From:	Tina Tran
To:	Guadalupe Quiroz
Subject:	Fw:
Date:	Friday, September 1, 2017 3:30:22 PM
Attachments:	image001.gif Hurricane Harvey Water QASP Addendum.docx Copy of HazMat Air Monitoring.xlsx

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QUALITY ASSURANCE SAMPLING PLAN ADDENDUM

FOR

ARKEMA
WATER SAMPLING
HURRICANE HARVEY RESPONSE SUPPORT
IMPACTED AREAS ALONG THE TEXAS AND LOUISIANA GULF COAST

Prepared for

U.S. Environmental Protection Agency Region 6
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August 2017

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1. INTRODUCTION

START-4 has prepared this Quality Assurance Sampling Plan (QASP) Addendum to describe the technical scope of work at the Arkema Facility spill in conjunction with the Hurricane Harvey Response. This Addendum only addresses the additional elements pertaining to the Arkema sampling event, and is to be used with the original Water Sampling QASP.

2. SITE BACKGROUND, LOCATION, AND DESCRIPTION

At approximately 2 a.m. CDT, on 31 August 2017, the Harris County Emergency Operations Center (EOC) was notified of two explosions and black smoke coming from the Arkema Inc. plant in Crosby, Texas. Local officials had previously established an evacuation zone in an area 1.5 miles from the plant, based on their assessment of the situation. The objective of the sampling is to obtain data in relation to the Arkema chemical explosion and spill. The Arkema plant produces liquid organic peroxides (in a product called Luperox®) that are primarily used in the production of plastic resins, polystyrene, polyethylene, polypropylene, PVC and polyester reinforced fiberglass, and acrylic resins. The chemicals associated with this product include the following:

TABLE 2-1
Chemicals of Concern (COCs)

Analyte	CAS#
Neodecaneperoxoic acid, 1,1- dimethylpropyl ester	68299-16-1
Naphtha (petroleum), heavy alkylate	64741-65-7
Naphtha (petroleum), hydrotreated heavy	64742-48-9
Hydroperoxide, 1,1-dimethylpropyl	3425-61-4
Peroxydicarbonic acid, dipropyl ester	16066-38-9
Neodecaneperoxoic acid, 1-methyl-1- phenylethyl ester	26748-47-0
Propaneperoxoic acid, 2,2-dimethylehtyl ester, 1,1-dimethylethyl ester	927-07-1
Peroxide, bis(1,1-dimethylpropyl)	10508-09-5

These chemicals are specialty chemicals that commercial labs are unable to analyze for and no risk levels have been established. General volatile (VOCs) and semivolatile (SVOCs) analysis will be conducted and the results of these analyses will be assessed against the Regional Removal

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Management Levels for Chemicals (RMLs) at the HQ>3 or risk level of 10-4 or greater to determine unacceptable risk (https://www.epa.gov/risk/regional-removal-management-levels-chemicals-rmls). If either of these risk levels are exceeded the facility will be moved to a site specific investigation for the evaluation and mitigation of the associated risks. In addition a, specialty analysis for the prescience or absence of Naphtha will be conducted. This analysis is not an EPA approved method, and will be used only for the determination of chemical presence, not risk.

It is important to note that the absence of hazardous compounds or analytes does not indicate that contact with or ingestion of this water is in anyway safe. In a flood situation there are multiple risk factors that can cause adverse responses, industrial chemicals are only one of those risk factors. The Centers for Disease Control and Prevention (CDC), in conjunction with the Agency for Toxic Substances and Disease Registry (ATSDR) and the Texas Department of State Health Services (TDSHS), has recommended that flood water be avoided to the extent practical and has suggested procedures if you do have to contact flood waters (https://www.cdc.gov/healthywater/emergency/extreme-weather/floods-standingwater.html). The flood waters are contaminated with household chemicals, oil and gas from submerged vehicles and from the sewer systems and septic tanks have been inundated. EPA cannot evaluate all the potential factors and variables to make a determination that the flood waters are safe. It is for this reason that EPA will not make a determination on the safety of floodwaters. That determination, if it is made, will be made by the Texas Department of State Health Services.

2.1 SITE CONCERNS

The primary concern for the Arkema plant spill is to determine the presence of contamination from the facility resulting from the explosions and subsequent spill and determine if an unacceptable risk to human health and the environment exists.

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3. SAMPLING APPROACH AND PROCEDURES

Samples collected by START-4 will be used to evaluate the nature of the contaminants present. In the field, in order to help determine the presence of chemicals within the floodwaters at the facility, a pH reading will be collected using pH strips and results logged in the field notes.

3.1 SAMPLE PRESERVATION, CONTAINERS, AND HOLD TIMES

Once collected, samples will be stored on ice at 4 degrees Celsius, in the dark, in coolers while at the site and until submitted for laboratory analysis. The samples will be sent by common carrier to the laboratory or driven by the WESTON START-4 members.

