THE ATMOSPHERIC ASSESSMENT GROUP

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SOURCES OF ASBESTOS CHRYSOTILE STRUCTURES ALONG PR 2

THE CONTRIBUTION OF ASBESTOS MINERAL CONTAINED IN BRAKE PADS, BRAKE SHOES AND LINING MATERIALS TO THE LEVELS OF ASBESTOS STRUCTURES DETERMINED TO BE PRESENT IN THE TALLABOA-ENCARNACION AREA

July 2014

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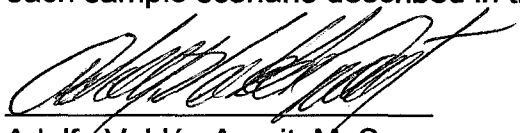
PROFESSIONAL CERTIFICATION

This certification is issued to attest that the methods used in the development of this investigation and the findings hereby presented were performed in compliance with the guidelines published by the Environmental Protection Agency for the sampling and the analysis of Asbestos Containing Materials in Commercial and Industrial Buildings. Several other documents both from the regulatory agency and from the scientific community were referenced or used in the development of the study. These are presented in the Appendix Section of the Report.

Samples were collected by a state certified Asbestos Inspector. The analysis was performed by a reference laboratory certified by the American Industrial Hygiene Association (AIHA), and following the method guidelines published by the regulatory agency. Transportation of the samples followed a strict and verified custody transfer. Custody records are present in the Appendix Section.

Findings are certified as an accurate representation of the condition described for each sample scenario described in the report.



Adolfo Valdés Agrait, M. Sc.
Asbestos Project Inspector; EQB Lic. ASB-0414-0184 SI
Asbestos Management Planner; EQB Lic. ASB-0414-0183 MP
Asbestos Project Designer; EQB Lic. ASB 0714-0297 PD

1.0 INTRODUCTION

Recent findings published by the Environmental Protection Agency demonstrated the presence of significant levels of Asbestos structures inside the facilities identified as the Jorge Lucas Pérez Valdivieso High School, Jorge Lucas Pérez Valdivieso Second Unit School, El Tuque Community Head Start, a few commerce building facilities, and several residences in the community known as Tallaboa-Encarnacion[1].

They all encompass an area located in the neighborhood, to the southeast (upwind), of the Petrochemical Complex, built in the 1950-1960. Prevailing wind conditions in the area has been defined by the local Environmental Quality Board (EQB), the PR Power Authority (PREPA), and the Caribbean Integrated Coastal Ocean Observing System (CARICOOS) Program funded by NOAA, as East-Southeast or East-Northeast, depending on the time of the day[2].

At the time of these findings (Nov. 2013), the Puerto Rico Olefins (PRO) facilities was undergoing a demolition project, guided by the work permits issued by the EQB, and the Office of General Permits (OGPe). Consistent with the environmental regulations governing these activities, all known Asbestos Containing Materials (ACM) present in the PRO plant facilities, had already been removed, and Certifications of Negative Presence of ACM were issued by a local, third party, EQB Certified Inspector, for each phase of the project[3].

The analytical data generated during the ACM Mitigation activities, and reviewed thoroughly for this investigation, demonstrated that the operation was carried out in compliance with the permits issued[3].

Area and personnel samples (for OSHA Compliance) collected and analyzed during the mitigation activities, by a reference laboratory, demonstrated that the Engineering and Administrative Controls instituted for the project, were adequate to contain the levels of asbestos fibers, below the regulated levels[3].

Asbestos is a collective term that describes a group of naturally occurring silicate minerals that are easily separated into fibers when processed. An Asbestos Structure is a term applied to isolated fibers as determined by the analytical method. The levels of Asbestos structures identified in the EPA Report fluctuated from No Asbestos Detected (NAD) to 363,000 structures/cm^2. Analysis of these samples was performed by a certified reference laboratory, following the ASTM Method 6480-05, Indirect Sample Preparation Technique and Transmission Electron Microscopy (TEM). The method is used for quantification of asbestos present in surface dust, although a word of caution is issued in the Method 6480-05 for the interpretation of the results, since it has been acknowledged that the size distribution of asbestos containing dust is substantially modified by the sample preparation and analysis.

One or more large asbestos-containing particle dispersed during sample collection and preparation procedures may result in large asbestos surface loading results in the TEM analysis of that sample. The Method strongly recommends that multiple independent samples be secured in the same area, and that a minimum of three of such samples be analyzed by the entire procedure.

The Method D 6480-05 is intended to disperse aggregated asbestos into fundamental fibrils, fiber bundles, clusters, or matrices and may not represent the physical form of the asbestos as sampled by altering the physical form of the mineral fiber aggregates. It is therefore used to obtain an estimate of the surface loading of asbestos structures.

2.0 PROJECT OBJECTIVES

Initial samples collected by EPA in the PRO facilities included samples of bulk material in the metal scraps from the demolition activities. Soil samples were also collected in the PRO facility at the time. The results of these samples reflected the presence of 40% Amosite/20% Chrysotile and 9 Amosite/Chrysotile, respectively; values that are consistent with the asbestos concentration in the insulation material used at the time of construction. Not a single fiber or structure of Amosite has been found in the Surface samples or Air samples collected by EPA in the neighborhood to the plant, suggesting the possibility that other sources of asbestos are not being considered.

The EPA banned the use of Asbestos in the Asbestos Ban and Phase-Out Rule in 1989. In 1991 the Rule was vacated by the Fifth Circuit Court of Appeals, and most of the original ban on the manufacture, importation, processing or distribution in commerce for the majority of asbestos containing products originally covered in the 1989 Rule, was overturned. The Agency issued a 'Clarification Document" in May 18, 1999, to resolve issues not completely understood by the regulated community[4].

The presence of asbestos materials in Disk Brake Pads, Linings, and Blocks and Clutch Facings has been acknowledged by the regulatory agencies. The EPA and the Occupational Safety and Health Administration (OSHA) have published guidelines for the safety during workshop task handling the automobile components. Specific sites of accumulation of asbestos dust are directed to the vehicle rims, wheels near the brake-drum friction areas[5].

Therefore, the objective of this investigation is to assess the possibility that the Chrysotile structures found in the area could be from other sources. Specific activities will be directed to assess the contribution of Brake Pads, Disks, Drums, and Blocks in commercial trucks, vans, and vehicles currently on the road traveling along PR 2, to the presence of Chrysotile structures in the environment, in the immediate neighborhood of the project site.

The investigation was commissioned by Tallaboa Industrial Park Company.

3.0 ANALYTICAL METHODOLOGIES

Background information was gathered to identify the commercial sources of Brake Pads, Shoes, Blocks, and Linings available to the consumer. Afterwards, the brand of each available material was identified from these sources. A work plan was developed and executed.

