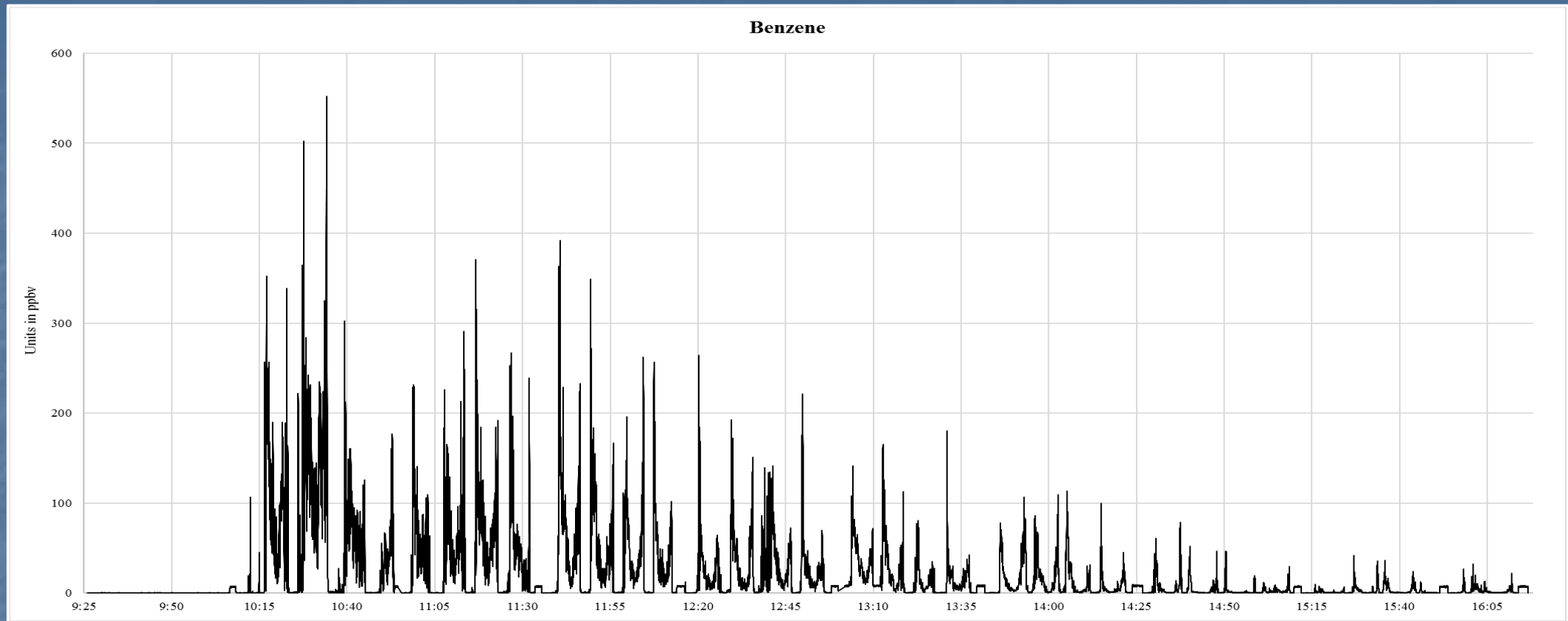
BAKKEN CRUDE RELEASE: WORKER HEALTH AND SAFETY PILOT STUDY
OHMSETT FACILITY
LEONARDO, NJ
2015



