CTEH® CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Arkema Facility - Harvey Response

Crosby, TX

Arkema Inc.

September 4, 2017

Project #109489 Evacuation Zone Data Summary

1.0 Introduction

As a result of flooding events related to Hurricane Harvey, the Arkema facility located in Crosby, TX suffered a loss of power and failure on refrigeration of manufacturing process. The loss of temperature control resulted in degradation and heating of organic peroxides, with the potential of creating a fire. As a precautionary measure, local authorities established a 1.5-mile radius evacuation zone around the facility.

On September 3, 2017, the Center for Toxicology and Environmental Health, LLC (CTEH®) initiated air monitoring in the community areas within the evacuation zone to support data needs for the evaluation of evacuation zone adequacy by unified command. This submittal summarizes the results of the real-time air monitoring that was conducted by CTEH® personnel from 21:04 on September 3, 2017 to 05:50 on September 4, 2017. A map of the 193 readings is provided in **Attachment A**.

2.0 Real-time Air Monitoring

All real-time air monitoring instrumentation was calibrated per the manufacturer's recommendations prior to air monitoring. Handheld, real-time air monitoring was conducted for benzene, and volatile organic compounds (VOCs) using the RAE Systems MultiRAE and UltraRAE. Additionally, combustion byproducts potentially associated with fire smoke, such as particulate matter ($PM_{2.5}$), and sulfur dioxide (SO_2), were assessed. **Table 1** summarizes the data for all real-time air monitoring readings recorded within a 1.5-mile radius of the Arkema facility in Crosby, TX from 21:04 on September 3, 2017 to 05:50 on September 4, 2017.

Table 1 Real-time Handheld Air Monitoring Readings
21:04 September 3, 2017 – 05:50 September 4, 2017

Analyte	Instrument	Number of Readings	Number of Detections	Range of Detections*
Benzene	UltraRAE	7	0	< 0.025 ppm
CO	MultiRAE Plus	23	0	< 1.0 ppm
$PM_{2.5}$	AM510	46	46	0.025 - 0.129 mg/m^3
	Dusttrak	22	22	0.027 - 0.48 mg/m^3
SO_2	MultiRAE Plus	23	0	< 0.1 ppm
VOCs	MultiRAE Plus	72	0	< 0.1 ppm

*If detections were not observed, the instrument detection limit is listed in this column.

Attachment A

Handheld Real-time Air Monitoring Locations

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Hand-held Real-time Reading Locations

Harvey Response - 21:04 September 3, 2017 to 05:50 September 4, 2017

Project: 109489
Client: Arkema
City: Crosby, TX
County: Harris

PROJECTION SYSTEM: *UTM15* COORDINATE SYSTEM: *WGS84*

Last Updated: *9/4/2017 2:43:28 PM*

Attachment B

KHPY Windrose

(Highland Park Airport - 12.5 miles SSE of Site)