3.1 Sampling Activities

Surface samples were collected on the vehicles rims along the inside surface of the wheel. The samples were collected (July 14th, 2014) by wiping the inside surface of the rim with a Ghost Wipe obtained commercially (ASTM E 1792-Lot # Jan 16, 2013). The sample was placed in a 50 ml plastic tube, identified, and annotations were made in the Chain of Custody Record. The width of the rim and the portion of the circumference "wiped" were measured, and the surface area calculated in square centimeters. A picture of the rim was obtained along with the vehicle information.

3.2 Sample Transportation and Delivery

The samples were sent (July 15th, 2014) by Federal Express to EMSL reference laboratory in New Jersey. Transportation documents and Proof of Delivery (July 16th, 2014) are presented in Appendix Section.

3.3 Sample Analysis

The analysis to determine the Asbestos type, number of Structures and Concentration were requested on the samples submitted. Method ASTM-05 was requested for the analysis, to maintain consistency with the method reported by the regulatory agency in their report.

The results of the analysis were as follows;

Sample ID	Sample Description	Asbestos Type	Asbestos Structures	Concentration Str/cm^2
AVA-01	10,000gl Tanker; 2nd Axel- Right Wheel Rim	Chrysotile	10	248,000
AVA-02	Dodge Van; Left Rear Wheel Rim	Chrysotile	12	89,500
AVA-03	Ford Hybrid; Left Rear Wheel Rim	Chrysotile	6	37,300
AVA-04	International Truck; Left Rear Wheel Rim	Chrysotile	<2.99	< 74,200
AVA-05	Transit Van; Left Rear Wheel Rim	None Detected	<2.99	< 73,000
AVA-06	Ranger Van; Left Rear Wheel Rim	Chrysotile	18	439,000
AVA-07	Ford Explorer; Left Rear Rim	Chrysotile	23	407,000
AVA-08	Truck Brake Pad; 1st Pile	Chrysotile	<2.99	< 52,900
AVA-09	Truck Brake Pad; 2nd Pile	Chrysotile	4	70,800
AVA-10	Truck Brake Pad; 3rd Pile	None Detected	<2.99	< 52,900
AVA-11	Collection Media Blank	NA	<2.99	NA

4.0 INTERPRETATION OF RESULTS

Results of the samples collected on the rear wheels of different model of vehicles, van and trucks demonstrate the presence of asbestos structures in levels consistent with those found and reported by EPA. All the mineral structures identified are also consistent with the type of mineral reported by EPA.

The EPA report of the bulk material sampled in the PRO facility identified up to 40% of Amosite mineral in the insulation material subject of the mitigation activity. No Amosite mineral structures were found in the JLPV School, Head Start or the commercial and residential facilities. A significant inconsistency for identifying the mitigation activity as the source of the Chrysotile mineral structures found in these locations. The agency didn't collect background samples nor considered "other sources" for their findings and conclusions.

A direct correlation for the presence of Chrysotile structures in the Tallaboa Encarnacion area and the mitigation activities of the Amosite-Containing materials in the PRO facilities cannot be established. Scientific fingerprinting evidence does not sustain this decision.

This report demonstrates, the possibility that Chrysotile mineral structures could be from "other sources". A direct correlation can be stablished for the presence of Asbestos Mineral Structures in Brake Friction Materials present in the area, and the findings of Chrysotile structures in the Tallaboa Encarnacion area.

5.0 PROJECT LIMITATIONS

The collection of samples was limited to the vehicles traveling along PR 2 and PR 127 in the Tallaboa Encarnacion area in the immediate neighborhood of the JLPV School. Selection of brand, model, and location was limited to those vehicles available in the area.

6.0 CONFIDENTIALLITY

The information contained in this report, analytical findings, and sample results will be maintained as privilege and confidential information.

The release of this information shall be shared with others, only upon written authorization from the author or from written authorization from PRO Management.

APPENDIX A

PERSONNEL CERTIFICATIONS

TARJETA DE REGISTRO
PARA EL MANEJO DE ASBESTO

Esta tarjeta autoriza a:

Adolfo Valdés Agrait

Planificador

A trabajar en Puerto Rico en la categoria arriba indicada. Esta persona NO es un empleado, ni un representante de la Junta

ASB-0414-0183-MP
Número de Registro

10 de abril de 2015
Fecha de vencimiento

Firma Autorizada
Junta de Calidad Ambiental

TARJETA DE REGISTRO
PARA EL MANEJO DE ASBESTO

Esta tarjeta autoriza a:

Adolfo Valdés Agrait

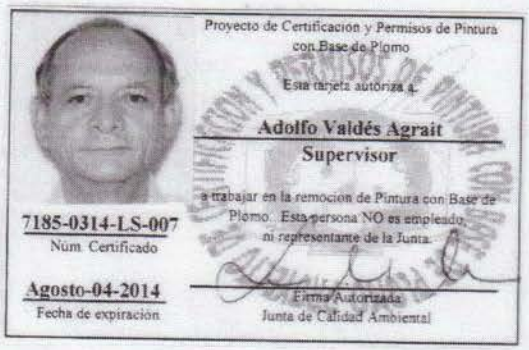
Inspector

A trabajar en Puerto Rico en la categoria arriba indicada. Esta persona NO es un empleado, ni un representante de la Junta

ASB-0414-0184-SI
Número de Registro

10 de abril de 2015
Fecha de vencimiento

Firma Autorizada
Junta de Calidad Ambiental



Proyecto de Certificacion y Permisos de Pintura con Base de Plomo

Esta tarjeta autoriza a:

Adolfo Valdés Agrait

Supervisor

a trabajar en la remocion de Pintura con Base de Plomo. Esta persona NO es empleado ni representante de la Junta.