MOBILE MONITORING TWO
93MSMS456
BAKKEN CRUDE RELEASE
LEONARDO, NEW JERSEY





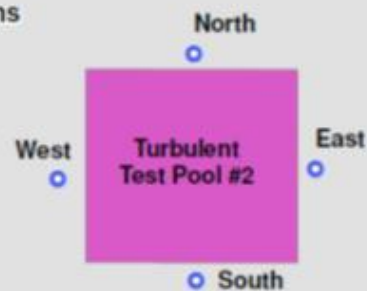




AreaRAE Locations
on 06/14/16
to 06/15/16



AreaRAE Locations
on 06/15/16
to 06/16/16



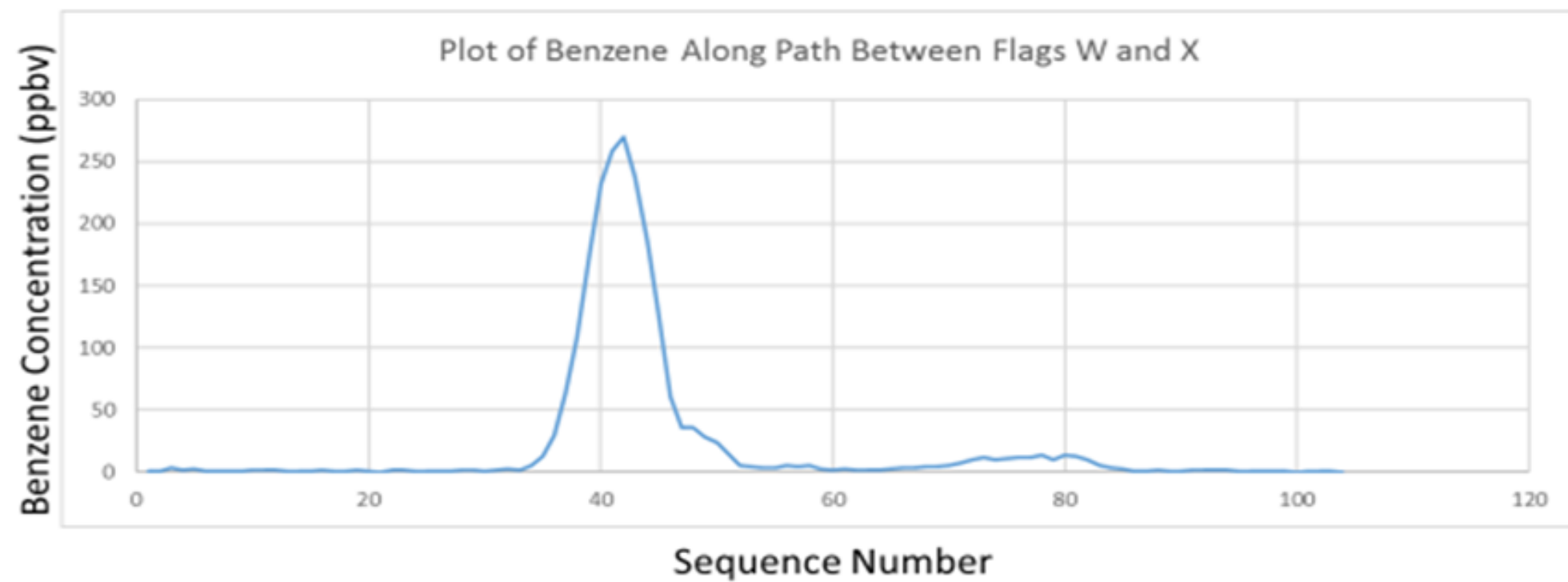
Legend

- | | |
|--------------------------------|--------------|
| Met Station | Pool #2 |
| Perimeter AreaRAE with LINC ID | TAGA Line #1 |
| Test Area AreaRAE with LINC ID | TAGA Line #2 |
| Pool #1 | TAGA Line #3 |

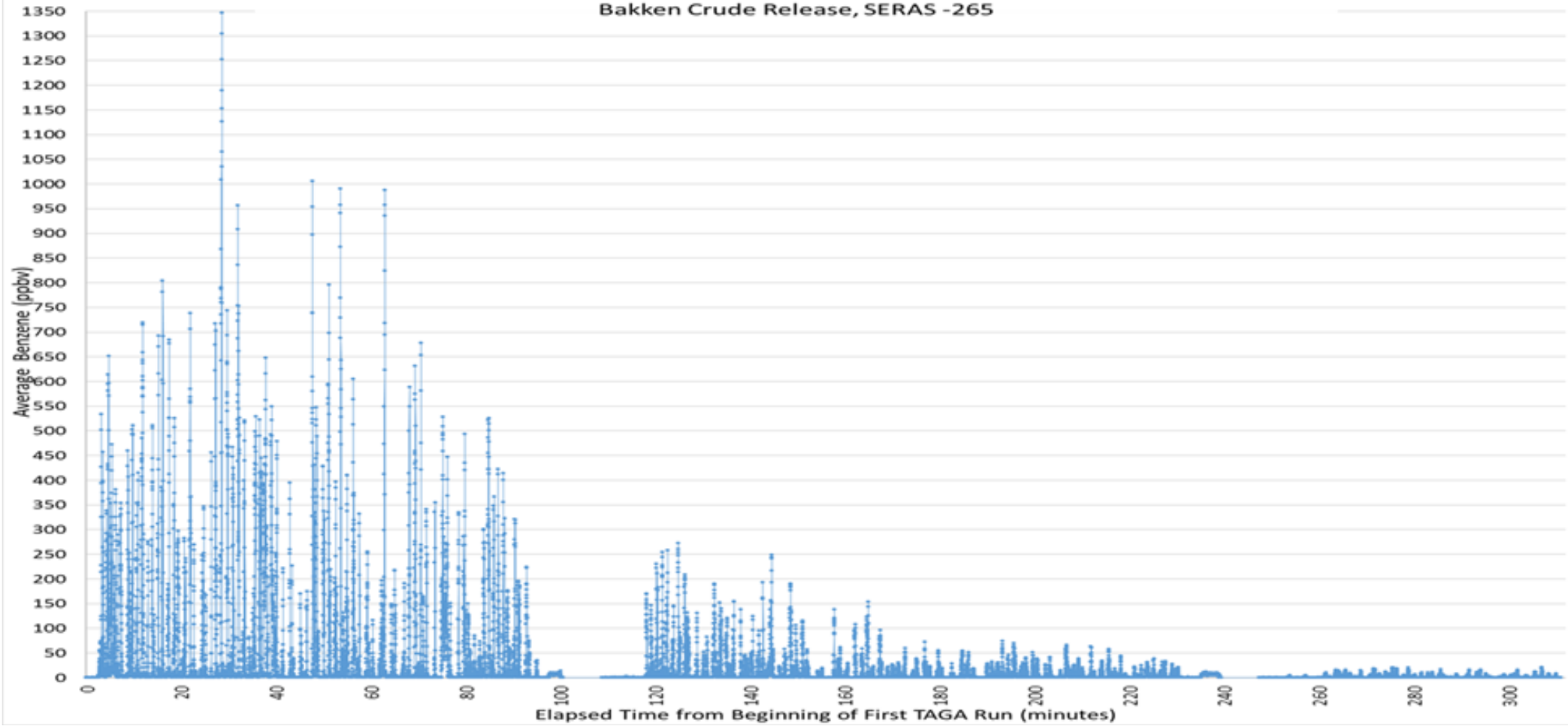


U.S. EPA Environmental Response Team
Scientific Engineering Response and Analytical Services
EP-W-09-031
W.A.# SERAS-264