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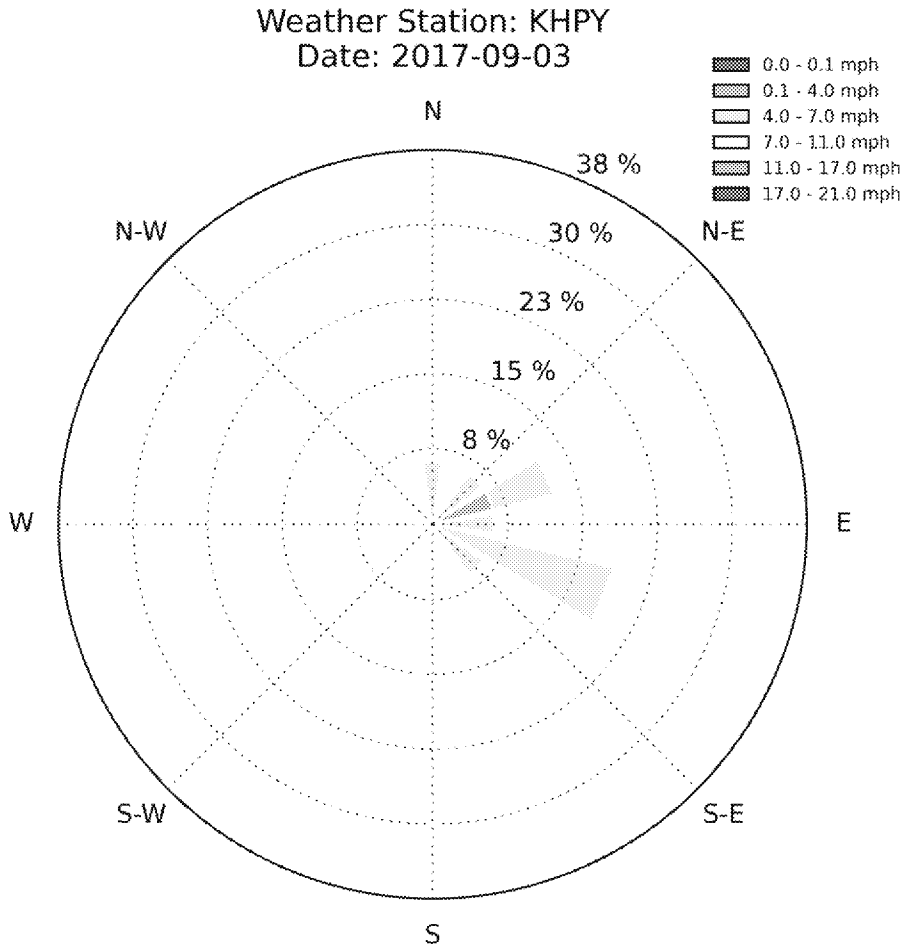
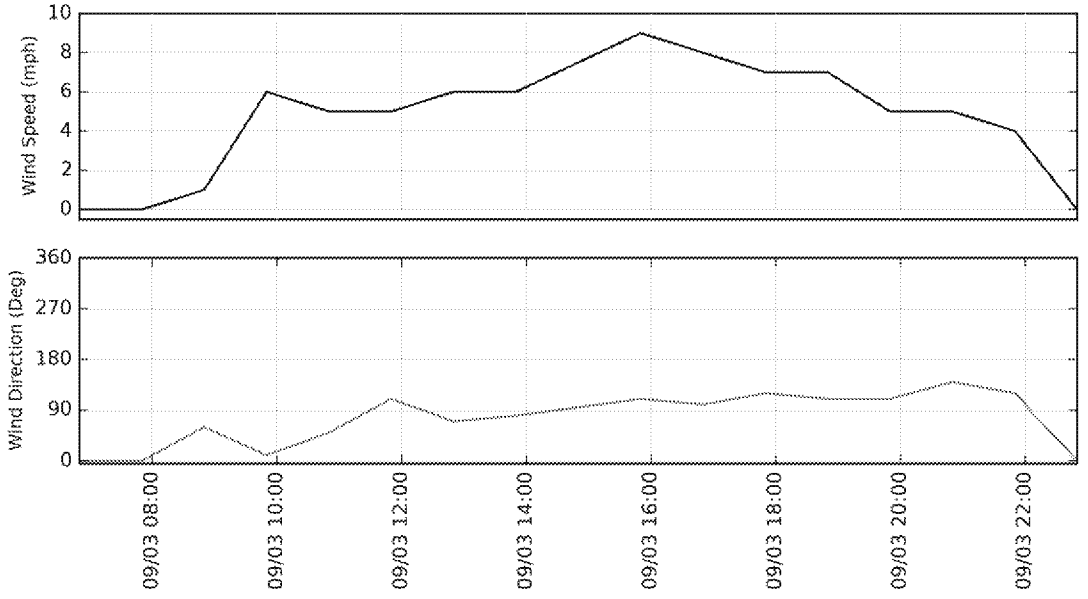
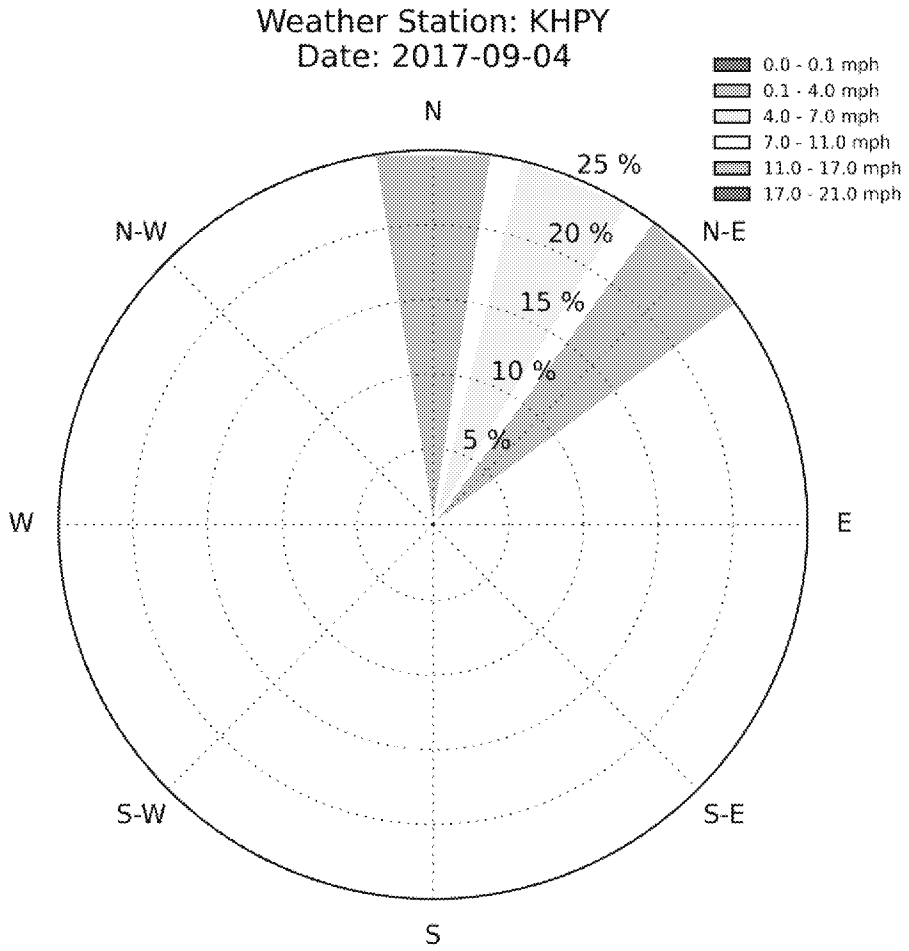
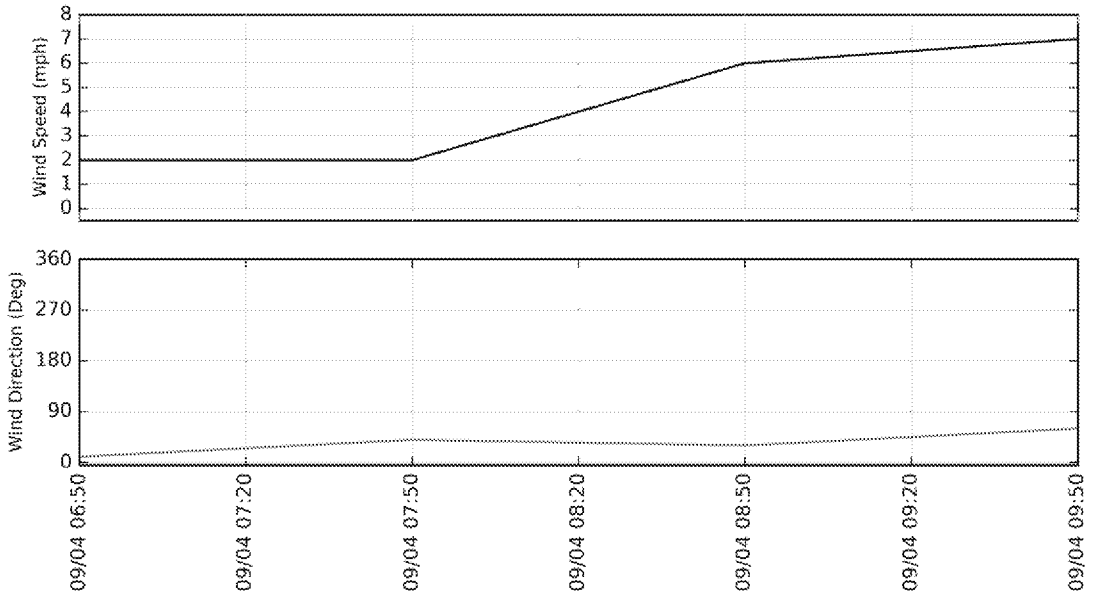

Weather Station: KHPY
Date: 2017-09-03
0.0 - 0.1 mph
0.1 - 4.0 mph
4.0 - 7.0 mph
7.0 - 11.0 mph
11.0 - 17.0 mph
17.0 - 21.0 mph
N
N-E
E
S-E
S
S-W
W
N-W
38 %
30 %
23 %
15 %
8 %


Wind Speed (mph)
10
8
6
4
2
0
Wind Direction (Deg)
360
270
180
90
0
09/03 08:00
09/03 10:00
09/03 12:00
09/03 14:00
09/03 16:00
09/03 18:00
09/03 20:00
09/03 22:00

CTEH


Weather Station: KHPY
Date: 2017-09-04
0.0 - 0.1 mph
0.1 - 4.0 mph
4.0 - 7.0 mph
7.0 - 11.0 mph
11.0 - 17.0 mph
17.0 - 21.0 mph
N
N-E
E
S-E
S
S-W
W
N-W
25 %
20 %
15 %
10 %
5 %


Wind Speed (mph)
0
1
2
3
4
5
6
7
8
Wind Direction (Deg)
0
90
180
270
360
09/04 06:50
09/04 07:20
09/04 07:50
09/04 08:20
09/04 08:50
09/04 09:20
09/04 09:50

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