7185-0314-LS-007
Núm. Certificado

Agosto-04-2014
Fecha de expiración

Firma Autorizada
Junta de Calidad Ambiental

TARJETA DE REGISTRO
PARA EL MANEJO DE ASBESTO

Esta tarjeta autoriza a:

Adolfo Valdes Agrait

Supervisor

A trabajar en Puerto Rico en la categoria arriba indicada. Esta persona NO es un empleado, ni un representante de la Junta

ASB-0913-0329-AS
Número de Registro

2 de septiembre de 2014
Fecha de vencimiento

Firma Autorizada
Junta de Calidad Ambiental

TARJETA DE REGISTRO DE LA
JUNTA DE CALIDAD AMBIENTAL
PARA EL MANEJO DE ASBESTO

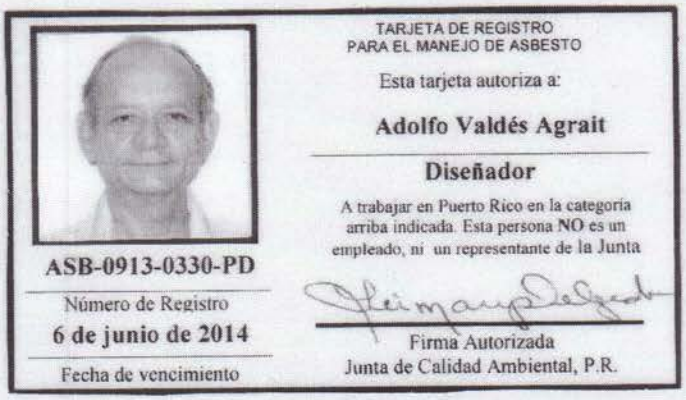
Adolfo Valdés
NOMBRE

Esp. en Monitoreo
CATEGORIA

12960367AW
NUM. DE REGISTRO

FECHA VENCIMIENTO

FIRMA AUTORIZADA



TARJETA DE REGISTRO
PARA EL MANEJO DE ASBESTO

Esta tarjeta autoriza a:

Adolfo Valdés Agrait

Diseñador

A trabajar en Puerto Rico en la categoria arriba indicada. Esta persona NO es un empleado, ni un representante de la Junta

ASB-0913-0330-PD
Número de Registro

6 de junio de 2014
Fecha de vencimiento

Firma Autorizada
Junta de Calidad Ambiental, P.R.

APPENDIX B

REFERENCE LABORATORY CERTIFICATIONS

June 30, 2014

Laboratory ID: 100194

Patricia Kirkland
EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

Dear Ms. Kirkland:

AIHA Laboratory Accreditation Programs, LLC (AIHA-LAP, LLC) has approved an extension to your laboratory's current certificate of accreditation in the Industrial Hygiene Laboratory Accreditation Program (IHLAP), Environmental Lead Accreditation Program (ELLAP) and Environmental Microbiology Accreditation Program (EMLAP). This extension will expire on September 01, 2014. Remember that your laboratory must maintain proficiency per Policy Module 6 in order for the new certificate to be issued.

Your laboratory remains an accredited laboratory in IHLAP, ELLAP and EMLAP. Please keep a copy of this letter with your expired certificate. If you have questions or concerns, please feel free to contact Patricia Sheehan, Laboratory Accreditation Specialist at (703) 846-0739.

Sincerely,

Cheryl O. Morton

Cheryl O. Morton
Managing Director
AIHA Laboratory Accreditation Programs, LLC

AIHA Laboratory Accreditation Programs, LLC

acknowledges that

EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077

Laboratory ID: 100194

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC accreditation to the ISO/IEC 17025:2005 international standard, *General Requirements for the Competence of Testing and Calibration Laboratories in t*he following:

LABORATORY ACCREDITATION PROGRAMS

✓	**INDUSTRIAL HYGIENE**	Accreditation Expires: 07/01/2014
✓	**ENVIRONMENTAL LEAD**	Accreditation Expires: 07/01/2014
✓	**ENVIRONMENTAL MICROBIOLOGY**	Accreditation Expires: 07/01/2014
☐	**FOOD**	Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached **Scope of Accreditation**. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2005 and AIHA-LAP, LLC requirements. This certificate is not valid without the attached **Scope of Accreditation**. Please review the AIHA-LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

S. D. Allen Iske, PhD, CIH, CSP
Chairperson, Analytical Accreditation Board

Cheryl O. Morton

Cheryl O. Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC

Revision 12: 03/29/2012

Date Issued: 07/31/2012

AIHA
Laboratory Accreditation Programs, LLC

IHLAP Scope Category	Field of Testing (FoT)	Technology sub-type/ Detector	Published Reference Method/Title of In-house Method	Method Description or Analyte *(for internal methods only)*
Spectrometry Core	Atomic Absorption	CVAA	NIOSH 6009	
			OSHA ID-145	SOP LM-015
			OSHA ID-145	SOP LM-013
		FAA	NIOSH 7082	
		GFAA	NIOSH 7105	
	Inductively-Coupled Plasma	ICP/MS	NIOSH 7300 Modified	
		ICP/AES	NIOSH 7300	
	X-ray Diffraction (XRD)		NIOSH 7500	
			OSHA ID-142	
	UV/VIS (Colorimetric)		NIOSH 6010	
Asbestos/Fiber Microscopy Core	Polarized Light Microscopy (PLM)		EPA 600/R-93/116	
	Phase Contrast Microscopy (PCM)		NIOSH 7400	
	Transmission Electron Microscopy (TEM)		EPA AHERA - 40 CFR Part 763	
			NIOSH 7402	
Miscellaneous Core	Gravimetric		NIOSH 0500	
			NIOSH 0600	
			NIOSH 5524	
	Thermo-optical Analysis (TOA)		NIOSH 5040	

The laboratory participates in the following AIHA-LAP, LLC-approved proficiency testing programs:

- ✓ AIHA-PAT Programs, LLC IHPAT Metals
- ✓ AIHA-PAT Programs, LLC IHPAT Organic Solvents
- ✓ AIHA-PAT Programs, LLC IHPAT Silica
- ✓ AIHA-PAT Programs, LLC IHPAT Diffusive Sampler (3M)
- ❑ AIHA-PAT Programs, LLC IHPAT Diffusive Sampler (SKC)
- ❑ AIHA-PAT Programs, LLC IHPAT Diffusive Sampler (AT)
- ✓ AIHA-PAT Programs, LLC IHPAT Asbestos
- ❑ AIHA-PAT Programs, LLC Bulk Asbestos (BAPAT)
- ❑ AIHA-PAT Programs, LLC Beryllium (BePAT)
- ✓ HSE Workplace Analytical Scheme for Proficiency (WASP) (Formaldehyde)
- ❑ HSE Workplace Analytical Scheme for Proficiency (WASP) (Thermal Desorption Tubes)
- ❑ Pharmaceutical Round Robin
- ❑ Compressed/Breathing Air Round Robin
- ✓ National Voluntary Laboratory Accreditation Program (NVLAP - determined at the time of site assessment)
- ❑ New York State Department of Health (NYS DOH – PCM and TEM)
- ✓ ERA Air and Emissions standards for indoor air quality
- ❑ Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA, formerly BGIA)
- ❑ Institut de Recherche Robert-Sauvé en Santé et en Sécurité du Travail (IRSST)

APPENDIX C

TRANSPORTATION DOCUMMENTATION AND PROOF OF DELIVERY

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Company TAAG

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Address VILLA DE JUAN

City PONCE State/Province PR

Country USA ZIP/Postal Code 00716

2 To

Recipient's Name Phone (212) 290-0051

Company EMSL

Address 307 WEST

Address 38TH STREET Dept/Floor

City NEW YORK State/Province NY

Country USA ZIP/Postal Code 10018

Recipient's Tax ID Number for Customs Purposes
e.g., GST/RFC/VAT/IN/EIN/ABN, or as locally required.