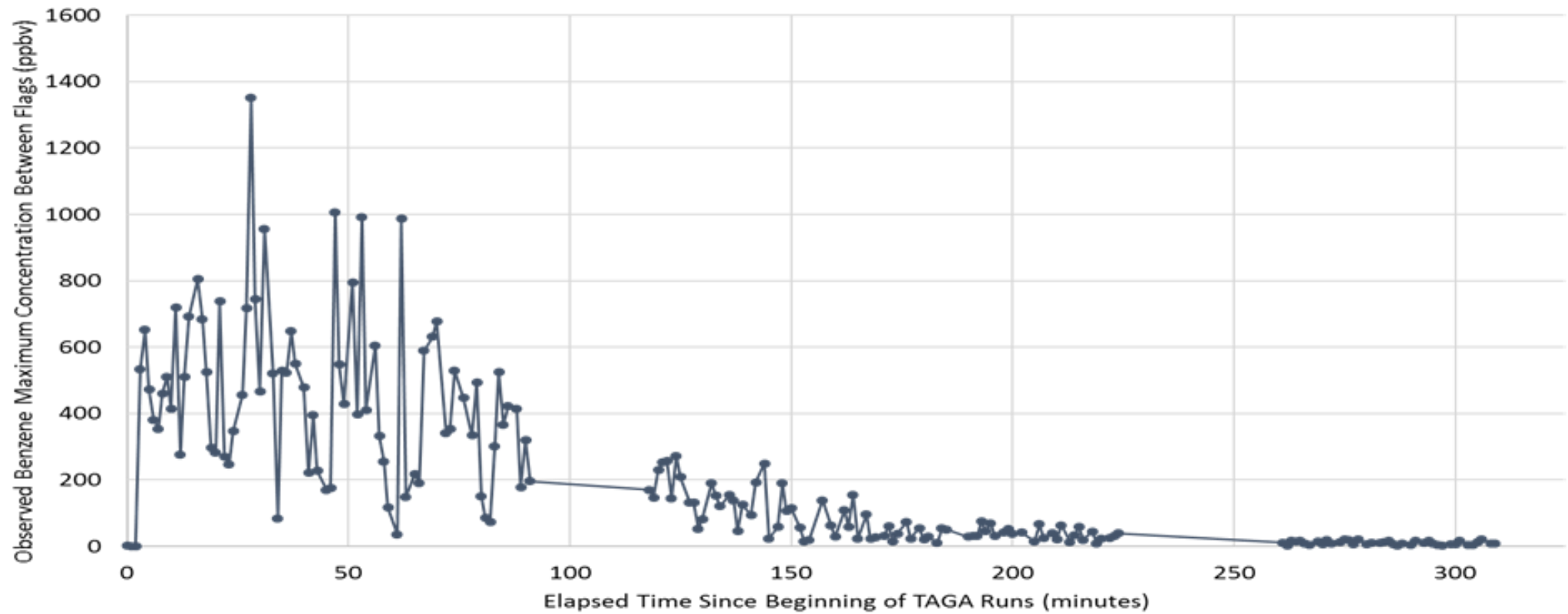
Figure 4
Air Monitoring and Sampling Locations
Bakken Crude Oil Release
Warm Weather Scenario – June 2016
Somerset County ESTA, Hillsborough, NJ



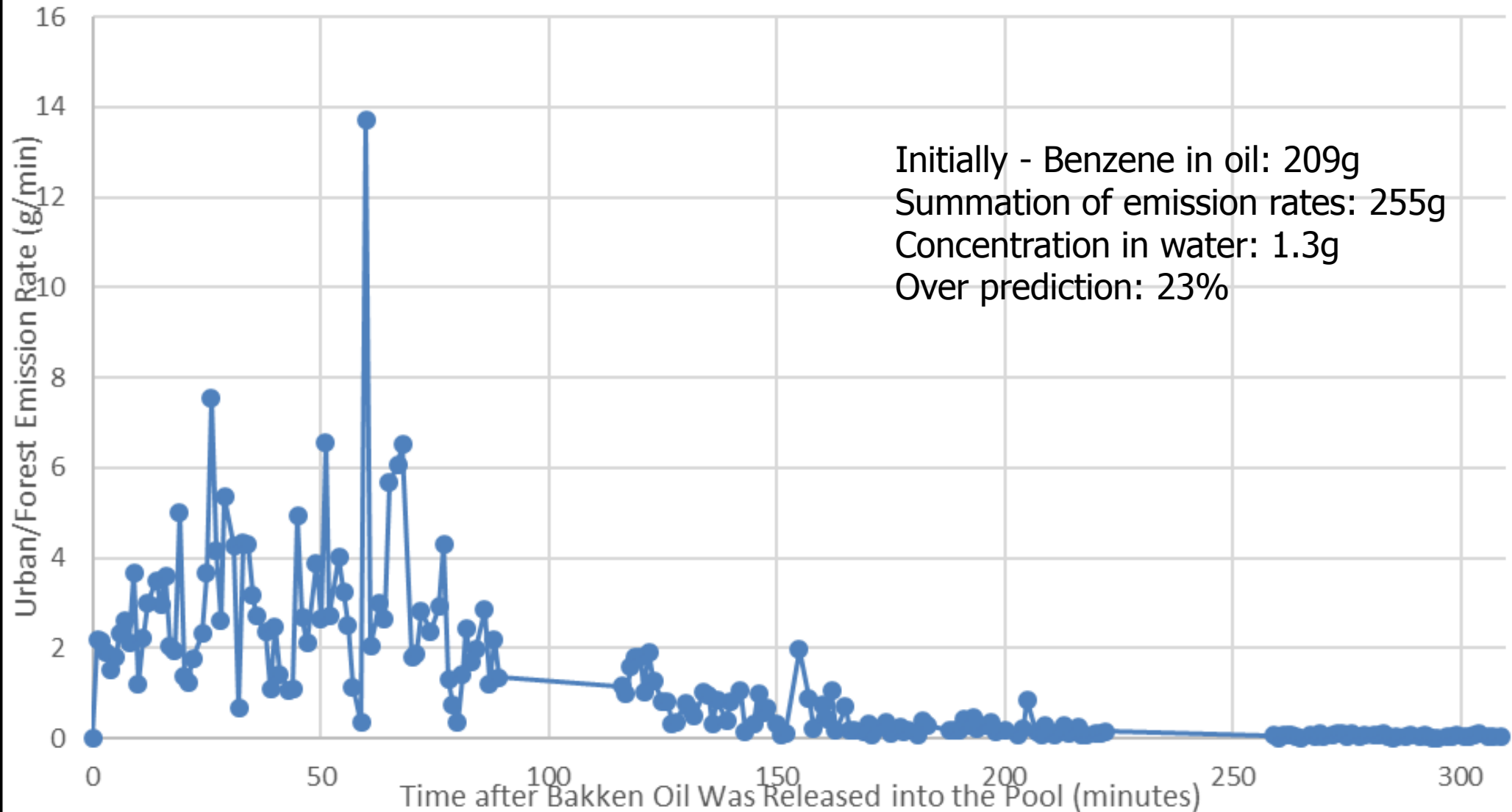
Average Benzene Concentration for TAGA Runs 417, 418 and 419 over Elapsed Time (minutes)
Bakken Crude Release, SERAS -265