WESTON will receive analytical results based on discussions with the EPA OSC. This turnaround time is initiated when the samples are collected in the field and continues until the analytical results are made available to WESTON either verbally or by providing facsimile or email copies of the results for review. Samples that have been analyzed will be disposed by the designated laboratory in accordance with the laboratory SOPs.

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4. ANALYTICAL APPROACH

Samples collected by START-4 during the sampling task will be delivered to EPA-designated laboratories for VOCs, and SVOCs, utilizing EPA publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. In addition, a specialized analysis for Naptha will be conducted. In determining the potential for unacceptable risk, analytical results will be compared to Regional Removal Management Levels for Chemicals (RMLs) in addition to site-specific background levels determined by the Environmental Unit. Additionally, the analytical results will be compared to site-specific background concentrations (to determine areas of observed contamination). RMLs are provided in Appendix C. Table 4-1 provides requirements for containers, preservation techniques, sample volumes, and holding times

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TABLE 4-1

REQUIREMENTS FOR CONTAINERS, PRESERVATION TECHNIQUES, SAMPLE VOLUMES, AND HOLDING TIMES

Name	Analytical Methods	Container	Preservation	Minimum Sample Volume or Weight	Maximum Holding Time
VOCs	SW8260B	G, amber, (Teflon lined septum for water; 40 ml Teflon lined)	4°C, HCl to pH<2 (pH adjust for water only)	3 x 40 mL vials (for water)	14 days (7 days if unpreserved by acid) for water
SVOCs	SW8270C	G, Teflon lined cap	4°C	1 liter	7 days extract/40 days analysis (water)
Naptha					

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Time		Longitude	Latitude	LEL	O2	SO2	H2S	CO
1143	CR 4876	29.95194	-94.98155	0	20.9	0	0	0
1148	CR 4865	29.94313	-94.9596	0	20.9	0	0	0
1155	CR 4874	29.94849	-94.9777	0	20.9	0	0	0
1157	CR 486	29.91407	-94.94888	0	20.9	0	0	0
1202	CR 4873/CR 4879	29.94514	-94.97216	0	20.9	0	0	0
1217	CR 48823	29.96292	-94.979	0	20.9	0	0	0

Time		Longitude	Latitude	LEL	O2	SO2	H2S	CO
----	CR 4876	29.95194	-94.98155	(New coordinates due to Harris Co Hazmat blocking old c				
1418	CR 4865	29.94313	-94.9596	0	20.9	0	0	0
1338	CR 4874	29.94849	-94.9777	0	20.9	0	0	0
1430	CR 486	29.91407	-94.94888	0	20.9	0	0	0
1334	CR 4873/CR 4879	29.94514	-94.97216	0	20.9	0	0	0
1410	CR 48823	29.96292	-94.979	0	20.9	0	0	0
1459	CR 4906			0	20.9	0	0	0
1356	CR 4874	29.95267	-94.97697	0	20.9	0	0	0

Time		Longitude	Latitude	LEL	O2	SO2	H2S	CO
1915	CR 4876	29.95200	-94.98151	0	20.9	0	0	0
1926	CR 4874	29.94846	-94.9787	0	20.9	0	0	0
1938	CR 4873	29.94506	-94.97204	0	20.9	0	0	0
1955	CR 4865	29.94303	-94.96055	0	20.9	0	0	0

Time		Longitude	Latitude	LEL	O2	SO2	H2S	CO
947	CR 4906	29.968680	-94.973900	0	20.9	0	0	0
958	CR 48823	29.962920	-94.979000	0	20.9	0	2	0
1021	CR 4876	29.951940	-94.981600	0	20.9	0	0	0
1041	CR 4874	29.948490	-94.977700	0	20.9	0	2	0
1051	CR 4873/CR 4879	29.945140	-94.972220	0	20.9	0	0	0
1120	CR 4865	29.943130	-94.959600	0	20.9	0	0	0
1129	CR 486	29.914070	-94.948900	0	20.9	0	0	0

PH Water

PH Water
ɔordinates)

6

6 (New Coordinates)

VOC
0
0
0
0

VOC	
11.8	* May be due to damaged well heads in the area
10.1	*May be due to damaged well heads in the area
6.7	*May be due to damaged well heads in the area
1.4	*May be due to damaged well heads in the area
0.2	*May be due to damaged well heads in the area
0	
0	

Time		Longitude	Latitude	LEL	O2	SO2	H2S	CO
1100		29.934800	-95.031300	0	20.9	0	0	0
1506		29.934400	-95.031300	0	20.9	0.1	0	0
1540		29.961000	-95.048500	0	20.9	0.1	0	0
2400	1-Sep-17	29.934400	-95.031300	0	20.9	0	0	0
2415	1-Sep-17	29.961000	-95.048500	0	20.9	0	0	0
1024	1-Sep-17	29.961060	-95.048617	0	20.9	0	0	0
1059	1-Sep-17	29.934672	-95.031288	0	20.9	0	0	0

VOC
0
0.6
0.1 - 0.4
0
0
0
0