3 Shipment Information

☐ **For EU Only:** Tick here if goods are not in free circulation and provide C.I.

Total Packages Shipper's Load and Count/SLAC 1 **Total Weight** ☐ lbs. ☐ kg **DIM** L / W / H ☐ in. ☐ cm

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
AIR & WIPE SAMPLES FOR ACM		USA	$100.

Has EEI been filed in AES? *For U.S. Export Only: Check One*

☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR

☐ No EEI required, enter exemption number: If other than NLR, enter License Exception:

☐ Yes – Enter AES proof of filing citation:

Total Declared Value for Carriage $100.

Total Value for Customs (Specify Currency) $100.

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For packages over 150 lbs. (68 kg), use the FedEx Expanded Service Intl. Air Waybill.

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☐ ☐ FedEx Intl. Economy FedEx Envelope and FedEx Pak rate not available.

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☐ Other ☐ FedEx 10kg Box* ☐ FedEx 25kg Box*

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Credit Card Exp. Date

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TIP ACM IN BRAKES

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Sender's Signature:

This is not authorization to deliver this shipment without a recipient signature.

Not all services and options are available to all destinations. Dangerous goods cannot be shipped using this Air Waybill.

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568

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FedEx

25 Julio, 2014

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Información de entrega:

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Firmado por:	.RENATA	**Lugar de entrega:**	NEW YORK, NY
Tipo de servicio:	FedEx International Priority	**Fecha de entrega:**	Jul 16, 2014 10:05
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Número de rastreo:	804298863270	**Fecha de envío:**	Jul 15, 2014
		Peso:	1.0 lbs/0.5 kg

Destinatario:	**Remitente:**
NEW YORK, NY US	PONCE, PR US
Referencia	TIP ACM IN BRAKES

Gracias por elegir FedEx. Esperamos trabajar con usted en el futuro.

APPENDIX D

REFERENCE LABORATORY REPORT

EMSL Analytical, Inc.
307 West 38th Street, New York, NY 10018
Phone/Fax: (212) 290-0051 / (212) 290-0058
http://www.EMSL.com manhattanlab@emsl.com

EMSL Order:	031427540
CustomerID:	ATMO50
CustomerPO:	CK 8640
ProjectID:	

Attn: **The Atmospheric Assessment Group**
Sabanetas Industrial Park M-1380
P.O. Box 219
Mercedita, 00715-0219

Phone:	(787) 842-5048
Fax:	(787) 842-8592
Received:	07/16/14 10:57 AM
Analysis Date:	7/21/2014
Collected:	7/14/2014

Project: **TIP/ ACM IN BRAKES**

Test Report: Asbestos Analysis of Wipe Samples Using Method ASTM 6480

SAMPLE ID	AREA SAMPLED (cm^2)	ASBESTOS TYPE	ASBESTOS STRUCTURES	Sensitivity (str/cm^2)	CONCENTRATION (str/cm^2)	COMMENTS
AVA-W-01 *031427540-0001*	193.5	Chrysotile	10	24800	248000	
AVA-W-02 *031427540-0002*	644.5	Chrysotile	12	7460	89500	
AVA-W-03 *031427540-0003*	774.2	Chrysotile	6	6210	37300	
AVA-W-04 *031427540-0004*	193.5	Chrysotile	<2.99	24800	<74200	
AVA-W-05 *031427540-0005*	196.6	None Detected	<2.99	24400	<73000	
AVA-W-06 *031427540-0006*	196.6	Chrysotile	18	24400	439000	
AVA-W-07 *031427540-0007*	270.97	Chrysotile	23	17700	407000	
AVA-W-08 *031427540-0008*	270.97	Chrysotile	<2.99	17700	<52900	
AVA-W-09 *031427540-0009*	270.97	Chrysotile	4	17700	70800	
AVA-W-10 *031427540-0010*	270.97	None Detected	<2.99	17700	<52900	
AVA-W-11 *031427540-0011*		None Detected	<2.99			Blank

Analyst(s)

David Z. Chen (7)
Gerald Iannuzzi (4)

James Hall, Laboratory Manager
or other approved signatory

Samples analyzed by EMSL Analytical, Inc. New York, NY

Report Amended: 07/25/2014 13:01:28 Replaces Report Amended: 07/25/2014 12:56:50. Reason Code: Data Entry-Change to PO

031427540

OrderID: 031427540

The Atmospheric Assessment Group
Sample Custody Record

(787) 504-0279; taagoup2@gmail.com

Client Name: TIP

Project Name: ACM IN BRAKES

Sampling Date: JULY 14TH 2014

Sample I.D.	Sample Identification	Surface Area		Sampling Media	Analysis Requested	Analysis Result	
AVA-1 W-01	TANKER 10,000 GL RIGHT 2ND AXEL RIM.	R-22.5	10	GHOST WIPE	248,000		
2 W-02	DODGE - RED; LEFT REAR RIM	R-20	12		89,500		
3 W-03	FORD - HYBRID; LEFT REAR RIM	R-16	6		37,300		
4 W-04	INT'L TRUCK; LEFT REAR RIM	R-22.5	<2.99		< 74,200		
5 W-05	TRANSIT VAN; LEFT REAR RIM	R-15	<2.99		< 73,000		
6 W-06	RANGER VAN; LEFT REAR RIM	R-16	18		439,000		
7 W-07	FORD EXPLORER; LEFT REAR RIM	R-16	23		407,000		
8 W-08	1ST TRUCK BRAKE PAD	7"x6"	<2.99		< 52,900		
9 W-09	2ND TRUCK BRAKE PAD	7"x6"	4		70,800		
10 W-10	3RD TRUCK BRAKE PAD	7"x6"	<2.99		< 52,900		

BK <2.99

Collected By: ADOLFO VALDÉS-AGRAIT

Released By: ADOLFO VALDÉS-AGRAIT

Received By: Sylvia Rios 7/16/14 10:57 AM

Shipping Tracking Number: 804298863270

The Atmospheric Assessment Group
Sample Custody Record

(787) 504-0279; taagoup2@gmail.com

031427540

OrderID: 031427540

Client Name: TPI

Project Name: ACM IN BRAKES

Sampling Date: JULY 14TH 2014

Sample I.D.	Sample Identification	Surface Area		Sampling Media	Analysis Requested	Analysis Result	
1 AVA-W-11	MEDIA BLANK			GHOST WIPE			
2							
3							
4							
5							
6							
7							
8							
9							
10							

Collected By: ADOLFO VALDÉS AGRAIT

Released By: ADOLFO VALDÉS AGRAIT

Received By: Sylvia Rios 7/16/14 10:57 AM

Shipping Tracking Number: _____

2/2

APPENDIX E

REFERENCE DOCUMENTS USED IN THE INVESTIGATION

REFERENCES

1-EPA Report of Findings; Phase I, II, IIIA & IIIB.