Elapsed Run Time (minutes) versus Observed Benzene Maximum Concentration (ppbv) between Flags
Bakken Crude Release, SERAS-264



Elapsed Run Time (minutes) versus Urban/Forest Ground Emission Rate (g/min)



TAGA MS/MS INTERFACED WITH THE GEOPROBE® MEMBRANE INTERFACE PROBE
EX-SITU AND IN-SITU APPLICATIONS
EDISON, NJ AND SEA GIRT, NJ
OCTOBER 2015

TAGA MS/MS Interfaced with the GeoProbe® Membrane Interface Probe
Ex-Situ Application
Edison, NJ
October 2015



Calibration Curve for TETRACHLOROETHENE

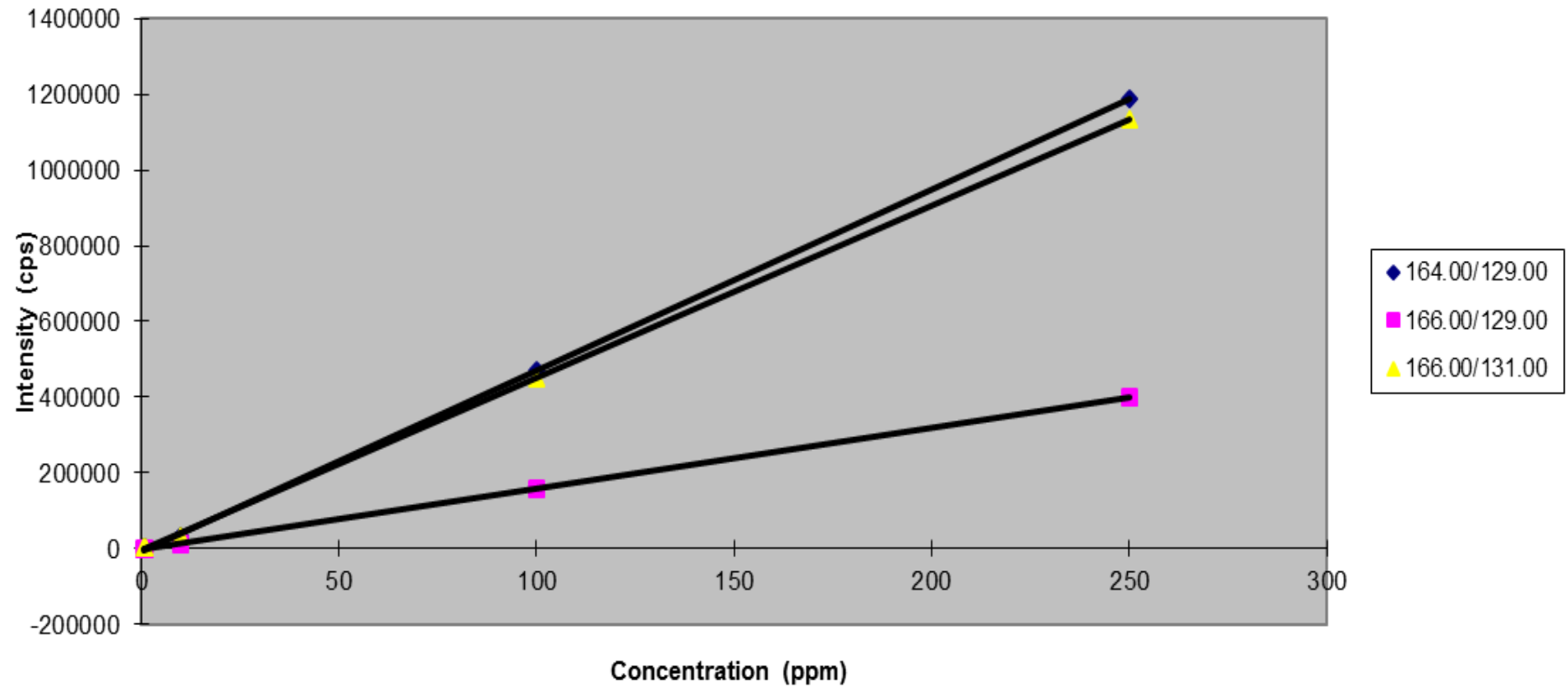


Table 1 Results from GeoProbe® MIP-TAGA MS/MS and US EPA Method 8260

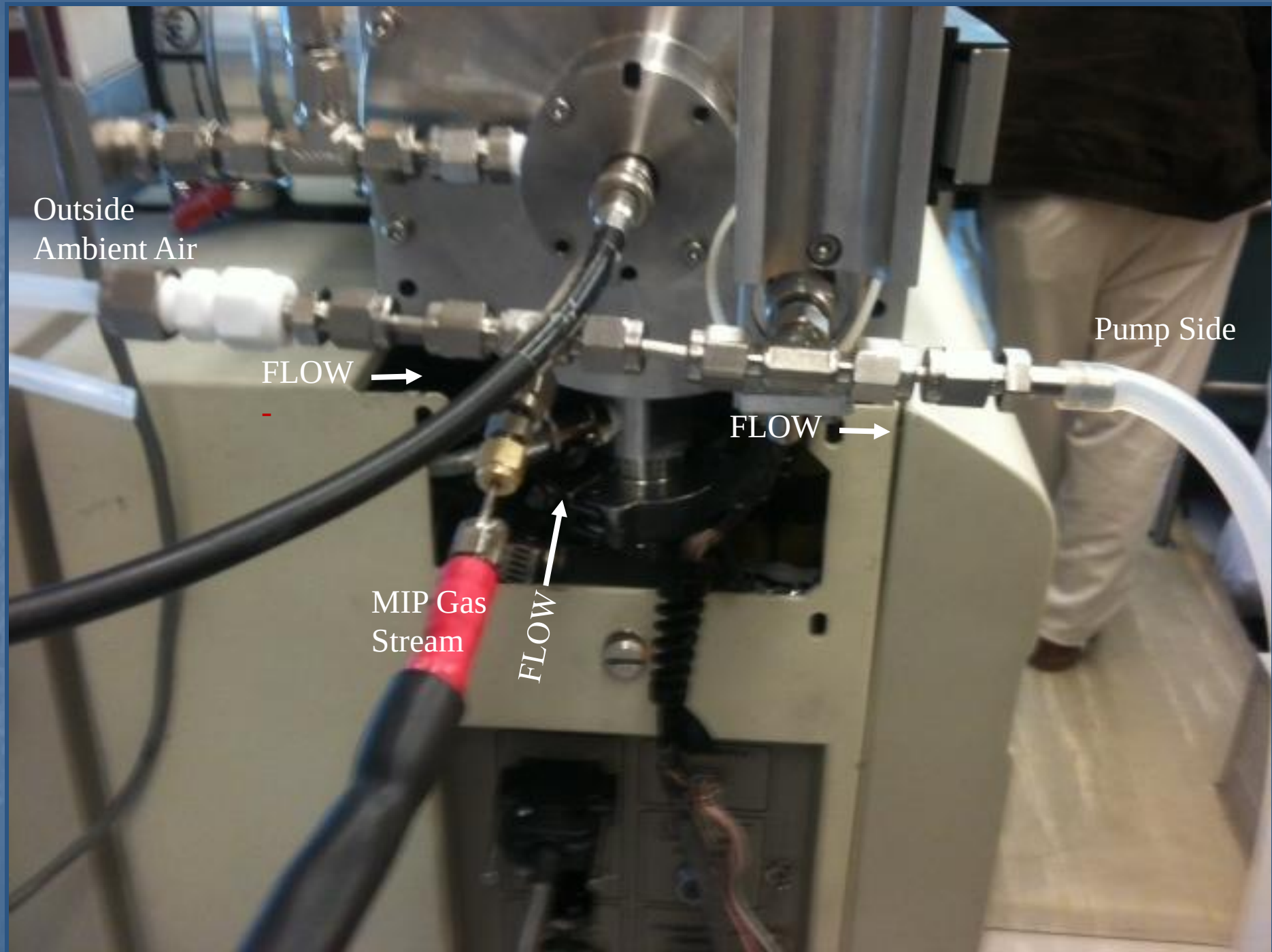
Laboratory:	GeoProbe® MIP-TAGA MS/MS	US EPA Region 4 Lab US EPA Method 8260	Contract Lab US EPA Method 8260
Description	Trichloroethene (PPM)	Trichloroethene (PPM)	Trichloroethene (PPM)
59200 \ MW31	1.8	1.4	1.2E/0.79D
59201 \ MW41	99	88/95D	75E/29D
59202 \ MW11	7.5	2.2	1.5E/1.1D
59203 \ MW33	1.5	0.16	0.26E/0.084D
59204 \ SVE01	17	15	5.5E/4.9D
59205 \ MW12A	2.3	1.2	1.0E
59206 \ MW32	79	80	59E/33D
0001 \ MW-26	0.85	1.0U	0.80E/0.80D
0002 \ DMW-38	1.3	1.3	1.2E/1.1D
0003 \ MW-15	50	44	49E/51D
0004 \ MW-16	2.7	0.28	0.37E/0.35D
0005 \ MW-40	1.1	2.9	0.003
0006 \ MW-29	1	0.46	0.45E/0.45D
0007 \ MW-3A	12	15	9.8E/11D