2-CARICOOS: Data from Marine Buoy for Nov.18, 19, 20, & 21, 2013 & EQB Wind Speed and Direction Graph for Tallaboa Area (2013).

3-Homeca Recycling & Demolition Corp. Closure Reports to EQB;

Permit No. 1: PG-ASB-57-0910-0125-RC

Permit No. 2: PG-ASB-57-0911-0112-RC

Permit No. 3: PG-ASB-57-1212-0175-RC

4-EPA-TSCA: Asbestos Ban and Phase Out (1989).

5-EPA: Asbestos Materials Ban: Clarification Letter (1999).

OSHA: Safety in Brake & Clutch Repair Work.

APPENDIX F

PICTORIAL EVIDENCE OF VEHICLE TIRE RIMS

AVA-W-01; 10,000 Gal Tanker

AVA-W-04; Int'l Delivery Truck

AVA-W-05; Transit Van

AVA-W-06; Ranger Van

AVA-W-03; Ford Hybrid

AVA-W-02; Dodge Van

AVA-W-07; Ford Explorer

AVA-W-08, 09 & 10

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION II
Emergency and Remedial Response Division
290 Broadway, 18th Floor
New York, New York 10007-1866

MEMORANDUM

TO: Case File

FROM: Chuck Nace, Environmental Toxicologist Chuck Nace 11/06/14
ERRD/PSB/TSS

DATE: November 6, 2014

RE: Technical review of "Sources of Asbestos Chrysotile Structures Along PR 2"

Please find my comments, which focused the document submitted by Tallaboa entitled "Source of Asbestos Chrysotile Structures Along PR 2". The document provided information suggesting that the source of asbestos in the Jorge Lucas Valdivieso School is from vehicle brake pads. Additionally, the document concludes that the wind direction is always from the east. A technical review of the document indicates that neither of these conclusions are valid. Please let me know if you need any additional information.

cc: Chloe Metz, TSS

Response to "Sources of Asbestos Chrysotile Structures Along PR 2"

There were three major points of discussion raised in the above mentioned document prepared by The Atmospheric Assessment Group: (1) wind patterns in the area, (2) types of asbestos detected and (3) hypothesis of brake pads being the source of asbestos. EPA has reviewed the document and finds that the report is lacking in study design, sample collection, QA/QC, and statistical relevance, and that the report's conclusions, which state brake pads are the primary source of asbestos, are not supported by the results. Further EPA would like to address the three major points of discussion listed above to illustrate the science that was used to support EPA's determination of the source of asbestos in the Jorge Lucas Valdivieso School.

Wind Patterns

The second paragraph in the introduction section indicates that the petrochemical complex lies to the northeast of the school, head start, and community. Additionally, it states that the prevailing winds blow from the east-southeast to east-northeast. While both of these statements are accurate, there is a difference between prevailing wind and wind that is related to weather systems and microclimates, which may be associated with interactions with oceans and change in elevation (i.e., mountains). EPA examined the wind direction in the local area, as measured at the Ponce Airport[1], from January 2010 through July 2013. As can be seen in the bottom graph in Figures 1, 2, 3 and 4, the wind direction does vary, and in certain times of the year (specifically from September to December), the wind routinely blows from west-northwest to north. This change in wind direction is highlighted in the figures with a blue oval. EPA also compared the wind direction measured at the PR Olefin site from January 20, 2014 through July 23, 2014 with wind data measured at the Ponce Airport from the same timeframe (Figure 5) to determine if the data collected at the Ponce Airport was able to be used as a surrogate for wind direction near the site. In general, the measured directions were similar, although not exact matches. This shows that although the prevailing winds are from the east-southeast to east-northeast, there were many occasions during the time that demolition activities occurred on the PR Olefins site that the wind was blowing in other directions, including from the west-northwest and northwest directions.

EPA also used the data collected from the Ponce Airport to obtain information on the wind direction on the day, November 27, 2013, that a staff member from the Jorge Lucas Valdivieso School reported a dust cloud entered the building. During the morning hours there was light wind blowing from the north, changing later in the day to the east and south-east (Figure 6), followed by calm (i.e., no wind) through midnight of November 28, 2013 (Figure 7). Based on this information, the eyewitness report can be validated. Although there were some measurements of wind switching to the east and east-southeast for several hours of the day on November 27, 2013 at the Ponce Airport, there may have been local weather conditions that were different. Additionally, the winds were light, as measured in Ponce, and the force from the impact of the stack could easily transport dust and fibers in directions against light wind.

[1] Ponce Airport weather data obtained from www.wunderground.com/history/airport/TJPS/2014/10/15/DailyHistory.html?MR=1

Types of Asbestos Detected

The first paragraph in Section 2 of the document indicates that "Not a single fiber or structure of Amosite has been found in the Surface samples or Air samples collected by EPA in the neighborhood to the plant, suggesting the possibility that other sources of asbestos are not being considered." This statement is not accurate. EPA did find several samples in the neighborhood (W-005-001, W-006-001 and W-008-001) and in the school (P0069-MV02-01) that contained amosite. These samples also contain chrysotile. Additionally, based upon the research and sampling that was done for the PR Olefins site, there is a plausible explanation why amosite was not distributed equally with chrysotile. The data indicates that the insulation on the boilers consisted primarily of amosite (40% with small quantities of chrysotile (5%) while the insulation on the stacks and tanks consisted primarily of chrysotile (50%) with small quantities of amosite (5%). The boilers were located at ground level and the stacks and tanks were elevated above ground level. The disturbance and release of fibers at the ground level during weathering and removal would have less dispersion than the fibers released from materials that were higher in elevation. Additionally, there was more surface area on the stacks and tanks when compared with the boilers, which would lead to chrysotile being the predominate type of asbestos being released from the site.

Brake Pads as Source of Asbestos

In evaluating the hypothesis presented in the document, that the source of asbestos in the schools was from brake pads of automobiles, multiple references were examined. Additionally, several scientists that work in the asbestos field were consulted and their input is included in the comments below.