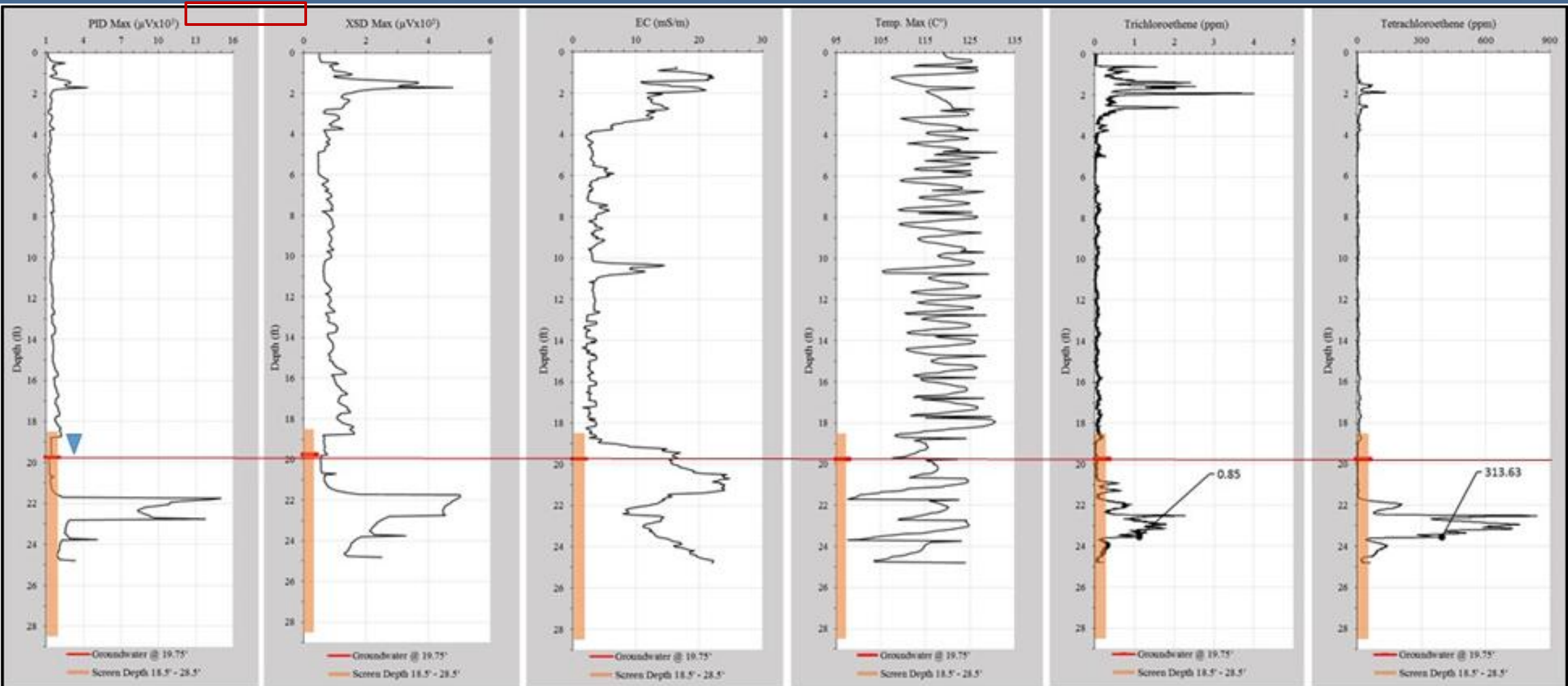
E - Value exceeds calibration range

D - Value from dilution sample

TAGA MS/MS Interfaced with the GeoProbe® Membrane Interface Probe
In-Situ Application
Sea Grit, NJ
October 2015







TAGA
 (average over screened area with water)
 PCE 119.27 ppm
 TCE 0.49 ppm

TAGA
 (instantaneous maximum over screened area with water)
 PCE 840.36 ppm
 TCE 2.28 ppm

TAGA
 (@23.50 feet – where the groundwater sample was collected)
 PCE 313.63 ppm
 TCE 0.85 ppm

**Groundwater
 Sample**
 23.5 Feet

Method 8260
 PCE 23.3 ppm
 TCE 0.029 ppm

▼ - Groundwater Level

MW-R-3S

J – Concentration is an estimate with value between the detection and quantitation limits
 U – Concentration is not detected with a value below the detection limit

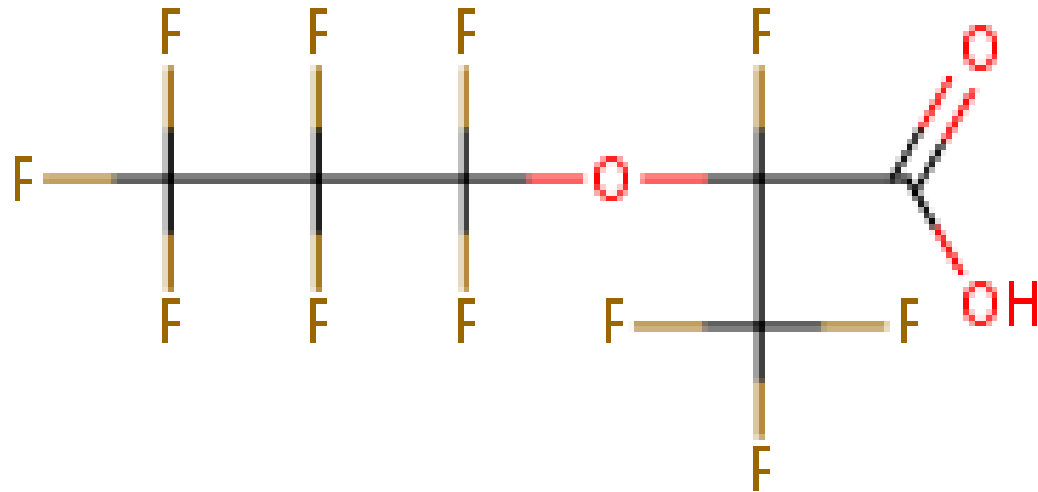
TAGA	DL	QL
PCE	0.16	0.53
TCE	0.05	0.17

TAGA
 PCE 29 ppm
 TCE 0.08J ppm

PERFLUOROCOMPOUND ANALYSIS IN AMBIENT AIR

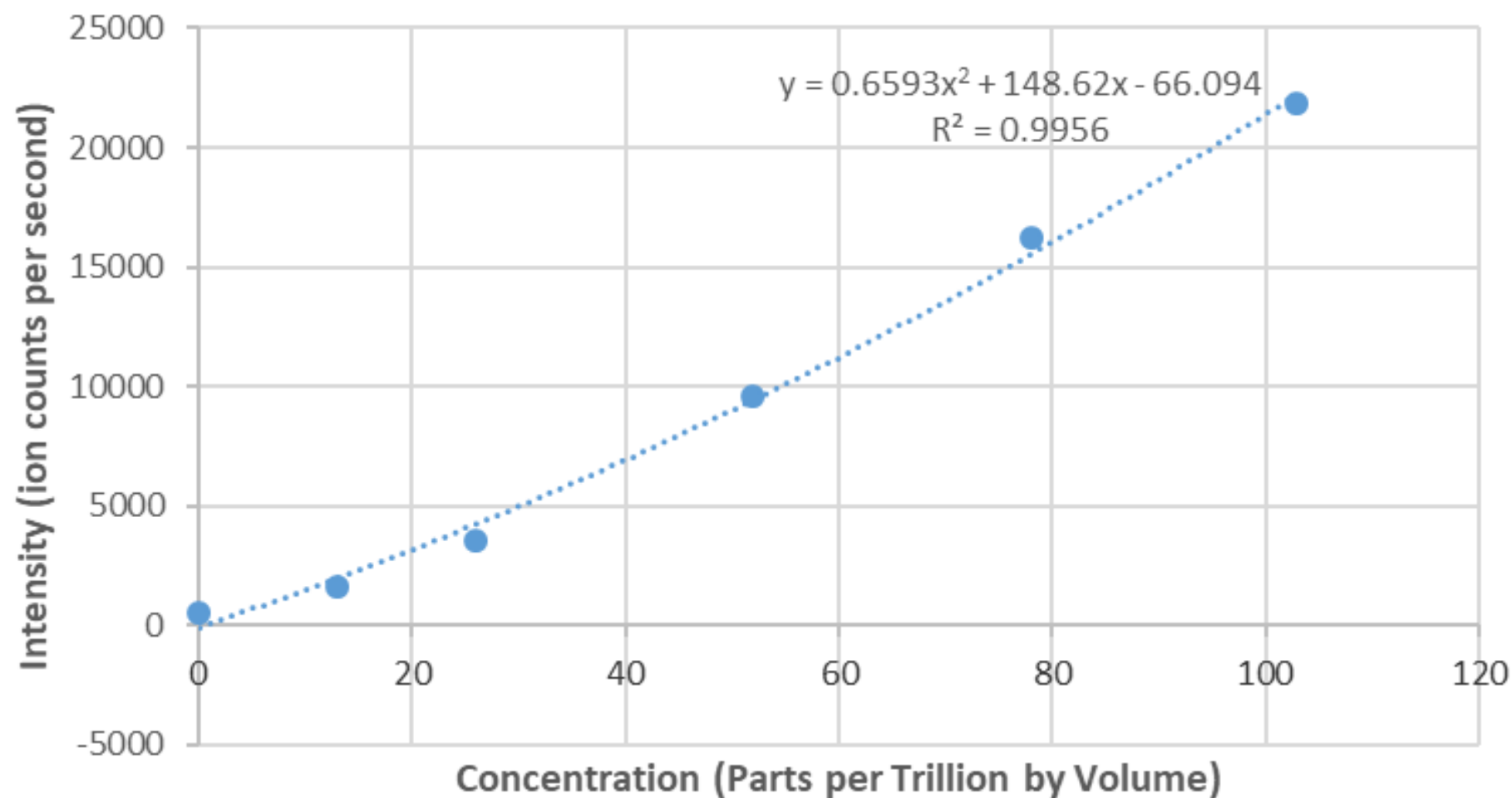


GEN-X CHEMICAL STRUCTURE



2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid

Calibration Curve for GENX - Parent Ion (329) - Neg Ion



VIPER TAGA MS/MS Data - 2018



VIPER: DEPLOYMENT MANAGER

Welcome mickunas.dave@epa.gov! [Log Out] [Change Password]

Deployments (45)

Unassigned Runs (0)

Help

[R06 TAGA - HURRICANE HARVEY](#) [POST-PROCESSED Deployment](#)

All Times Central, DST Observed

[3407-25: Harvey-Mobile Monitoring](#) [Near Corpus Christi-Processed-](#) [64MSMS00506](#)

Start: 9/19/2017 9:43:38 AM

End: 9/19/2017 12:27:42 PM

Description: TAGA 3064 Mobile Monitoring 28

Location: Corpus Christi, TX



[\(.3002\) TAGA Compounds Data -](#) [TAGA Data](#)

Connection: Down [\[Edit\]](#)

Intermittent after 45 minute(s)

Down after 90 minute(s)

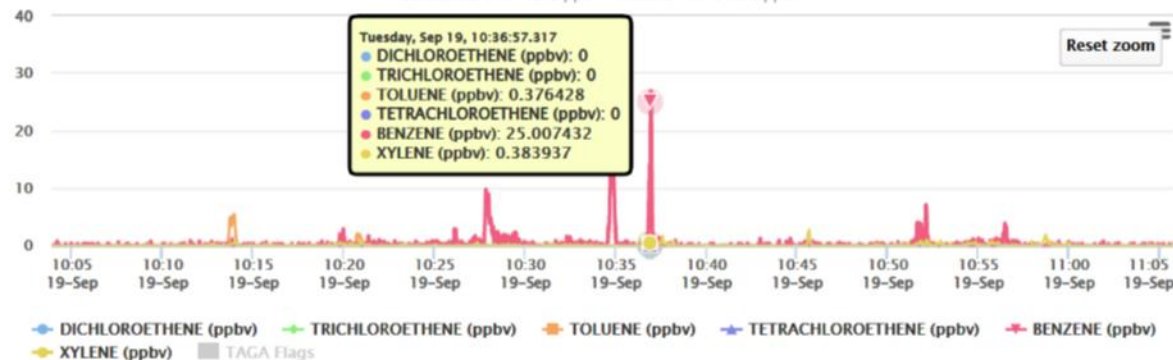
Lat/Lng: 27.7986450 / -97.4177246

Last Update: 9/19/2017 12:27:42 PM

Latest Readings: [\[Edit\]](#)

DICHLOROETHENE: 0.0251193 ppbv TRICHLOROETHENE: 0.0197809 ppbv TOLUENE: 0.1021844 ppbv TETRACHLOROETHENE: 0.0702780 ppbv

BENZENE: 0.4071272 ppbv XYLENE: 0.3131256 ppbv



Export

[Revise Graph](#)

[Annotate Readings](#)