As indicated above, the study design was not adequate to make any conclusions based on the data that was collected. The greatest flaw is that chrysotile was the most widely used form of asbestos and there is no way to "fingerprint" the origin or material from which the fiber was derived. This indicates that there is no way to differentiate chrysotile that came from the site or chrysotile that came from brake pads. There was also no testing or evidence showing that the brake pads on the vehicles samples contained asbestos or that the fibers that were found in the rims were migrating a substantial distance into the community. Additionally, given that it has been shown that asbestos has been released into the community, sampling vehicles that are local to the community may be measuring fibers that settled on the rims from the surrounding environment. This is supported by a document prepared by the California Air Resource Board that indicates "Although brake material contains about 50 percent asbestos, the emitted particles contain only about 0.29 percent asbestos. Apparently, most of the original asbestos fibers are broken down into nonfibrous materials (magnesium silicates) during the braking process (Lynch 1968, Rowson 1978, Williams and Muhlbaier 1982)."

Given this, EPA does not accept the conclusions of the document that was submitted by Tallaboa and contends that the source of asbestos in the schools and surrounding community is from an environmental release of asbestos from the petrochemical property.

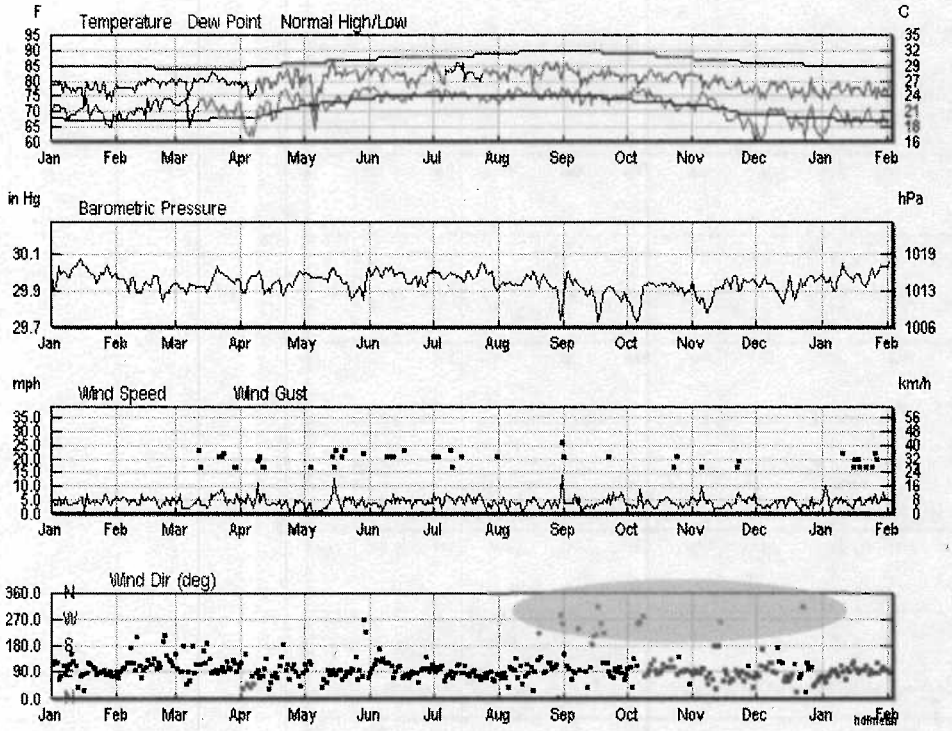


Figure 1. Wind direction from 2010 as measured at the Ponce Airport

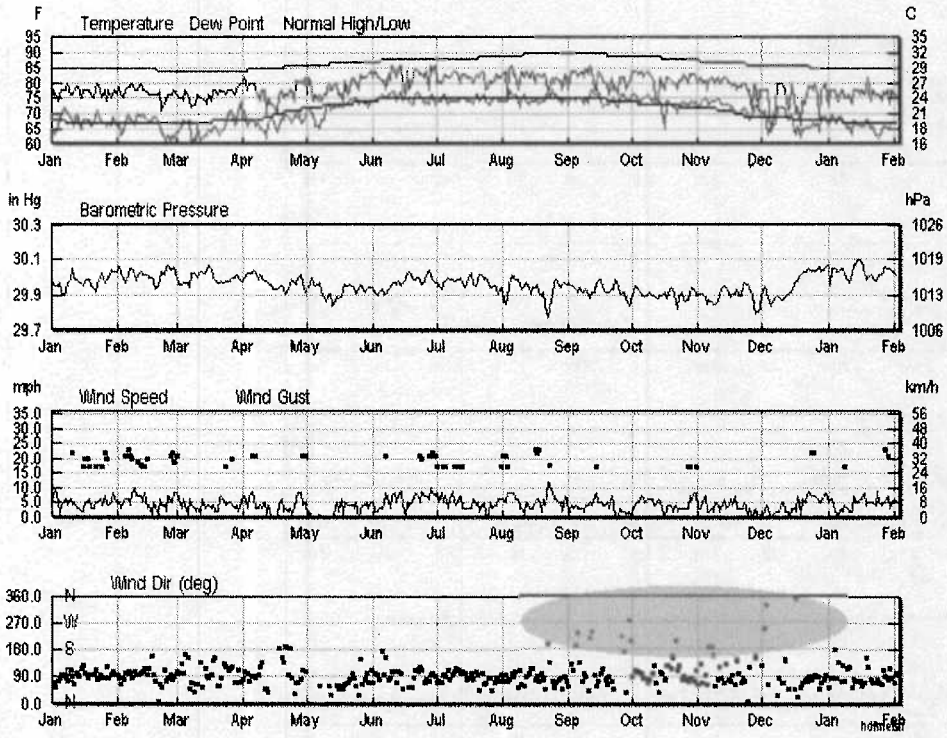


Figure 2. Wind direction from 2011 as measured at the Ponce Airport

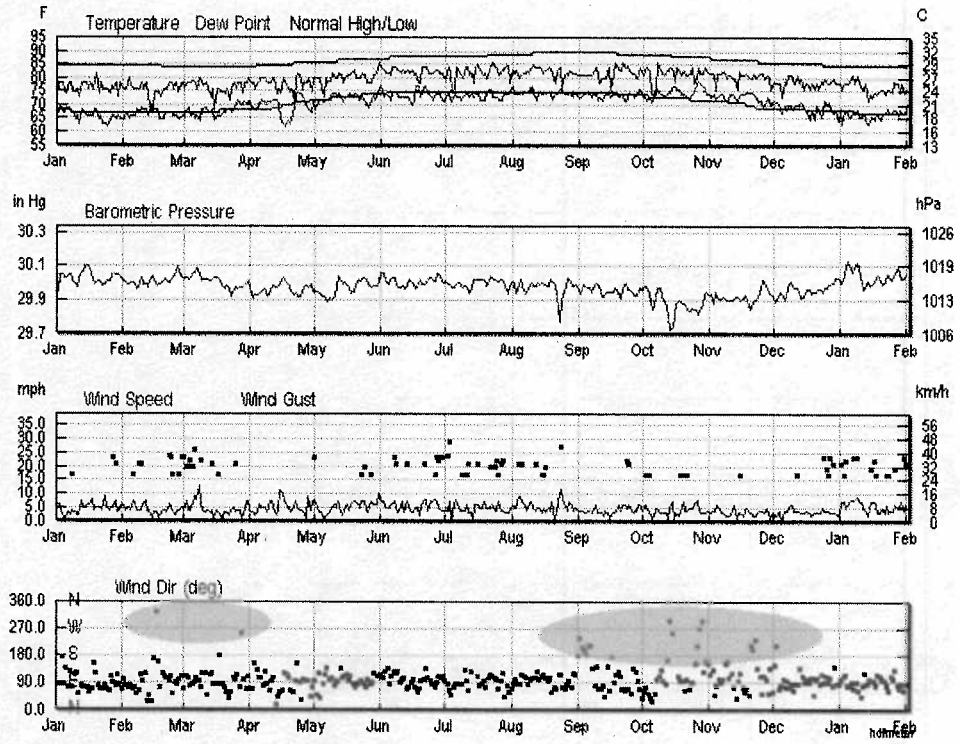


Figure 3. Wind direction from 2012 as measured at the Ponce Airport

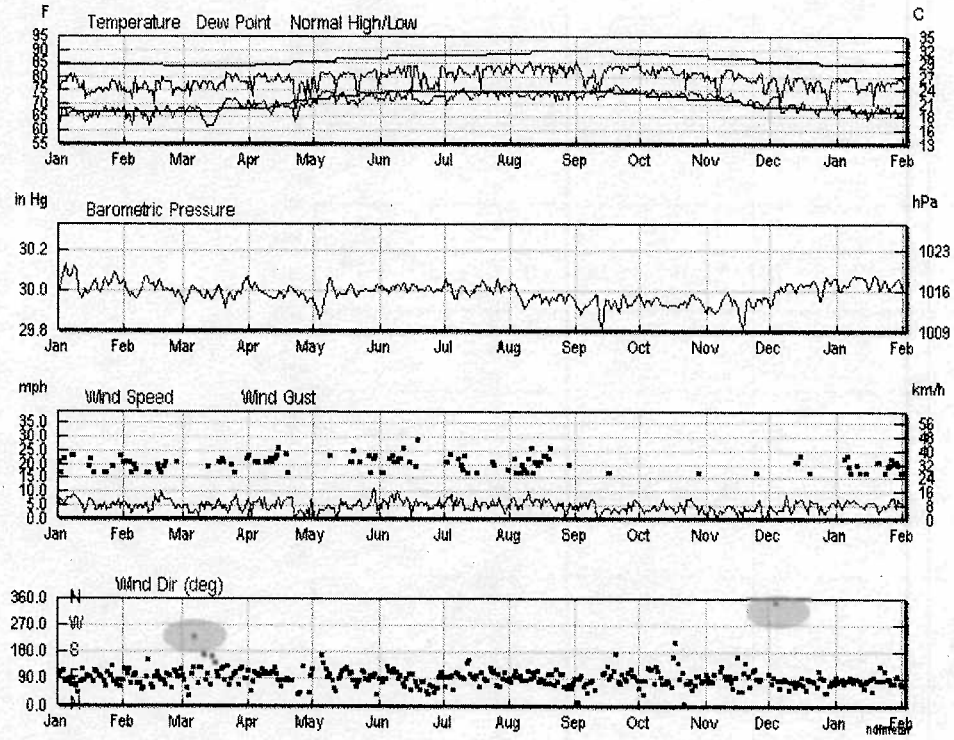


Figure 4. Wind direction from 2013 as measured at the Ponce Airport

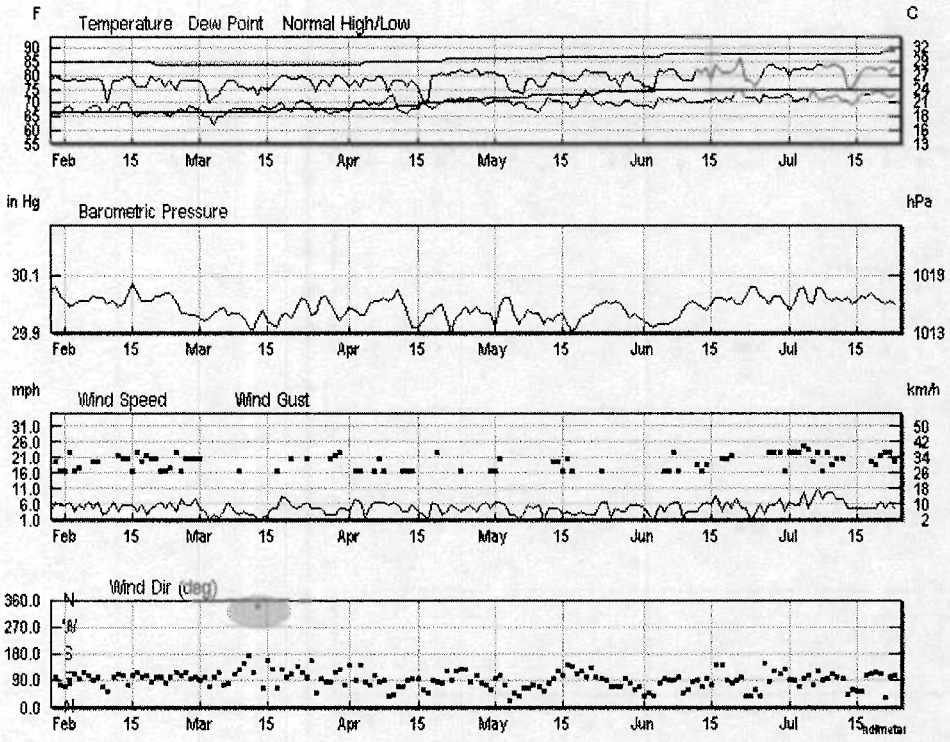
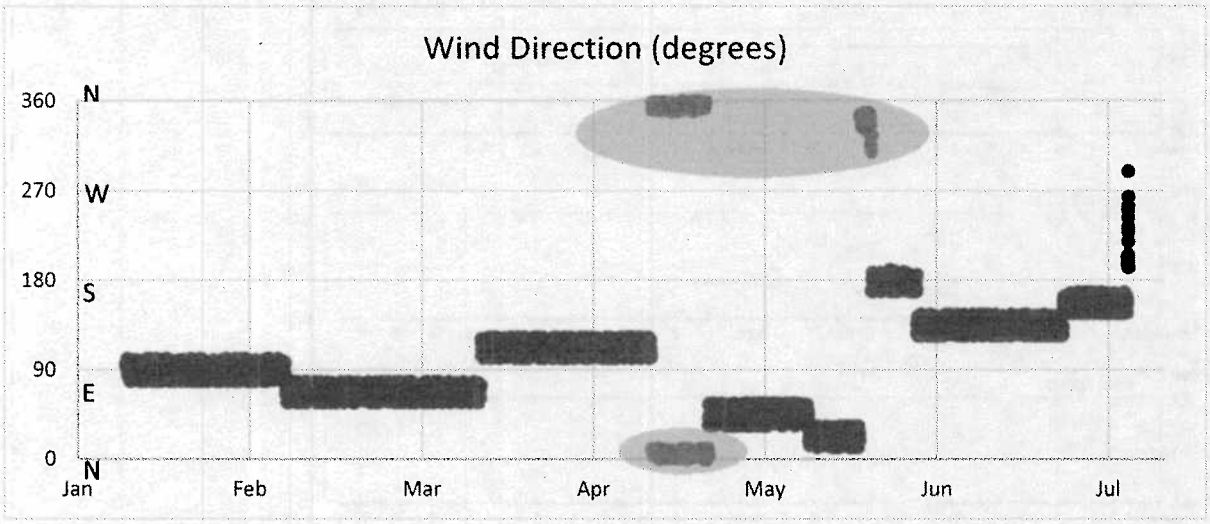