Instrument Monitors

Name	Type	Sensor	Settings	~
Benzene > 180 ppbv	Alarm	BENZENE	WARNING - High Alarm: 180; Low Alarm: n/a	[Remove]
Dichloroethene > 180 ppb	Alarm	DICHLOROETHENE	WARNING - High Alarm: 180; Low Alarm: n/a	[Remove]
Tetrachloroethene > 100 ppbv	Alarm	TETRACHLOROETHENE	WARNING - High Alarm: 100; Low Alarm: n/a	[Remove]
Toluene > 4000 ppbv	Alarm	TOLUENE	WARNING - High Alarm: 4000; Low Alarm: n/a	[Remove]
Trichloroethene > 100 ppbv	Alarm	TRICHLOROETHENE	WARNING - High Alarm: 100; Low Alarm: n/a	[Remove]
Xylene > 1700 ppb	Alarm	XYLENE	WARNING - High Alarm: 1700; Low Alarm: n/a	[Remove]

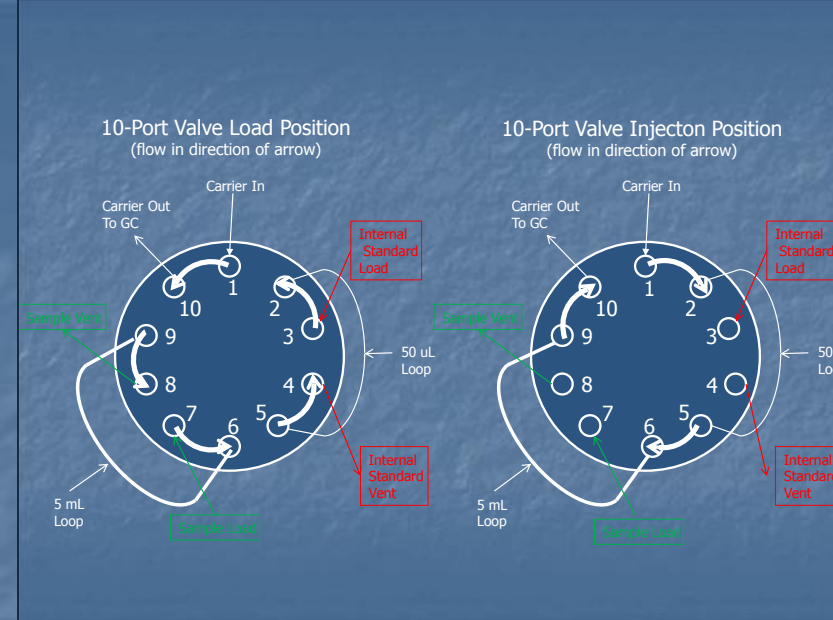
[\[Add New Instrument Monitor\]](#) [\[Enable Alarm Notifications\]](#)



New Jersey Department of Environmental Protection National Environmental Laboratory Accreditation Program ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS Effective as of 01/29/2014 until 06/30/2014							
Laboratory Name: ERT / SERAS LABORATORY Laboratory Number: 12023 Activity ID: NLC130004 2890 WOODBRIDGE AVE BLDG 209 ANX Edison, NJ 08837							
Category: CAP03 – Atmospheric Organic Parameters Eligible to Report NJ Data							
Status	No	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Dropped	No	NJ	CAP03.05500	AE	GC/ECD, LV PUF	[EPA TO-10A]	Lindane (gamma BHC)
Dropped	No	NJ	CAP03.05530	AE	GC/ECD, LV PUF	[EPA TO-10A]	Methoxychlor
Certified	Yes	NJ	CAP03.06080	AE	TAGA, Dir. Introduction, LPCI or APCL, MS	[USER DEFINED Trace Atmospheric Gas Analyzer SOP 1711]	Tetrachloroethene
Certified	Yes	NJ	CAP03.06085	AE	TAGA, Dir. Introduction, LPCI or APCL, MS	[USER DEFINED Trace Atmospheric Gas Analyzer SOP 1711]	Trichloroethene
Certified	Yes	NJ	CAP03.09010	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Benzene
Certified	Yes	NJ	CAP03.09095	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Dichloroethane (1,1-)
Certified	Yes	NJ	CAP03.09105	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Dichloroethane (1,1-)
Certified	Yes	NJ	CAP03.09110	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Dichloroethane (cis-1,2-)
Certified	Yes	NJ	CAP03.09115	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Dichloroethane (trans-1,2-)
Certified	Yes	NJ	CAP03.09150	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Ethylbenzene
Certified	Yes	NJ	CAP03.09180	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Methyl tert-butyl ether
Certified	Yes	NJ	CAP03.09190	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Tetrachloroethene
Certified	Yes	NJ	CAP03.09195	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Toluene
Certified	Yes	NJ	CAP03.09205	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Trichloroethane (1,1,1-)
Certified	Yes	NJ	CAP03.09215	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Trichloroethene
Certified	Yes	NJ	CAP03.09245	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Vinyl chloride
Certified	Yes	NJ	CAP03.09255	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Xylene (o-)
Certified	Yes	NJ	CAP03.09260	AE	GC/MS, Tedlar Bags	[USER DEFINED Modified TO-15 for Tedlar Bags, SERAS SOP 1741]	Xylene (m + p-)

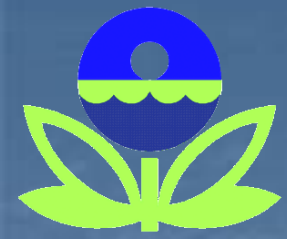
KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

----- Annual Certified Parameters List ----- Effective as of 01/29/2014 until 06/30/2014



Accreditations - 2014





For additional information concerning the scheduling, capabilities, and applications of the TAGA mobile laboratories, contact:

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US EPA/ERT-Research Triangle Park, NC

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E-mail - mickunas.dave@epa.gov.