Figure 5. Wind direction from 2014 as measured at the Ponce Airport compared for the same period of time as meteorological data was collected from the PR Olefins site (January 29, 2014 to July 23, 2014) – see below



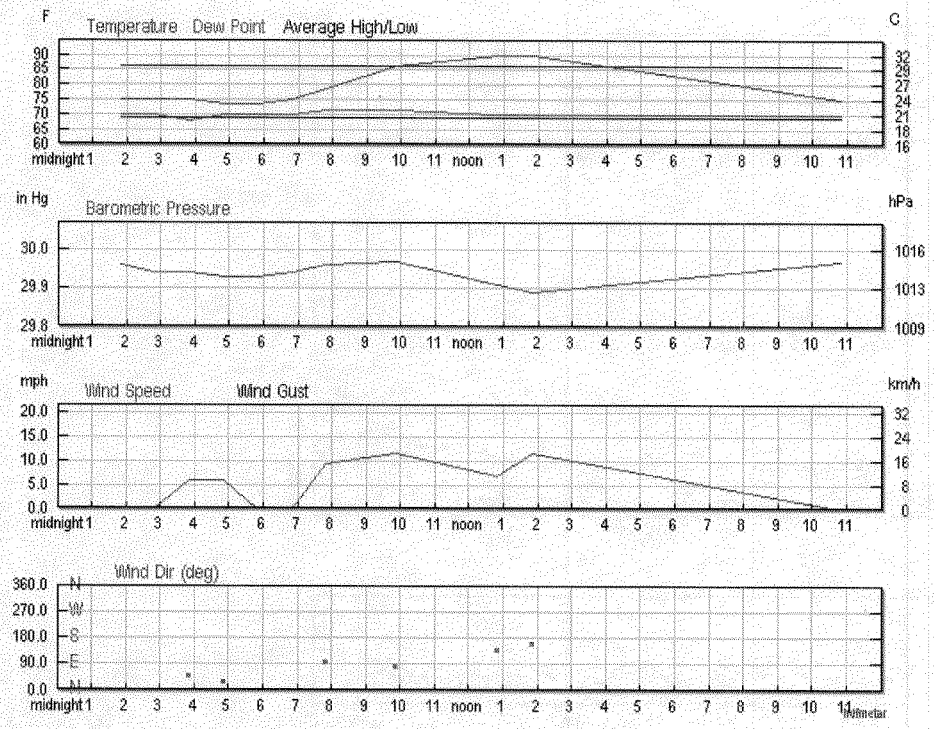


Figure 6. Wind direction as measured at Ponce Airport on November 27, 2013, the day of the Turkey Trot and reported dust cloud at the school

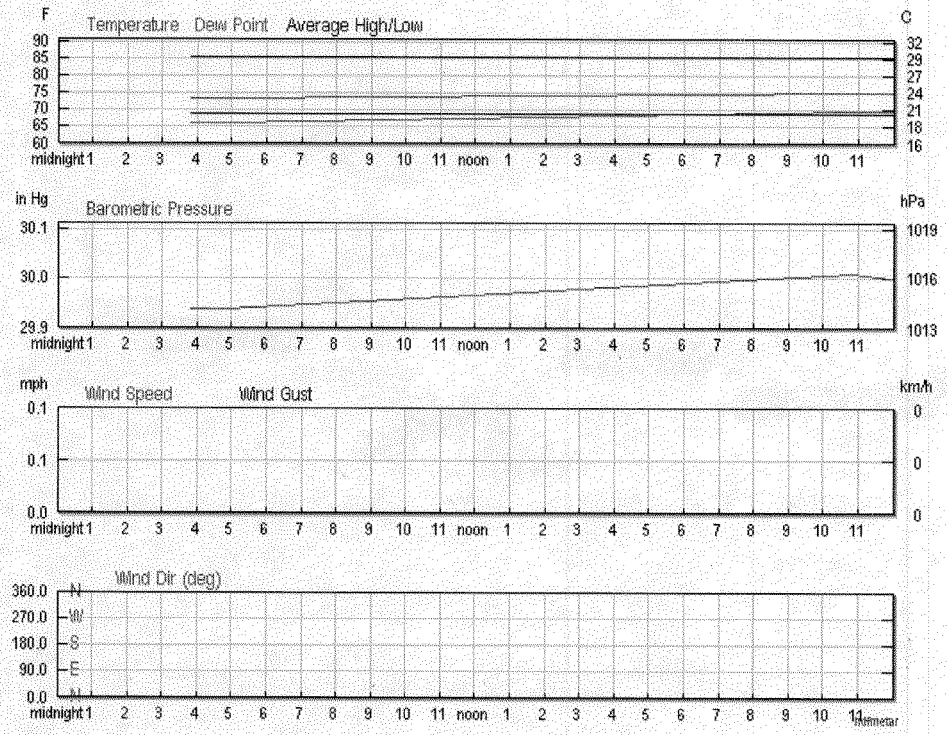


Figure 7. Wind direction as measured at Ponce Airport on November 28, 2013